Highways Management Plan

Street Lighting Lifecycle Plan

January 2017

Lancashire County Council

www.lancashire.gov.uk

Version	Date	Author	Changes
0.1	20/07/2016	KP	Initial draft
0.2	28/11/2016	KP	Updated following meeting with RP
0.3	08/12/2016	KP	Updated to reflect various costs as calculated by RP
0.4	13/12/2016	KP	Updated to reflect comments made by SS
0.5	20/12/2016	KP	Updated to reflect comments made by HIAMSB
1.0	09/01/2017	KP	Front cover added

Next Review Date – August 2018

1 – Introduction

Lifecycle planning is an important aspect of asset management and involves drawing up long-term plans for managing an asset grouping with the aim of providing the required levels of service at the lowest whole life cost.

Lifecycle plans capture all information relating to the inventory, its condition and performance. They also identify both the short-term routine maintenance needs and long-term capital costs and enable annual spend profiles per asset to be produced. They also enable long-term predictions about the deterioration of various assets and their maintenance needs to be forecast and typically include information relating to:

- policy and strategy for maintaining the asset,
- list of specified goals and objectives the asset contributes to,
- extent of the asset and its characteristics, split into appropriate groupings,
- present condition including details how the data is measured, recorded and stored,
- current levels of service and costs associated with maintaining the asset at that level,
- details maintenance backlogs together with estimated quantities involved and cost of clearing such backlogs,
- comparison of current level of performance to the desired level of performance to enable 'performance gap' to be quantified and costed,
- details of alternative maintenance options costs for a range of alternative treatments to enable different investment strategies to be examined for best whole life costs and most effective way of narrowing the gap,
- details of the costs and risks associated with maintaining the asset at each of the defined service standards, including identification of risks associated with not maintaining to the desired standard
- consideration of future changes and demands placed on the asset that will help to determine the performance that will be required in future years,
- prioritisation of maintenance schemes
- Improvement Plan to fill known gaps in knowledge e.g. asset, condition, costs and timetable / methodology for filling gaps,

Lifecycle plans also provide secondary benefits in enabling the 'institutional knowledge' i.e. the knowledge and judgement of key personnel, to be captured and documented, thereby enabling it to be shared and further developed. They also enable the County Council to gather information on the costs for each treatment option and the effect that this expenditure has on performance improvement year on year. Once these are known benchmarking can then take place with other authorities / treatments etc.

Lifecycle Planning recognises that there are key stages in the life of each asset type and that investment options need to be considered at each of these stages to ensure that each part of the asset achieves its full expected life, at minimum cost. Each asset goes through the following stages during its lifecycle:-

Creation or Acquisition	Assets are created or acquired in response to either new development, to increase capacity or to improve performance.
Routine Maintenance	Carrying out minor works on a cyclical basis to maintain the asset in a serviceable condition.
Renewal or Replacement	Carrying out to return the asset to its "as new" capacity and condition.
Upgrading	Improve the asset above its original standard.
Disposal	Involves decommissioning, demolishing or selling old, obsolete or surplus assets.

This life-cycle plan has been written to capture, document and formalise the 'institutional knowledge' that has accumulated within the authority in relation to street lighting assets and sets out in a clear and concise manner why Lancashire County Council chooses to install street lighting and the procedures it has put in place to try and ensure that this equipment is maintained in as safe a condition as possible.

The lifecycle of street lighting installation typically spans 30 years in line with the expected life of a street lighting column. With careful management this can be extended by using column inspection and testing. During the operational life of a lighting installation a number of individual component parts will need to be repaired or renewed in order that the street lighting installation can continue to illuminate the highway etc.

This Lifecycle plan should be regarded as being a 'living document' and will be updated and adapted as required to reflect changes in working practices, technology, legislation and guidance. The next update is scheduled for August 2018 which will take into account the requirements of 'Well-managed Highway Infrastructure Code of Practice' which was released in October 2016.

2 – Purpose of Street Lighting

The purpose of street lighting is to illuminate the highway and reveal all features of both the road and traffic that are important to all users. It also plays an important role in improving traffic safety and the easing of passage. It has a social role in terms of amenity; reducing crime and fear of crime and can play a part in regeneration of both commercial and residential areas and encouraging participation in night-time leisure and recreational activities.

While lighting fulfils a number of important purposes, care is taken not to over-light roads, as this can unnecessarily contribute towards light pollution, neighbourhood nuisance and increased energy consumption.

This asset grouping comprises of the following:-

- Columns, brackets, lanterns, lamps, control gear and switching devices,
- Illuminated centre island refuge beacons, posts, lamps and control gear,
- Illuminated signs, posts, lanterns, lamps, control gear and switching devices,
- Illuminated bollards, lamps and control gear,
- Zebra crossing beacons, posts, lamps and control gear,
- Underground cable networks, ducts, inspection chambers, feeder pillars, switching and fuse equipment,
- Subway Lighting, lanterns, lamps and control gear,
- Matrix Signals,
- Feeder Pillars,
- LCC owned cables, joints, fuses and other electrical components/connections

Under the Public Health Act 1985 District/Borough/City, Parish & Town Councils also have the power to provide lighting. This can be additional lighting not on the highway such as within car parks, housing estates, park areas and school grounds. As this type of lighting is off the adopted highway the installation, maintenance and energy supply for this type of lighting is not the responsibility of Lancashire County Council as Highway Authority.

Legal Framework – Powers and Duties
The authority has a duty to ensure that it takes all reasonable care to secure that the highway maintainable at public expense is not dangerous, the definition of dangerous is dictated by case law and each case is decided upon its own facts.

The highway authority is also given powers under the Act for the provision and maintenance of Road Lighting on adopted highways or potentially adopted highways in its administrative area.

Under the Highway Act 1980 the Council has the power but not the duty to light. Therefore, whilst a Highway Authority has to illuminate certain traffic signs it has no statutory duty to

provide lighting. If lighting is provided the County Council has a duty of care to maintain its lighting stock in a safe condition. It should be able to demonstrate that it has systems in place to maintain public lighting equipment in a safe condition, including the detection of dangerous equipment. A Highway Authority:

- is not liable for accidents arising from a failure to light a highway unless the accident arises because the authority has failed to take reasonable steps to prevent objects it has placed in and around the highway (e.g. road signs, lighting columns, bus shelters etc.) from becoming a danger to the public.

- would be negligent if an accident was caused directly by its road lighting apparatus being in such a state of disrepair that it caused an injury e.g. a badly maintained lighting column collapsing due to fatigue and falling onto a passer-by or if a person received an electric shock or was electrocuted due to faulty electrical equipment

- may be challenged if it removed a system of road lighting or failed to maintain one in operation if it cannot demonstrate that the reason the system of road lighting was installed for was no longer applicable i.e. if a system of road lighting was installed as an accident remedial measure and the level of night time accidents increased following its removal or a system of lighting was installed as a crime reduction initiative and crime increased following the removal or downgrading of the lighting system.

Activities associated with this asset grouping must comply to legislation that includes:-

- The Management of Health and Safety at Work Regulations 1999 and 2003,
- Various Traffic Signs Regulations and General Directions,
- Electricity at Work Regulations 1989,
- Environmental Protection Act 1990,
- Hazardous Waste Regulations Act 2005,
- WEEE Regulations 2013,
- Carbon Reduction Commitment
- Highways Act, 1980
- BS 7671 17th Edition Wiring Regulations, 2008
- The (Highways) Road Hump Regulations, 1999
- New Roads and Street Works Act, 1991
- Clean Neighbourhoods and Environment Act 2005,

Corporate Objectives
The Street Lighting service makes a major contribution towards the County Councils Corporate Strategy by supporting the following priorities:

- Support the development of resilient communities where self-help becomes part of the fabric,

- Invest in local accessible green infrastructure that helps to make cycling and walking to work, school and local services a practical safe choice,
- Develop an effective economic growth programme for your communities suffering from highest level of deprivation,
- Invest in our town and city centres,
- Support green energy solutions in Lancashire and develop green energy solutions for the county as a whole and reduce the own county's energy use.

National Street Lighting Codes of Practice and Guidance
The service standards that apply to the street lighting functions to meet duty of care responsibilities as contained in the Highways Act 1980 Section 41 and the recommendations contained within various codes of practice, procedures and standards which include:

- Well-lit Highways, Code of Practice for Road Lighting Management, 2004 and 2012,
- The Institution of Lighting Professionals Technical Report Number 22 – Managing a Vital Asset : Lighting Supports
- BS5489/BS EN 13201 – British/European Lighting Standards,

Local Street Lighting Codes of Practice and Guidance
The County Council has incorporated the requirements of the above national standards into the following documents:

- Code of Practice on Road Lighting and Highway Electrical Maintenance Design – 1997,
- Code of Practice on Road Lighting and Highway Electrical Systems Maintenance – 1997,
- Code of Practice for the Installation and Operation of Seasonal Decorations on or Above the Public Highway – 1999

In addition Members have approved the dimming of street lighting as follows:-

- Dimming from midnight to 6am on all road classifications (August 1997 - Highways and Transportation Committee),
- Dimming @ 50% dusk-dawn (2014-15 budget setting process).

Asset Group Objectives
The objectives of this asset grouping are:

- To ensure that all equipment is electrically and structurally safe,
- To ensure equipment is installed and maintained safely,
- To provide appropriate lighting in conservation and other areas,
- To minimise the impact of lighting on the environment,
- To minimise and reduce the energy costs associated with this asset group,
- To deliver the street lighting objectives sustainably, economically and effectively,
- To maintain an accurate inventory.

3 - Inventory

The inventory of all assets in this group are currently stored in 10 HLPLUS databases which broadly mirror the district boundaries within Lancashire. The HLPLUS software is a DOS based specialised street lighting management information system that is used to manage all aspects of maintenance including reactive and cyclical maintenance activities. It is anticipated that in the next 12 months all street lighting inventory data will be migrated to Symology's Insight system.

The majority of the inventory information was collected in the mid 1990's but has been updated as and when new assets are added through new schemes and developments etc. or when existing assets are repaired, replaced or refurbished. It is anticipated that once Insight is installed this programme will support the use of mobile devices, enabling inventory attributes to be updated on site by operatives and then uploaded into Insight.

The extent and characteristics of the street lighting stock is shown below which breaks the street lighting inventory down by column type and mounting height.

Column Type	5m	6m	8m	10m	12m	15/18m	25/30m	Total
Aluminium	508	8		35	72	1		624
Cast Iron	545	23	5					573
Composite	1,185	82		215	99			1,581
Concrete	32,309	3,483	1,402	2,294	60			39,548
Pole Bracket	696	147	8					851
Stainless Steel	1,484	463	24	7				1,978
Tubular Steel	46,393	17,001	6,541	26,231	4,477	40	11	100,694
Wall / Structure	2,352	175	170	131	10	8		2,846
Total	**85,472**	**21,382**	**8,150**	**28,913**	**4,718**	**49**	**11**	**148,695**

A further breakdown the street lighting inventory, by lamp type is provided in Appendix A

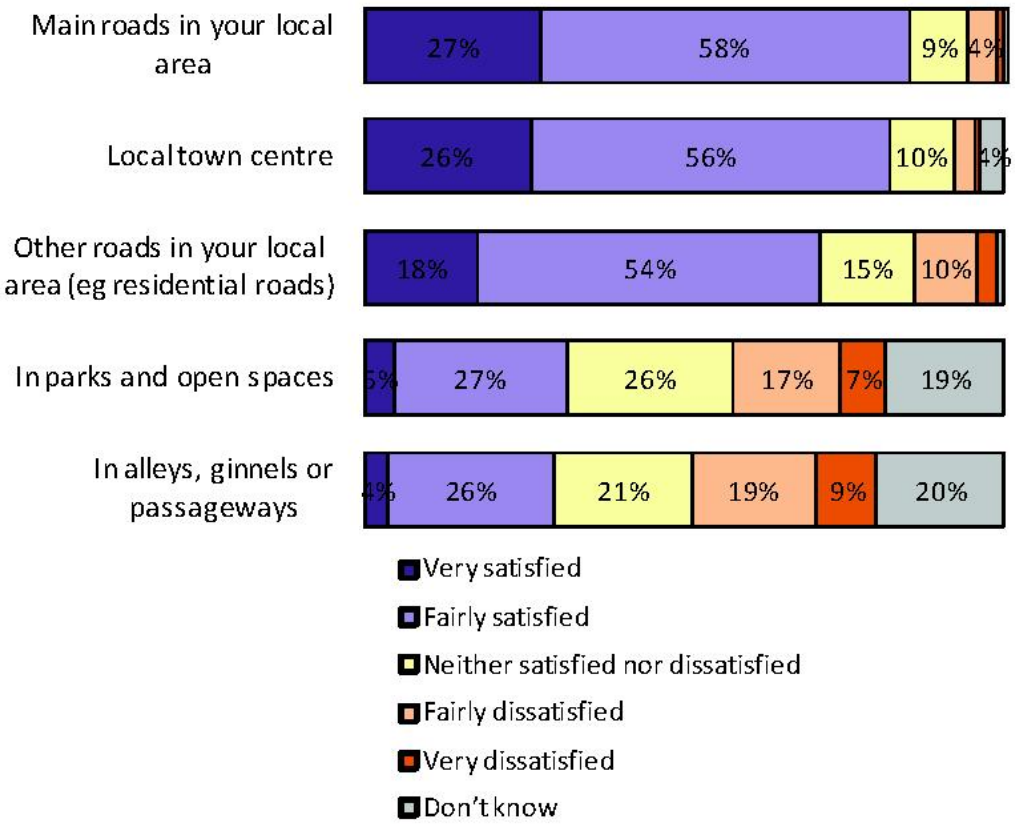
4 - Customer Aspirations

Street lighting holds a prominent position in the eyes of the community and the public has ever increasing expectations for better lighting in terms of higher lighting levels, less outages, better colour rendition and more environmentally friendly lighting.

The last time the views of our customers were sought in relation to street lighting was in November 2009 as part of the 'Living in Lancashire Survey: Wave 27 Street Scene'. This wave was not street lighting specific and looked at street scene and the factors affecting it.

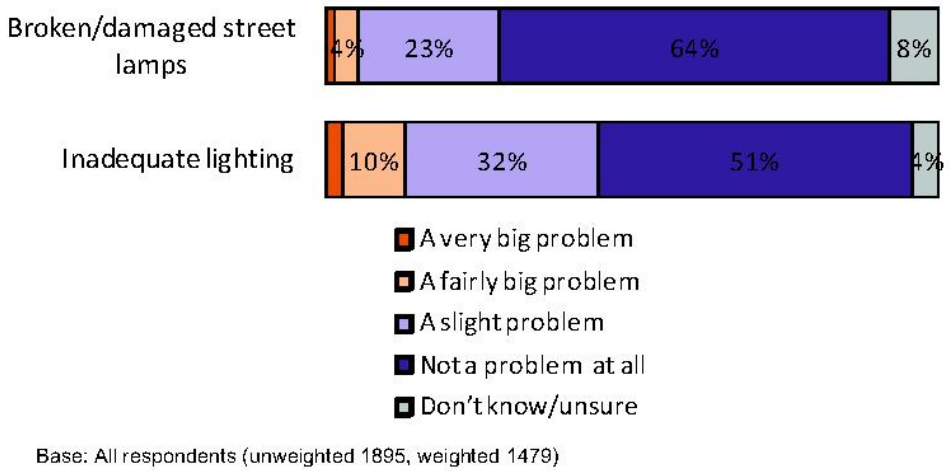
The series of questions around street lighting began by asking how satisfied respondents were with street lighting in different areas. The highest level of satisfaction occurred with lighting around main roads in the local area (85%), the local town centre (82%) and other roads in the local area (71%). Respondents were less likely to be satisfied with the lighting provided in parks and open spaces (31%) and in alleys, ginnels or passageways (30%).

Chart 10 - How satisfied or dissatisfied are you with the street lighting provided in the following places in your local area?



Most respondents answer that broken or damaged street lamps are not a problem at all in the local area (64%), with just one person in twenty saying that it is a very or fairly big problem (5%). Half of panel members answer that inadequate lighting is not a problem at all, with about one person in seven answering that it is a very or fairly big problem (13%).

Chart 11 - Thinking about the neighbourhood you live in, how much of a problem are the following?



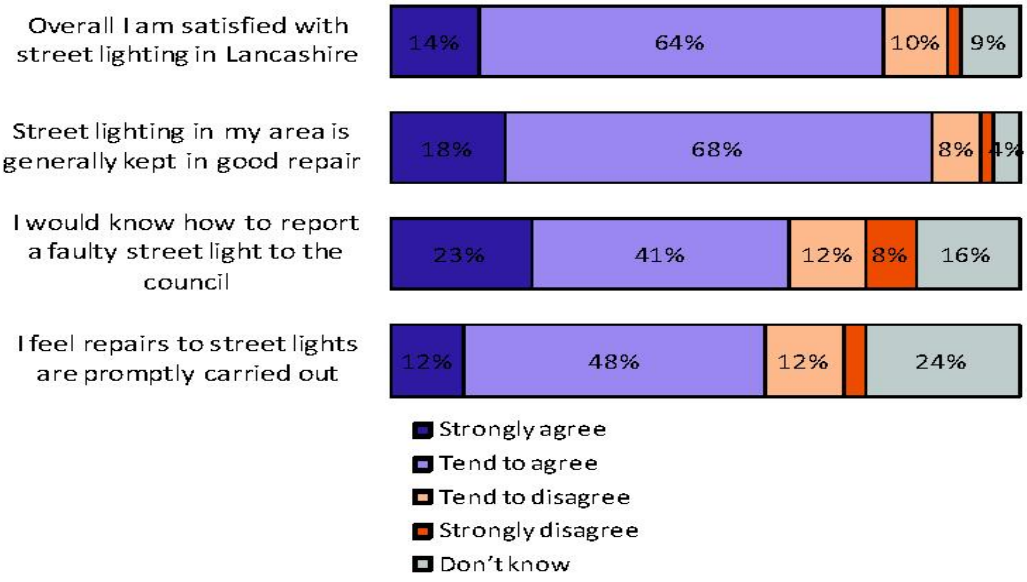
Base: All respondents (unweighted 1895, weighted 1479)

Broken/damaged street lighting is more likely to be a very/fairly big problem in neighbourhoods for Black Minority Ethnic (BME) residents (22%) than white residents (4%). Whilst there are some slight differences by district council area none are statistically significant.

Inadequate street lighting is significantly more likely to be a very/fairly big problem for BME residents (37%) than for white residents (11%). Residents in Rossendale (20%) and Burnley (17%) are more likely to see this as a very/fairly big problem.

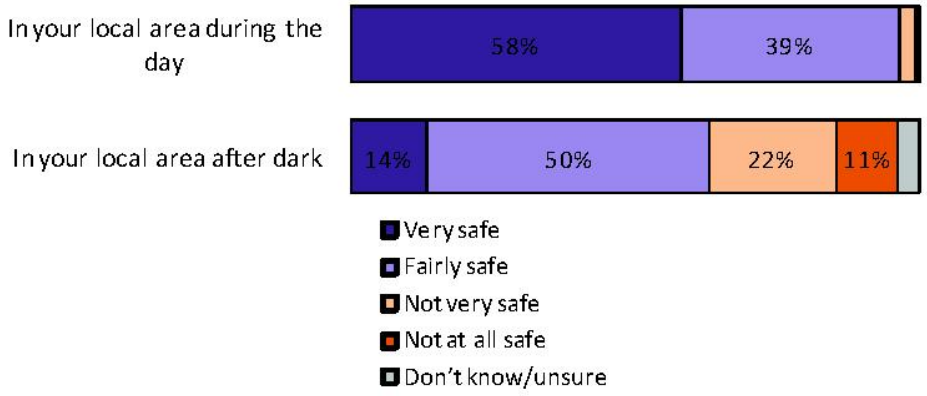
Overall, four in five respondents agree that they are satisfied with street lighting in Lancashire (79%), while six in seven agree that local street lighting is kept in good repair (86%). However more than one in three respondents either disagree that they know how to report faulty street light or answer that they don't know (36%).

Chart 12 - How much do you agree or disagree with the following statements?



While almost all respondents feel very or fairly safe in their local area (97%), only about two in three feel safe locally at night (64%, with only 14% feeling very safe). The proportion feeling safe at night varies from 76% of respondents from an AB socio-economic group falling by grade to just 51% of those from a DE socio-economic group. This likely to reflect the levels of deprivation in the areas each group of respondents live in.

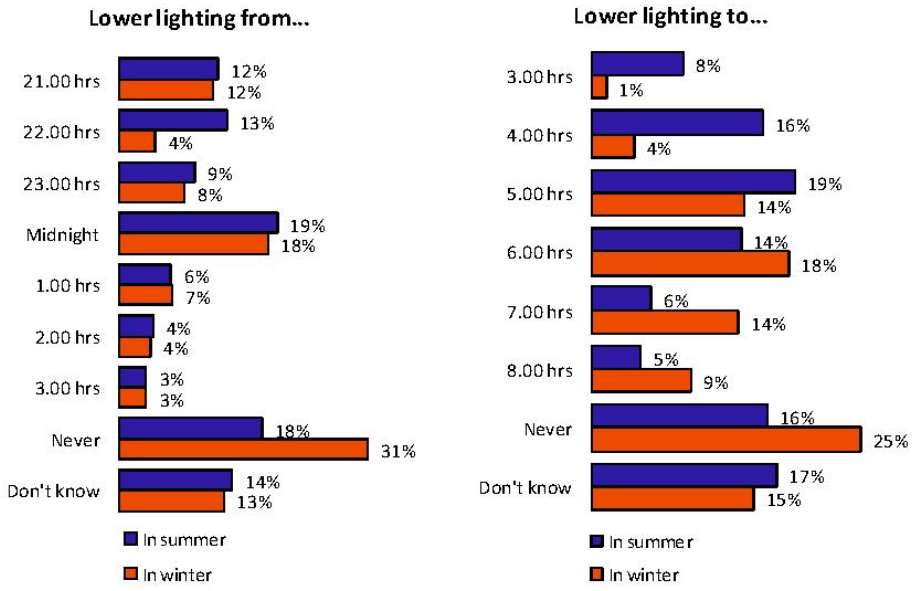
Chart 13 - How safe do you feel walking alone in each of the following situations?



Finally on street lighting, panel members were told that Lancashire County Council was looking at options for street lighting in the county, one of which was lower levels of street lighting. Respondents were asked between what times lower levels of lighting would be acceptable, both in summer and in winter. The proportions giving each answer are shown in the chart below. The most common times named for low lighting are midnight (19% in summer and 18% in winter) until 5am in the morning in summer and 6am in winter (19% and 18% respectively).

While most people gave a time they considered lower level lighting acceptable, it is important to note that between one person in six (16%) and one in three (31%) said that it would never be acceptable. Interestingly, more people thought that low level lighting would never be acceptable in winter than in summer. Also about one person in six answered that they didn't know when lower lighting would be acceptable. This suggests that if low level street lighting is introduced in Lancashire, careful communications would need to be made to residents to explain the reasons and possible benefits.

Chart 14 - After what time in the evening, if at all, do you feel lower lighting levels in residential streets would be acceptable from? Before what time in the morning, if at all, do you feel lower lighting levels in residential streets would be acceptable until?

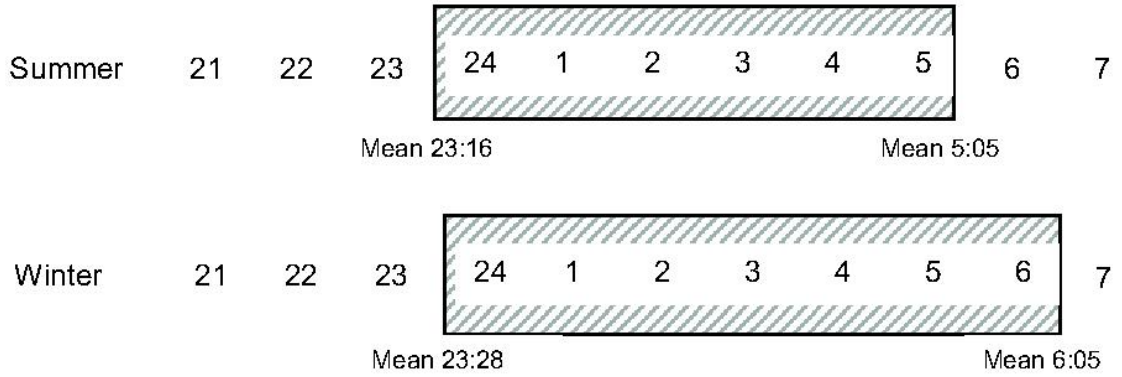


Base: All respondents (unweighted 1856, weighted 1452)

Demographically, residents from urban areas and market towns were more likely to say that lower lighting should never be introduced than those from rural areas (e.g. 19%, 20% and 13% answering low lighting should never be introduced in the summer). This may reflect lower levels of traffic in rural areas.

Taking just the responses of those who named a time for acceptable lower street lighting gives the mean times shown below. These correspond to an average time of low lighting of 5 hours 48 minutes a night in summer and 6 hours 36 in winter, which gives an overall average of 6 hours 12 minutes across the whole year

Chart 15 - Mean times for when lower street lighting is acceptable



There are some differences between respondents in these timings. Respondents aged 25 to 44 years gave the least total time for lower street lighting (5h32 per night in summer and 6h23 in winter), while those aged 60 years and above gave the longest times (6h03 and 6h52). Those aged 45 to 59 years gave times between the other two groups.

Comparing between those who said that their local area was safe or unsafe, those answering it was very or fairly safe gave average times of 5h36 in summer and 6h25 in winter, which is more than half an hour a night less than those who said their local area was not very or not at all safe, (6h15 in summer and 7h04 in winter).

While it might be surprising that those who do not consider their local area safe at night suggest longer periods of low lighting, it might be that people who consider their area unsafe are less likely to be out at night.

We will look to refresh this data in 2017 when we will be seeking residents view with regards the street lighting service and dimming of street lights.

5 – Service Standards

The current levels of service provided by the County Council in relation to street lighting together with those contained in national guidance are set out in Appendix B. Further information relating to these service standards is shown below.

Fault Repairs

The County Council generally aims to repair all streel lighting faults within 5 working days from receipt of a defect report. Whilst this target is met in most cases there are instances where the repair time may take longer than this. On 'traffic sensitive' and/or high speed roads, expensive traffic management may be required so that operatives can work safety.

As traffic management can take time to arrange, lighting faults on these roads generally take longer to repair. In order that faults that require traffic management do not unduly affect our performance figures, we changed our methodology in April 2013 to calculate our average repair time and now calculate separately the repair times for those faults that do and do not require traffic management. The time taken to replace street lighting faults is reported on a quarterly basis and information for the last 3 years is shown below:-

		All Faults			Faults Requiring Traffic Management			Faults Not Requiring Traffic Management		
District	Period	Total Faults	Total Repair Days	Ave Repair Time	Total Faults	Total Repair Days	Ave Repair Time	Total Faults	Total Repair Days	Ave Repair Time
			Working Days			Working Days			Working Days	
2013/14	Qtr1	4,380	24,303	5.549	859	11,586	13.488	3,521	12,717	3.612
	Qtr2	4,597	20,634	4.489	858	9,294	10.832	3,739	11,340	3.033
	Qtr3	5,180	25,243	4.873	794	11,191	14.094	4,386	14,052	3.204
	Qtr4	6,359	29,977	4.714	1,091	13,311	12.201	5,268	16,666	3.164
	Total	**20,516**	**100,157**	**4.882**	**3,602**	**45,382**	**12.599**	**16,914**	**54,775**	**3.238**
2014/15	Qtr1	3,785	17,327	4.578	688	9,116	13.250	3,097	8,211	2.651
	Qtr2	3,963	19,674	4.964	910	11,395	12.522	3,053	8,279	2.712
	Qtr3	4,414	22,481	5.093	903	11,718	12.977	3,511	10,763	3.066
	Qtr4	4,816	21,782	4.523	899	11,525	12.820	3,917	10,257	2.619
	Total	**16,978**	**81,264**	**4.786**	**3,400**	**43,754**	**12.869**	**13,578**	**37,510**	**2.763**
2015/16	Qtr1	2,475	11,587	4.682	681	7,909	11.614	1,794	3,678	2.050
	Qtr2	2,815	11,055	3.927	647	5,662	8.751	2,168	5,393	2.488
	Qtr3	3,654	16,327	4.468	822	9,778	11.895	2,832	6,549	2.313
	Qtr4	4,611	18,854	4.089	1,116	9,840	8.817	3,495	9,014	2.579
	Total	**13,555**	**57,823**	**4.266**	**3,266**	**33,189**	**10.162**	**10,289**	**24,634**	**2.394**

Emergency Response

The County Council provides an emergency response function and generally aims to respond on site within 1 hour from time of receipt during normal working hours or within 2 hours outside of normal working hours. Where the defect cannot be repaired at the time of the visit, the site will be left in a safe manner with repairs scheduled for a later date.

Night-Time Inspection
In addition the County Council currently operates a night-time scouting function to identify lighting outages and other defects. Whilst the actual night inspection cycles vary between summer and winter, the County Council aims to inspect all adopted street lighting and illuminated signs/bollards on average every 10 days.

Bulk Lamp Change
All street lighting lamps have a finite life. In order to reduce the occurrence of wide scale lamp failures across Lancashire, the County Council operates a 'bulk change' regime whereby all street lighting lamps are replaced just before they reach their scheduled hours of operation. The period between bulk change visits varies according to the light source. High pressure sodium lamps typically have a service life of approximately 6 years, whilst low pressure sodium lamps have a service life of just three years. At the time of the bulk change visit, the lantern bowl and optics are cleaned to ensure as much of the light emitted is directed onto the carriageway as possible.

The County Council are currently installing a significant number of LED lanterns which are expected to have a service life of approximately 20+ years. As the LEDs are fitted to electronics tray within sealed lanterns, it is not possible to replace individual LEDs should any fail. As a result LED lanterns will not be subject to a bulk change, but will still require cleaning at regular intervals.

Sign lights and illuminated bollards are subject to a 2 year bulk change. Bollard bodies and sign plates are cleaned at intervals that are considered appropriate to their location.

Electrical Test
All items fitted with an electrical connection are subject to an electrical test in line with the d to the Electricity and Work Regulations 1989. Currently the County Council operates a 6 year testing cycle.

Column Condition
As there are no national performance indicators to measure the condition of this asset grouping, it is our responsibility to carry out risk assessments and develop an appropriate maintenance strategy and service standard.

The Institute of Lighting Professional's Technical Report 22 (TR22) provides local authorities with technical guidance with regards to column inspection procedures, column inspection frequencies and column testing techniques together with guidance in respect of how to record the results of these. TR22 also provides a mathematical algorithm to help local authorities calculate a lighting column's action age which is the point in time where a columns theoretical residual life has expired. This calculation is based on a number of factors such as material type, column protection system and column age which are considered together with local environmental conditions such as wind speed, ground conditions, proximity to gritting route etc. all of which combine to influence the rate of corrosion, column fatigue and service life.

Once a column has reached its action age it doesn't necessarily follow it needs replacing immediately and TR22 provides additional guidance as to how the service life of columns can safely be extended past their theoretical action age through enhanced column inspection and/or non-destructive column testing regimes.

As columns approach the end of their service life, TR22 provides further guidance as to the prioritisation of such columns based on a consequence of failure matrix which recognises that columns located on the centre reserve of busy dual carriageway have the potential to cause more damage and disruption compared to a similar column situated on an isolated footpath.

The condition of the street lighting stock has been determined according to the potential risk they are considered to pose to the general public. This has been calculated by taking the 'action age' away from the 'current age' and multiplying the answer by the 'near a road - consequences of failure' factor to produce a risk rating score.

Columns numbers are grouped into risk rating bandings and placed in a risk category, which are assigned into either high, medium or low priority bands as illustrated below:-

Risk Category	Risk Rating Score	Priority
1	>150	**High**
2	101-150	**High**
3	51-100	**High**
4	41-51	**Medium**
5	31-40	**Medium**
6	21-30	**Medium**
7	11-20	**Low**
8	2-10	**Low**
9	1	**Low**
10	<1	**Low**

Therefore the older a column is and the greater the probability of a collapse causing injury or disruption due to its location, then the higher the risk rating score and the higher the priority for attention, inspection and replacement or removal as appropriate.

Columns which have not yet reached their action age have a risk rating score of <1. Therefore a risk rating score of >1 indicates that a column has exceeded its action age and may require further attention. Those columns deemed to have the highest potential risk will require an initial inspection prior to wholesale replacement to ensure that they have in fact reached the end of their useful life as it is not uncommon for columns to have a useful serviceable life that is well in excess of that initially indicated by the manufacturer.

The 2014 Transport Asset Management Plan (TAMP) sets out the County Councils strategy for maintaining all our transport assets on a holistic basis over the 15 year period 2015/16

to 2029/30. The TAMP identifies five possible service standards that the County Councils assets provide to customers. These are POOR, ACCEPTABLE, FAIR, GOOD and EXCELLENT. The street lighting service standard can be determined by the % of columns in Risk Classes 1 to 6, as show below:-

	Poor	Acceptable	Fair	Good	Excellent
% of columns in Risk Classes 1- 6	>50	50-35	**35-20**	20-5	<5

Using these generic service standards a Street Lighting Level of Service have been developed which show what that users should expect from the street lighting asset. This information is shown at Appendix C.

The level of service provided by Street lighting is set out below using the above criteria

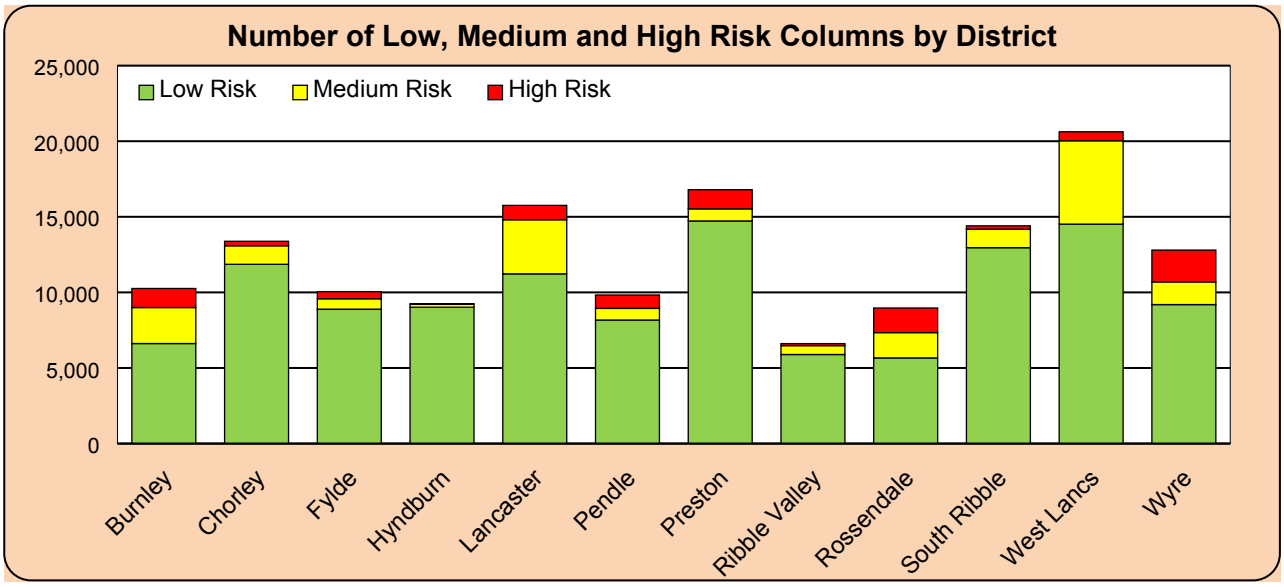
Year	Columns in Risk Classes 1- 6		Service Standard
	Number	%	
2014	34,228	23.15	FAIR
2015	26,976	17.40	FAIR
2016	29,964	20.15	FAIR

Due to data cleansing activities by the Highways asset Group in 2015, a number of columns had their erection date amended, resulting in a number of columns now have 'older' dates to more accurately reflect their true age. Therefore, the 2016 data is not strictly comparable to earlier years.

Using the 2016 inventory information, the table below shows the total number of lighting columns in each risk category by material type.

All Districts	**Lower Priority**				**Medium Priority**			**High Priority**		
Risk Rating Score	**<1**	**1**	**2 to 10**	**11 to 20**	**21 to 30**	**31 to 40**	**41 to 50**	**51 to 100**	**101 to 150**	**>150**
Risk Class	**9**	**10**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
Aluminium	267	13	85	40	152	32	32	3	0	0
Cast Iron	196	7	82	61	54	40	16	24	72	21
Composite	152	2	210	157	626	340	75	16	2	1
Concrete	2,755	258	11,997	7,954	6,725	1,917	1,303	4,928	1,636	75
Tubular Steel	77,177	1,372	8,295	3,582	3,043	3,712	896	2,500	94	23
Stainless Steel	1,815	2	74	83	4	0	0	0	0	0
Wall / Structure	666	17	629	440	418	218	123	271	27	37
Pole Bracket	87	4	97	155	115	153	155	83	0	2
Total	**83,115**	**1,675**	**21,469**	**12,472**	**11,137**	**6,412**	**2,600**	**7,825**	**1,831**	**159**
Priority Total	**118,731**				**20,149**			**9,815**		
Priority %	**79.85%**				**13.55%**			**6.60%**		

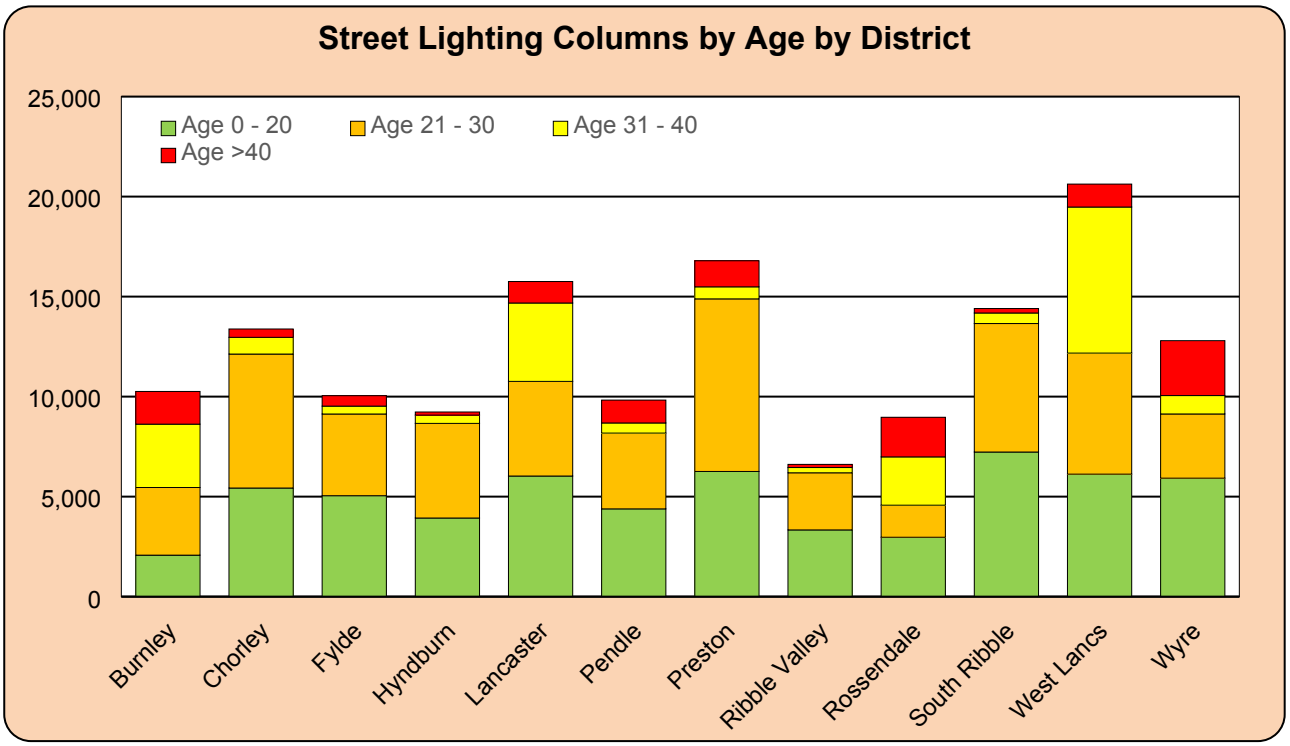
The chart below shows the number of low, medium and high risk columns in each district area



The table below shows the age profile of the street lighting 'column' stock by material type.

Lighting Columns by Age Category					
	Age 0 - 20	**Age 21 - 30**	**Age 31 - 40**	**Age >40**	**Total**
Aluminium	155	138	265	66	624
Cast Iron	130	250	33	160	573
Composite	338	860	377	6	1,581
Concrete	616	18,993	11,324	8,615	39,548
Pole Bracket	352	387	105	7	851
Stainless Steel	32	1786	160	0	1,978
Tubular Steel	56,313	32,683	8,565	3,133	100,694
Wall / Structure	804	1091	435	516	2,846
Total	**58,740**	**56,188**	**21,264**	**12,503**	**148,695**

The chart below shows the number of columns by age band in each district area.



The data indicates there is a concentration of columns over 40 years old in the district areas of Burnley, Lancaster, Preston, Rossendale and Wyre.

6 – Asset Valuation

All highway authorities in England are required to account for the value of their highway assets in their end of year accounts in a prescribed manner and format. In order to comply with these requirements the County Council has to calculate and publish the depreciated replacement cost (DRC) and the gross replacement cost for each of its major asset types.

DRC is a method of valuation that provides the current cost of replacing an asset with its modern equivalent asset, less deductions for all physical deterioration and all relevant forms of obsolescence and optimisation. The gross replacement cost (GRC) is based on the cost of constructing a modern equivalent new asset. The difference between the DRC and GRC is the amount of the value of the asset that has been consumed by the authority during its useful life.

Whole of Government Accounts (WGA) consolidates the audited accounts of over 5,500 organisations across the public sector in order to produce a comprehensive, accounts-based picture of the financial position of the UK public sector. WGA is based on International Financial Reporting Standards (IFRS), the system of accounts used internationally by the private sector.

WGA is a major step forward in transparency and accountability as it supports the government's agenda to make more public data available. WGA enables the direct comparability of financial data across public sector entities and is producing trend data that will help to inform future analysis and decision making.

The production of information on a consistent basis between highway authorities, facilitates benchmarking and means that information can be aggregated to provide data at regional and national level on spending patterns and needs.

As the street lighting asset is a high value and high spend item, the County Council is required to calculate the DRC and GRC valuation of this asset group within its annual Whole of Government Account returns.

The value of this asset group as at July for each of the past four years is shown below:-

Value of Street Lighting Asset Group			
	Gross Replacement Cost	**Depreciation**	**Depreciated Replacement Cost**
2012/13	£187,094,490	£90,982,400	£96,112,090
2013/14	£189,136,555	£92,403,506	£96,733,029
2014/15	£206,434,000	£119,799,000	£86,635,000
2015/16	£211,547,200	£132,404,580	£79,142,620

This shows that as more and more street lighting columns are added to the inventory and more LED lanterns are fitted, that the value of the lighting stock is increasing year on year.

The increasing value of depreciation supports the fact that there has been an under-investment in this asset grouping for many years.

Caution however needs to be exercised when looking at the rate of depreciation over the past couple of years. Due to the street lighting inventory only being computerised in the late 1990's many of the actual erection dates of those columns already installed when the system was installed were unknown with many erection dates reflecting the day they were entered onto the database rather than their commissioned or erected date.

In order that the County Council can produce more accurate TR22 information the Highways Asset Group have over the past two years been reviewing many of the erection dates recorded within HLPLUS and then adjusting to reflect more realistic dates that mirrored the adoption date of the street they are located or a date that reflects their period of manufacture.

As a consequence a large number of lighting columns have over the past two years have had their erection date changed to an earlier date, which has 'aged' the lighting stock and increasing the level and rate of depreciation over the past two years.

7 – Investment

Traditionally there has been two sources of funding used to maintain this asset, revenue and capital.

Revenue
Revenue funding is used to finance the day to day issues associated with maintaining all the installations in this asset grouping in a safe and working order. Revenue expenditure is used to carry out the following activities:-

- Fault repairs,
- Emergency response,
- Night Time Inspection,
- Bulk lamp clean / change,
- Electrical testing.

Street lighting energy costs are financed from a separate street lighting revenue energy budget. The level of revenue funding made available for street lighting over the past 4 years is set out below:-

Year	Maintenance	Energy
2013-14	£3,199,885	£6,834,227
2014-15	£3,323,733	£6,187,327
2015-16	£3,464,000	£7,307,000
2016-17	£3,396,332	£7,020,426

Capital
Capital funding is used to replace street lighting columns that are the end of their useful life and the level of capital funding made available for street lighting over the past 4 years is set out below:-

Year	Column Replacement	Energy Reduction
2013-14	£2,647,000	-
2014-15	£1,700,000	-
2015-16	£1,000,000	-
2016-17	£1,000,000	£5,000,000

£5m capital was allocated to street lighting in 2016-17 as part of BOP 049 (Street Lighting Energy Savings) to target the replacement of a number energy inefficient lanterns with LED equivalents. This money was to supplement monies provided by the Department for Transport.

The 2014 Transport Asset Management Plan sets out the County Councils strategy for maintaining all our transport assets on a holistic basis over the 15 year period 2015/16 to 2029/30. In line with this significant investment in the street lighting infrastructure is due to take place in the third phase of this plan, between 2025/26 and 2029/30.

TAMP Investment Strategy

Our objective is to reduce the risk of damage or personal injury caused by column failures by managing our resources so that priority is given to replace those columns that are considered to pose the greatest risk to the public.

Investment will attempt to 'normalise' the condition of the street lighting stock across Lancashire. This will be done by allocating 70% of available resources to those districts having the highest number of columns with the highest risk rating scores. This will fund risk reduction works such as column inspection, column testing and column removal and/or replacement works as considered appropriate. The remaining 30% will be used to respond to unexpected failures and will be allocated according to the inventory totals in each district area.

Reduction of Risk

It should be noted that this strategy will NOT lead to the immediate replacement of all columns having the highest risk rating scores being replaced. Reduction of risk requires the identification of those columns considered most likely to fail. Once identified, on-site assessments will be undertaken to establish the residual life of all such columns. This information will lead to a number of options being considered, namely:-

- Immediate removal of column with no planned replacement,
- Immediate removal of column with scheduled replacement,
- Scheduled removal/replacement of column,
- Implementation of a strategy so as to better manage the risk of column failure via column inspection and/or column testing programmes at frequencies that are considered appropriate to reduce the risk of column failure.

A total of 9,815 columns are considered to pose the highest potential risk of failure and these therefore represent our high priority for further assessment, including possible replacement. A breakdown by column type and district area is provided below:-

Allocation per District Area to Reduce Risk @ 70 % of total			
District Area	**Total Scores >50**	**% of Columns >50**	**Allocation per £1,000**
Burnley	1,260	12.84%	89.86
Chorley	296	3.02%	21.11
Fylde	467	4.76%	33.31
Hyndburn	5	0.05%	0.36
Lancaster	947	9.65%	67.54
Pendle	884	9.01%	63.05
Preston	1,267	12.91%	90.36
Ribble Valley	133	1.36%	9.49
Rossendale	1,627	16.58%	116.04
South Ribble	229	2.33%	16.33
West Lancs	595	6.06%	42.44
Wyre	2,105	21.45%	150.13
Total	**9,815**	**100%**	**700**

Responding to unexpected failures

Columns may be damaged by accident or freak weather conditions and will, in most cases, require replacement. In order to deal with such instances, a contingency is allocated based on the total number of columns and signs etc. in each district area as shown below:-.

Allocation per District Area for Unexpected Failures @30% of total			
	Total All Units	**% Total Units**	**Allocation per £1,000**
Burnley	10,258	6.90%	20.07
Chorley	13,381	9.00%	27.00
Fylde	10,047	6.76%	20.27
Hyndburn	9,231	6.21%	18.62
Lancaster	15,754	10.59%	31.78
Pendle	9,826	6.61%	19.82
Preston	16,792	11.29%	33.88
Ribble Valley	6,612	4.45%	13.34
Rossendale	8,967	6.03%	18.09
South Ribble	14,404	9.78%	29.06
West Lancs	20,625	13.28%	41.61
Wyre	12,798	8.30%	25.82
Total	**148,695**	**100.00%**	**300**

Department for Transport Challenge Fund

In 2015 the County Council made a successful bid to Department for Transport Challenge Fund, which provided total funding of £19.8m for the replacement of approximately 67,000 energy inefficient lanterns with modern LEDs equivalents, the replacement of up to 4,000 street lighting columns aged 40 years or over, which will help us to reduce the percentage of columns in risk classes 1-6. The bid also included the installation of up to 150 charging points for Ultra Low Emission Vehicles.

Maintenance Backlog

Historically there has been a significant lack of funding allocated to maintaining the street lighting infrastructure which has caused a serious backlog of essential column replacement works to accumulate, resulting in many lighting columns still in use well past their design life.

This ageing profile can only be addressed by increasing future year's capital budget. If the 25 year design life of a lighting column can be extended to 30 years by the introduction of a column testing regime this will enable the County Council to safely extend the life of a column beyond its design life so as to maximise service life and reduce whole life costs by mitigating against future claims for third party injury or damage.

It is estimated that the current value of the backlog of work is approximately £18.09m once materials, labour, design time, electricity connection and traffic management costs are taken into account. It is also estimated that about 4,900 columns need to be replaced annually, at an approximate cost of £4.9m, just to maintain a steady state i.e. no further deterioration in the lighting stock.

8 – Asset Lifecycle

The street lighting asset grouping passes through a number of stages during its lifecycle which are summarised below:-

Creation or Acquisition
Assets are created or acquired in response to either new developments, the building of new roads or additional/new assets are added as the result of installing new/replacement lighting schemes etc. Only those new assets which are 'built' in accordance with the LCC Code of Practice on Road Lighting and Highway Electrical Systems Design (1997) will be accepted for adoption.

Design briefs specify equipment types and accepted lighting levels and aim to reduce whole life costs for both maintenance and energy charges. The procedure to follow when adopting new lighting is attached at Appendix E

Routine Maintenance
Minor works are undertaken on a cyclical basis to maintain the asset in a serviceable condition, in accordance with the LCC Code of Practice on Road Lighting and Highway Electrical Systems Maintenance (1997). This involves activities such as night inspections, fault repairs, electrical testing, emergency response and visual Inspection of assets at every routine/repair visit.

Renewal or Replacement
Works undertaken to return the asset to its 'as new' capacity and condition via bulk change and cleaning activities. A bulk change is timed to occur just before a lamp reaches the end of its life, which varies according to the light source used. Typically SON lamps need changing every 5 years, SOX lamps every 3 years, sign lamps every 2 yrs. Lanterns are cleaned at this time, so as to return the lantern and the light output to its original condition.

This activity also includes the replacement of columns, signs and bollards etc. as and when they reach the end of their service life.

Upgrading
This involves upgrading the asset to improve its performance above its original standard, ie through the fitting of new energy efficient lanterns. These tend to control better and therefore distribute the available light better, reduce light pollution and also use less energy. Also includes upgrading of lanterns and photocells that enable street lighting to dim outside of the rush-hour traffic peak, so as to reduce our energy costs.

Disposal
Involves decommissioning of old columns which are either removed because they no longer serve a purpose or have been replaced as part of a new lighting scheme

This activity may also include the decommissioning and removal of street lighting columns that are not specifically required for highway purposes, where it is safe to do so, based on a risk assessment of road safety and the fear of crime.

Where suitable lighting is identified for decommissioning, Town and Parish Councils will be consulted on the proposed removal of any street light and, dependent upon their condition, may be invited to take over the maintenance of this lighting. Where such offers are declined, the lighting will be decommissioned.

Illuminated signs will be removed or de-illuminated where permitted by the Department for Transport's traffic sign regulations.

9 - Whole Life Costs

The main material costs associated with this asset group are columns, lanterns, lamps and photocells. In addition, there are costs associated with connecting the asset to the electricity network and ongoing maintenance costs which involve periodic bulk lamp changing, lantern cleaning, fault repair and electrical testing and energy costs.

Lighting columns are used support lanterns whose purpose is to provide a sufficient amount of light onto the carriageway. The amount of light required to illuminate carriageway varies from road to road and is dependent upon a number of factors including carriageway geometry, speed of traffic and volume of traffic and road location (e.g. rural or urban) etc. In order to achieve this a number of different columns and lanterns are used.

The County Council has significantly more 5mtr columns in use than any other column type, the majority of which are fitted with 50w Son lamps that dim to 50%. The average costs and life expectancy of these items is shown below:-

Item	Expected Life	Cost
5mtr Tub Steel Galvanised Lighting Column	25yrs	£64
5mtr Aluminium Lighting Columns	70yrs	£200
5mtr Stainless Steel Column	100yrs	£371
SON lantern for 5mtr Lighting Column	15yrs	£181
LED lantern for 5mtr Lighting Column	25yrs	£256
Ave Cost 5Yr Son Lamp	5yrs	£5
Dimming Photocells	20yrs	£16
Electronic Ballast	6Yrs	£64
LED Driver	10yrs	£100

Electricity Network Related Costs

Item	Cost
New Connection	£480
Transfer Cables	£360
Disconnection	£250
LCC Owned Cable Connection etc	£80

Maintenance Related Costs (excluding Traffic Management)

Item	Cost
Clean Lantern only (ave cost)	£10
Clean & Bulk Change (ave cost)	£12
Fault Repair (ave cost)	£12
Structural Test	£40
Electrical Test (ave cost)	£10

The lifecycle costs below compare the costs of fitting and installing 5 meter tubular steel and 5 meter stainless steel columns with a typical SON lantern and a typical LED lantern, over a 100 year cycle.

100 year Whole Life Cost – Street Lighting Column

Tub Steel Galv + SON	Life (years)	Rate (£)	Quantity	Cost
5Mtr Column	40	64	3.0	192.00
SON Lantern	15	181	7.0	1267.00
Lantern Install costs	15	30	7.0	210.00
SON Lamp	5	5	20.0	100.00
Dimming Photocell	20	16	5.0	80.00
Electrical Test	10	10	10.0	100.00
Fault Repairs (1 per 6yrs)		12	16.0	192.00
Ballast	6	64	16.0	1,024.00
Install column	40	75	2.0	150.00
Remove Column	40	65	2.0	130.00
Structural Test	6	40	16.7	668.00
New Connection	40	460	1.0	460.00
Transfer Supply	40	550	2.0	1,100.00
Energy Cost	100	2281	1.0	2,281.00
Total Cost				**7,954.00**

Tub Steel Galv + LED	Life (years)	Rate (£)	Quantity	Cost
5Mtr Column	40	64	3.0	192.00
LED Lantern	15	256	7.0	1024.00
Lantern Install costs	15	30	7.0	120.00
LED Modules	15	40	7.0	280.00
Dimming Photocell	20	16	5.0	80.00
Electrical Test	10	10	10.0	100.00
Fault Repairs (1 per 12yrs)		12	8.0	96.00
Driver	15	80	16.7	1,336.00
Install column	40	75	2.0	150.00
Remove Column	40	65	2.0	130.00
Structural Test	6	40	16.7	668.00
New Connection	40	460	1.0	460.00
Transfer Supply	40	550	2.0	1,100.00
Energy Cost	100	681	1.0	681.00
Total Cost				**6,417.00**

Stainless Steel + SON	Life (years)	Rate (£)	Quantity	Cost
5Mtr Column	100	370	1.0	370.00
SON Lantern	15	181	7.0	1,267.00
Lantern Install costs	15	30	7.0	210.00
SON Lamp	5	5	20.0	100.00
Dimming Photocell	20	16	5.0	80.00
Electrical Test	10	10	10.0	100.00
Fault Repairs (1 per 6yrs)		12	16.0	192.00
Ballast	6	64	16.0	1,024.00
Install column	40	75	1.0	75.00
Remove Column	0	0	0.0	0.00
Structural Test	6	40	16.7	668.00
New Connection	100	460	1.0	460.00
Transfer Supply	0	0	0.0	0.00
Energy Cost	100	2281	1.0	2,281.00
Total Cost				**6,827.00**

Stainless Steel + LED	Life (years)	Rate (£)	Quantity	Cost
5Mtr Column	100	370	1	370.00
LED Lantern	25	256	4	1024.00
Lantern Install costs	25	30	4	120.00
LED Module & Install	15	40	7	80.00
Dimming Photocell	20	16	5	80.00
Electrical Test	10	10	10	100.00
Fault Repairs (1 per 12yrs)		12	8.0	96.00
Driver	15	80	16.7	1336.00
Install Column	40	75	1.0	75.00
Remove Column	0	0	0.0	0.00
Structural Test	6	40	16.7	668.00
New Connection	100	460	1.0	460.00
Transfer Supply	0	0	0.0	0.00
Energy Cost	100	681	1.0	681.00
Total Cost				**5,290.00**

From this it can be seen that whilst the initial set up cost of using stainless steel columns and LEDS together is more expensive, the lifecycle of a street lighting installation could be extended from 40years to over 100years. This change would save approximately £1,127 per installation over a 100 year period. In addition, the risks to the general public and County Council are significantly lower as there will be less risk of a structural column failure due to corrosion and less night-time outages.

If the estimated savings of £1,127 are typical of all column heights and LED combinations then across the whole lighting stock, then whole lifecycle costs could be reduced by £167m – equivalent of £1.67m per year over a 100yr lifecycle.

Given the reliability of this equipment combination and the low ongoing maintenance costs, consideration should at least be given to the use of this equipment in either 'difficult to reach or maintain' locations such as central reserves etc. where the cost of maintenance is higher, due to the need for expensive traffic management costs.

Different scenarios for other equipment types, materials etc. could also be included.

These costs are on the conservative side as they assume that all LED lanterns will require to have an LED lamp module replaced once during their 25 year life. The current LED lantern specification requires that at least 90% of LED lamps last the equivalent of 25 years. As the County Council is also currently dimming many of its LEDs it is anticipated that more than 90% of LED lamp modules will exceed their estimated 25 year life.

If it is assumed that the LED lamp module lasts as long as the LED lantern then the difference between using stainless steel and tubular steel columns fitted with LEDs is estimated to be in the region of £2,314 per installation over a 100 year period. If the estimated savings of £2,314 are typical of all column heights and LED combinations then across the whole lighting stock, then whole lifecycle costs could be reduced by £344m – equivalent of £3.44m per year over a 100yr lifecycle.

As the trend is to install more lighting columns than are removed, the potential savings outlined above will only increase. The county council dims lights at various times during the night in order to reduce both energy costs and carbon emissions.

10 – Risk Management

Risk Management is an important part of both corporate governance and performance management. It allows the Council to avoid problems and failures, rather than just reacting to them when they arise. It helps the Council to identify where it needs to focus its efforts and resources, to exploit more opportunities and suffer fewer failures.

The Council adheres to the principles forwarded in the International Risk Management Standard (ISO 31000). Under this standard the definition of 'risk' is no longer 'chance or probability of loss', but 'the effect of uncertainty on objectives' ... thus causing the word 'risk' to refer to positive possibilities (opportunities) as well as negative ones (risks).

As part of the risk management process in the Council, these risks and opportunities are formalised and recorded.

Statement of Commitment
Lancashire County Council is committed to the management of risk.

Risk management is the identification, assessment, and prioritisation of risks, followed by the application of resources to minimise, monitor and control those risks in order to protect assets and minimise losses and liabilities.

Lancashire County Council is clear that the responsibility for managing risk belongs to everyone and that there needs to be an appropriate level of understanding of the nature of risk by all stakeholders.

The Council's risk management approach offers a long term commitment, inherent to good governance practices and fully supported by the Members, Management and Officers of the Council.

Risk Appetite
Risk appetite is 'the amount of risk an organisation is willing to accept' by taking risks and exercising control over those risks. The Council will not accept the following risks:

- Anything negatively affecting the safety of our Members, employees or customers
- Anything having a damaging impact on our reputation
- Anything leading to breaches of laws and regulations
- Anything endangering the future operations of the Council

The Council will also not accept any identified risk with a high risk rating of 12 or more, without listing it on the Corporate Risk Register and identifying mitigating actions.

The table below details of the costs and risks associated with maintaining the asset at each of the defined service standards, including identification of risks associated with <u>not</u> maintaining to the desired standard.

Service Options					
	Minimum	**Statutory Minimum**	**Existing Service**	**Above Minimum Requirements**	**Well Above Minimum Requirements**
Definition	**(Poor)**	**(Acceptable)**	**(Fair)**	**(Good)**	**(Excellent)**
General Description	Minimum (Reactive) level of service that falls below the minimum required standard.	Minimum (Reactive) level of service that just meets the statutory minimum required standard only.	Standard that exceeds minimum level of service but is not sufficient to fund 'steady state' i.e. no further deterioration.	Standard that is just sufficient to fund 'steady state' to arrest further deterioration in asset	Provides enhanced Level of Service based on best engineering principles & technical judgement.
Street Lighting	**Approx. <£1.5m** The minimum budget level only just sufficient to fund reactive maintenance, albeit with much reduced response times. Budget not sufficient to maintain the current asset condition resulting in a greater backlog than would be the case of current funding levels.	**Approx. £3m** The budget level only sufficient to fund reactive maintenance and minimal testing and inspections. It would still not be sufficient to maintain the current stock condition resulting in a greater backlog than would be the case of current funding levels	**Approx. £4.1m** Existing budget level sufficient to fund day to day functions but not enough to structurally test columns or fund adequate number of column replacements. Will result in continued increase in backlog	**Approx. £9.4m reducing to £7.9m** Would require initial additional investment of £6m for 3yrs to clear backlog and then £4.0m thereafter to maintain 'steady state' plus £0.5m per year to fund column testing works.	**Approx. £9.4m reducing to £8.4m** Would require initial additional investment of £6m for 3yrs to clear backlog, and then £5.0m annually to install better quality columns to extend lifecycle to over 100 years and reduce whole life costs, through lower maintenance, repair and , energy costs
	Consequences	**Consequences**	**Consequences**	**Consequences**	**Consequences**
	No bulk change of lamps, no cleaning of lanterns and no night inspection service. Faults attended to as and when reported by	No bulk change of lamps, no cleaning of lanterns but night inspection (NI) service funded. Many faults detected by NI but still	Bulk change and cleaning of lanterns on 5yr cycle. Night inspection service funded - most faults detected by NI with	Bulk change and cleaning of lanterns on 5yr cycle. Night inspection service funded - most faults detected by NI with	Bulk change and cleaning on 6yr cycle of declining numbers of discharge lamps. Night inspection service (NI) funded. Due to improved reliability of

	the public. Increase calls to contact centre. Due to increase in fault numbers, repairs take average of 15 working days.	significant numbers reported by public. Fault repair times now average just over 8 working days	residual numbers reported by public. Fault repair times just below 5 working days.	residual numbers reported by public. Fault repair times well below 5 working days.	lamps, fewer faults and reduced reports from public. Fewer NI – and repair teams required. Fault repair times well below 5 working days.
	Electrical testing of columns suspended.	Electrical testing of columns funded.	Electrical testing of columns funded.	Electrical testing of columns funded.	Electrical testing of columns funded.
	No new columns installed. Dangerous columns and columns damaged by persons unknown cut down and stumps left in ground.	Limited replacement of columns but only on strategic routes. Some columns cut down and stumps left in the ground.	All columns that are removed are replaced but rate of renewal not sufficient to keep pace with rate of decay. Age profile of continues to increase.	Increase rate of renewal matches rate of renewal. Backlog still exists. Column tests means residual life maximised.	Enhanced rate means that backlog of old columns eradicated. Column tests results in maximum residual life achieved.
	Due to staff shortages emergency responses now within 4 hours	Emergency response times within 2 hours.	Emergency response times within 2 hours.	Emergency response times within 2 hours	Emergency response times within 2 hours
	Risks	**Risks**	**Risks**	**Risks**	**Risks**
Street Lighting	No preventative maintenance work undertaken. Most works are reactive, in nature therefore whole lifecycle costing is unpredictable and a threat to future budget requirements.	No preventative maintenance work undertaken. Most works are reactive, therefore whole life cycle costing becomes unpredictable. Threat to future budget requirements.	Increase preventative maintenance and reduced reactive works make whole life cycle costs and budgets more predictable. Minimal threat to future budget requirements.	Increase preventative maintenance and reduced reactive works make whole life cycle costs and budgets more predictable. Minimal threat to future budget requirements. Column testing improves whole life	Installation of high quality equipment significantly reduces the need preventative and reactive maintenance. Whole life cycle costs further reduced. Financial risks reduced to low level due to improved equipment reliability.

				cycle costs and ensures that budgets are fully optimised as only those columns that need replacing are replaced.	
	No inspections and no testing means that dangerous defects left undetected. More reliant on public to report these. Increase risk of accident/injury and court action. Risk of column failure still exists.	NI and electrical tests enable significant numbers of dangerous defects to be identified. Therefore reduced risk to customers of accident or injury and reduced risk to LCC of court action. Risk of column failure still exists.	NI and electrical tests enable significant numbers of dangerous defects to be identified. Therefore reduced risk to customers of accident or injury and reduced risk to LCC of court action. Risk of column failure still exists.	NI and electrical tests enable significant numbers of dangerous defects to be identified. Therefore reduced risk to customers of accident or injury and reduced risk to LCC of court action. As columns are tested reduced risk of column failure.	NI and electrical tests enable reducing number of dangerous defects to be identified. Therefore reduced risk to customers of accident or injury and reduced risk to LCC of court action. As increasing number of old columns are removed the risk of column significantly reduced.
	Street scene not attractive with lights out for longer and column stumps left. Has serious impact on communities with crime and fear of crime increasing.	Street scene not attractive with column stumps left in ground. Slower repairs and missing columns have some impact on some communities with fear of crime increasing.	Lighting makes a positive contribution to night time activities and the street scene as faults are repaired quickly and most dangerous columns removed and replaced.	Lighting makes a positive contribution to night time activities and the street scene as faults are repaired quickly. New columns improve day-time appearance of street scene and	Lighting makes a positive contribution to night time activities and the street scene as faults are repaired quickly. New columns improve day-time appearance of street scene and reduce the risk of injury due to column

				reduce the risk of injury due to column failure.	failure.
	As lights are out longer many repairs become more expensive due to additional component failure caused by moisture ingress.	As lights are out longer some repairs become more expensive due to additional component failure caused by moisture ingress	Due to quicker repairs fewer expensive repairs are caused by moisture ingress.	Due to quicker repairs fewer expensive repairs are caused by moisture ingress.	Due to more reliable equipment failure rates fall significantly. Quick repairs mean low numbers of very fewer expensive repairs are caused by moisture ingress
	Due to long repair times complaints from members of the public are at an all-time high and is taking up a significant amount of officer time.	Due to long repair times complaints from members of the public have increased and are taking up a greater proportion of officer time.	The volume of complaints from members of the public are at a constant level and can be dealt with comfortably by officers.	Complaints from members of the public are reduced due to quick repair time / more reliable equipment	Complaints from members of the public are significantly reduced due to quick repair time / more reliable equipment

Other Risks Associated With The Asset Grouping.

The risks below have been identified and completed in line with the methodology contained in the Risk Management Section TAMP

Street Lighting Event	Safety	Property Damage	Network Disruption	Cost to LCC	Total Impact Rating Score	Likelihood Probability Score	Risk Rating Total Impact Rating Score x Probability Score	Mitigation Action	REVISED Total Impact Rating Score	REVISED Likelihood Probability Score	REVISED Risk Rating Total Impact Rating Score x Probability Score
Column failure with multiple fatalities	8	5	3	6	22	2	**44**	TR22 procedures in place to calculate column 'Action Ages'. Robust column testing / inspection regimes in place to detect columns likely to fail. All columns 'at risk of failure' are removed as soon as possible in order to avoid columns falling and causing injury or third party damage.	15	2	**30**
Column failure with fatality	7	4	3	5	19	3	**57**		16	3	**48**
Column failure with multiple serious injuries	6	4	3	5	18	3	**54**		18	3	**54**
Column failure with serious injury	5	4	3	4	16	4	**64**		15	3	**45**
Column failure with multiple slight injuries	4	4	1	3	12	4	**48**		12	4	**48**
Column collision with fatality	7	4	3	1	15	4	**60**	Risk assessments to be undertaken at all column knockdown sites prior to replacement columns being erected to determine what measures can be put in place to avoid repeat. On high speed routes and/or sites with high accident / fatality rates consideration to be given to the use of passive safe columns	10	4	**40**
Column collision with multiple serious injuries	6	4	3	1	14	5	**70**		13	4	**52**

11 - Performance Gap

Where existing Standard of Service differs from desired Standard of Service, a Performance Gap exists. See below a number of alternative maintenance options that will enable the desired Standard of Service to be delivered.

a) Night Inspections

Current situation – Inspections carried out during darkness hours on an average frequency of 14 working days. As Inspectors cover specific areas in rota, this leads to reporting of concentrated faults in the inspected area. Repairs teams therefore do not have to travel far between columns when doing fault repairs. (Current Cost = £135K)

Alternatives:-

- **Increasing inspection frequency to 7 working days** will result in some faults being detected slightly earlier and a slightly better service being offered. This will increase costs as more personnel will be required to inspect the asset. Should reduce risk as some dangerous defects will be detected / repaired sooner and result in reduced third party claims. (Estimated Cost = £220K)

- **Reducing inspection frequency to once per month** will result in less faults being detected, particularly in rural areas. This could lead to the contact centre receiving more reports from the public and a more random distribution of faults across the County. This will result in repair teams having to travel greater distances to fix faults within specified timescales. Greater risk of dangerous defects not being detected resulting in increased third party claims. (Estimated Cost = £95K)

- **Amend inspection routes so that only urban/residential roads are inspected** will result in less faults being detected, particularly so in rural areas. Customers may not notice reduced service delivery, but might not result in huge cost reductions as inspectors will still need to use some rural roads to travel between communities. Greater risk of dangerous defects in rural areas not being detected resulting in increased third party claims. (Estimated Cost = £90K)

- **Combining night inspection & fault repair teams** will reduce the need for separate night inspector staff and should lead to an increase in service delivery as faults will be fixed quicker following detection. As repair teams will need to stop frequently, it is unlikely that they will be able to complete the same number of inspection routes per night as separate inspectors would – may result in more repair teams being required. Noisy repair vehicles could be deemed to be a nuisance in the middle of the night. Repair teams may also encounter access problems due to parked cars etc. (Increase in repair costs of between £250K - £300K)

- **Stopping night inspections will** result in a reduced service being provided. Less faults will be detected and some lights will remain out for longer periods, particularly in rural areas. Contact Centre will receive more phone calls and location of faults will be more random in nature. Will result in repair teams travelling further between faults and may have to re-visit particular areas more frequently in order to repair faults within specified period. Will lead to staff redundancies and greater risk of dangerous defects not being detected resulting in increased third party claims. (Increase in repair costs > £100K)

b) Emergency Response

Current Situation - LCC provide an emergency response from time of notification to attendance on site between 8am - 5pm on a working day of 1 hour and 2hours outside of these hours. (Current Cost = £176K)

Alternatives

- **A standard response time of 1 hour regardless of day/time** – will require increase in resources and lead to increased costs, but will not necessarily result in a significantly better service, particularly out of hours as this could result in more standby crews being required. (Estimated Cost = £216K)

- **A standard response time of 2 hour regardless of day/time** – will not have an impact on cost, but will produce a reduced service. Could have impact on safety during the working day when pedestrian / traffic flows are greatest as defects repaired slower more chance of injury. (Estimated Cost = £170K)

c) Fault Repairs

Current Situation - All faults attended within 5 working days apart from faults on those roads that are subject to traffic management which can take longer. (Current Cost = £1.9m)

Alternatives

- **Attend all faults on non-traffic management roads within 2 working days –** may require more repair teams, or existing teams to work longer hours. As current repair time for routine faults is in the region of 3 days, this will produce minor service improvements. (Estimated Cost = £2.1m)

- **Attend all faults on non-traffic management roads within 7 (or 10) working days –** will result in lights being out for longer, a reduced level of service and result in more phone calls to the Contact Centre particularly in urban areas between October and March. This may lead to a reduction in costs as fewer materials and fewer repair teams would be required. This could lead to more third party claims if it is considered that LCC is being negligent. It could also damage image of LCC particularly if lamps have a fault which causes them to be lit during the day are left on longer at a time when lights that ought to be lit at night are out longer. (Estimated Cost = £1.7m)

d) Bulk Lamp Replacement

Current situation – lamps are bulk changed in conjunction with an electrical test and are replaced just before they fail. For high pressure sodium lamps this is every 5 years, for low pressure sodium this is every 3 years and for sign lights is approximately every 2 years. (Current Cost = £488K bulk change + £142K electrical test = £630K)

Alternatives

- **Bulk changing high pressure sodium lamps at a 4 year interval** will result in reduced lamp costs but the purchase of an inferior lamp that is more prone to failure before the end of the 4 year period. Whilst LCC will save on cost price of each lamp, more lamps might need to be purchased. The cost of repair is significantly more than the cost of a lamp so repair costs and overall costs are likely to increase. (Estimated Cost = £777K)

Bulk changing high pressure sodium lamps at a 6 year interval will result in the purchase of a better quality lamp. As this technology is not yet proven, and there are very few suppliers of a 6 year lamp, these carry a premium price. If these lamps prove to be more reliable, then repair costs could be reduced as fewer repair teams would be needed. As SON lamps would be dimmed to 50% across the County, this will extend the life of lamps beyond their predicted life and therefore offset any negative impacts of increased lamp change interval without the need to purchase more expensive lamps

- (Estimated Cost = £488K)

- **Stopping bulk lamp replacements** will result in lamps using the whole of their residual life before they fail. As a result of there will be more lamp failures, more phone calls to the contact centre and night inspectors may not be able to complete their routes due to the need to stop more frequently to record faults. An increase in faults will result in additional administration time required to log faults leading to delays in issuing works instructions which will further delay repair times and the service offered will noticeably be reduced as a result. As lamps are replaced on an area basis, faults will become more random and result in repair teams having to travel further to repair lamps within the specified timescales. May require more operatives to keep pace with enhanced failure rates. (Increase in repair costs of > £200K)

e) Electrical Test

Current Situation – all assets that are connected to an electrical supply are subject to a periodic electrical test. LCC carry this out on a 6 year cycle and time this so that it coincides with a bulk lamp change. (Estimated Cost = £142K if done with bulk change)

Alternatives

- **Changing the 6 year cycle to one that is more/less frequency** will in the main not lead to either a reduction or increase in service but will lead to increased costs an extra visit in additional to the bulk lamp change visit will need to be carried out, which may result in

additional electricians and vehicles being required. Increasing the period between tests will increase the risk that an unknown defect will cause an injury. (Estimated Cost = £190K)

f) Structural Inspections

Current Situation: - all assets are visually structurally inspected as and when operatives attend as part of either a fault repair, bulk lamp change or electrical test visit. (Estimated Cost = £Nil)

Alternative

- Assets considered most at risk of failure to have a specific additional annual visit as some 'high risk' assets may only be visited once every six years. Whilst such visits would strengthen the LCCs case in respect of managing a known risk, it is unclear what this additional visit would practically achieve as most steel columns corrode below ground level and hairline cracks in concrete columns are difficult to detect with the naked eye. This would increase costs and potentially reduce risk of column failure. (Estimated Cost = £142K)

g) Structural testing of columns

Current Situation: - Assets are structurally tested on an ad-hoc basis in response to concerns surrounding particular columns raised at a national level, or in response to columns at particular locations. National Guidance advises that structural testing should be carried out to a pre-determined programme. Current Cost = £ Nil

Alternative

- **Structural testing of columns to a pre-determined programme** will ensure that the life of steel columns can safely be extended beyond their design life so that they are not removed too early or left in place too long. This will maximise column life and reduce risk to the public of column failure. Such a procedure will help the County Council to defend any third party claims. (Estimated Cost = £560K)

h) Column Materials

Current Situation: - All new street lighting columns are made of tubular steel to which a galvanising protective coated is added. Further protection is also added to that part of the column which is buried in the ground. Although these columns have a design life of 25yrs their service life can be safely extended beyond this through rigorous monitoring and testing regimes. (Current Cost = £Nil)

Alternative

- **Stainless Steel lighting columns are now available** at a price that warrants further consideration of their use. Whilst they have a 70 year design life and a 70 year anti-

corrosion guarantee, it can be expected that they will have a service life of well over 100 years. During this time maintenance costs will be reduced as they will not require painting or structural testing. This option would enable the LCC to avoid paying for (up to two) further column replacement costs at the 40 & 80 year mark compared to the continued use of galvanised tubular steel columns. As these columns are more susceptible to damage arising from low speed vehicular impact, which could affect their structural integrity further investigations may be required before these could be used in all locations across Lancashire. As the stainless steel columns cost 5 times more than galvanised tubular steel columns 20% will needed to be added to the column replacement budget or fewer columns will be replaced.

i) Lighting Periods - Energy implications

Current Situation: - Most street lighting in Lancashire operates on a dusk to dawn regime, the exception to this is lighting in selected subways which operate 24 hours a day and lighting on remote cycle tracks in rural areas which operate on a part-night basis. The exact period of operation is determined by the photocell used to switch the lights on and off. Many lighting columns now fitted with photocells that enable the lighting to dim after 7pm when traffic and pedestrian movements are at their lowest. (Current Cost = £5.1m)

Alternatives

- **Many authorities have introduced part-night lighting** on many roads in their area. By switching lights off between midnight and 5.30am the annual lighting period is reduced by approximately 2260 hours. It is thought that this would be very unpopular with most people, but a small minority would welcome this e.g. astronomers. Would lead to increase in fear of crime – but would not necessarily increase crime rates. As lights would be switched off earlier undertaking a night inspection would be problematic. It is also thought that the lamp bulk change interval could be extended as they are not operating for as long. As a result fewer lamp replacements would be required and less crews required to carry out repairs. There would be some upfront costs associated with this i.e. cost of new photocells and cost of installing them. As LCC has a duty of care to illuminate any obstacles it has placed in the highway etc. risk assessments would need to be carried out to understand the effect of no lighting of anticipated crime/accident rates. (Estimated Energy Saving = £2,18m).

  Whilst the County Council could save up to £2.18m in energy costs, actual revenue savings would be less as new photocells would need to be purchased and fitted in order that the street lighting could operate as outlined above.

Alternatives
Turn off all lighting where there is no legal obligation to it i.e.:-

- A Highway Authority is not liable for accidents arising from a failure to light a highway unless the accident arises because the authority has failed to take reasonable steps to

prevent objects it has placed in and around the highway (e.g. road signs, lighting columns, bus shelters etc.) from becoming a danger to the public. Would be very unpopular with most people, but a small minority would welcome this e.g. astronomers. Would lead to increase in fear of crime – but would not necessarily increase crime rates. Ditto from above comments regarding night inspections, lamp life, fault numbers, repair crews, risk assessments, CCTV etc.

Disposal

Current Situation - in the mid-1990s, the County Council offered all lighting authorities (parish councils & district councils) the opportunity to transfer ownership to the County Council all 'footway lighting' systems under their control. All local councils in Lancashire accepted this offer. As a result LCC has acquired lighting columns in locations that in today's climate would not be lit, some of which are located in back gardens and car parks etc. LCC is funding both energy and ongoing maintenance costs.

- **In order to reduce the burden of this type of lighting** on the budget a survey is undertaken to identify column which are considered 'surplus to requirements' ie do not illuminate the highway or illuminate obstructions or provide any practical purpose in terms of crime/accident reduction purpose and offer these back to parish councils for future maintenance. If they do not want to take these on, then take steps to remove them.

12 – Future Changes

In order that the County Council can plan for future years it is important that all potential pressures are identified and considered so that the effect that these changes will have on the performance of this street lighting service can be assessed. A number of pressures have been identified which are summarised below:

Increasing Inventory
The street lighting inventory increases by approximately 1% per year as a result of new housing and commercial developments etc. Whilst the rate of increase might have slowed due to the recession there is still an upward trend. In times of growing financial restraint there may come a time when there is simply not enough money available to support the asset.

To minimise the impact of this growth, design briefs will be continually be reviewed to ensure that the street lighting on these developments delivers lowest whole life costs for both maintenance and energy whilst meeting the relevant lighting standards. We will also be reviewing the existing lighting design standards with a view to providing an appropriate level of lighting across Lancashire in the most efficiently and effective manner in order to reduce the associated maintenance and energy burden that these developments have on the County Council.

A commuted maintenance payment will be required where a developer chooses to use materials or lighting installations which, in the opinion of the County Council will require premature or more costly replacement or incur additional maintenance costs

Energy Costs
This is by far the biggest challenge facing the street lighting service. The cost of energy charged to the LCC is made up of a number of different components namely cost of generated energy, cost of transmission and regulatory costs. As a result of increases in all these the cost of energy has almost trebled in the past 10 years. Whilst LCC does purchase its energy requirements by competitive tender to get a good as deal as possible, it is unable to avoid paying these additional costs other than reducing consumption by removing/disposing of lighting, reducing consumption through shorter operating periods or using low energy lamps.

Ageing Infrastructure
Due to a lack of investment over many years the rate of renewal has not kept pace with the rate of decay. As a result the lighting stock is continuing to age with many columns still in use many years past their design life. Nationally there have been a number of fatalities involving the failure of lighting columns which have resulted in compensation payments being made. A pay out of £1m would fund the replacement of approximately 1,000 lighting columns.

As LCC was not able to demonstrate in court that it has a robust column inspection regime as a result of a column failure in Morecambe and currently does not have a structured column testing programme in place, contrary to National Best Value Guidance i.e. TR22, LCC is currently in a very vulnerable position should a serious injury arise as a result of a column failure in Lancashire.

13 - Forward Years Works Programme

In line with the Highway Asset Management Framework a unified 10 year forward work's programming process will provide a single prioritised investment programme with a means of evaluating investments in different asset groups, in multi-asset group schemes or in whole-asset schemes on a common basis, so that the most beneficial receive the highest priority. With good quality condition data and the development of effective modelling techniques it should be possible to predict likely future maintenance and intervention requirements together with their location. Only by projecting forward the anticipated need and asset conditions can the best whole life options be identified.

This programme should integrate the works required from all funding streams and initiatives. It will become the basis for improved co-ordination of works on the network and management of road space. Typical levels of confidence that may be achieved in a long-term programme are shown below.

Year(s) Description	Confidence Level
Year 1	Work is in progress 100%
Year 2	Firm recommendation 95%
Years 3 to 5	Reasonable assessment 75%
Years 6 to 10	Informed assessment 50%

It is anticipated that the forward plan will present not only the general volumes of work, for example, kilometres of carriageway surfacing, and when they are to be required, but also an annual financial plan presenting the expenditure required to deliver the work plan. Once produced this proposed works programme can then be fed into the commissioning cycle.

Since the TAMP was approved in 2014, street lighting replacement works have been determined using the annual TR22 calculation which provides a mathematical algorithm which calculates a lighting column's action age which is the point in time where a columns theoretical residual life has expired. TR22 provides further guidance as to the prioritisation of such columns based on a consequence of failure matrix which recognises that columns located on the centre reserve of busy dual carriageway have the potential to cause more damage and disruption compared to a similar column situated on an isolated footpath.

As a result of this calculation lighting columns are given a risk rating of between 1 and 10 and then assigned as either, low, medium or high priority. Only columns regarded as high priority should be included in the Forward Works Programme. Given that there are significantly more columns classed as high priority than funds available to replace them, columns need to be prioritised into actual works programmes, particularly as columns that reach their action age, or are over 40 years of age, don't necessarily need replacing immediately and TR22 provides additional guidance as to how the service life of columns can safety be extended past their theoretical action age through enhanced column inspection and/or non-destructive column testing regimes.

As a result, it may be necessary to prioritise the replacement of certain column types within this initial selection:-

Highest Priority

- **Pre-Stressed Concrete Columns** - In the early 1970's the design and manufacture of concrete columns changed to pre-stressed concrete. These were supplied until the early 1990's. As these columns contain less concrete and use pre-stressed reinforcement wires to give them strength, they are less durable, more prone to failure and considered a high risk.

- **Un-Galvanised Steel Columns (Fabrikat)** - Many different steel columns have been supplied into Lancashire since the late 1960's. It is known that between 1968 and 1973, many were not galvanised. During the column survey work carried out by Highways Asset Group a couple of years ago a number of Fabirkat columns that pre-dated Fabrikat's own archive, which started in 1972, were identified and are not thought to be galvanised.

- **Cast Iron Columns** – Many of these columns started life as gas lights which were eventually converted to accommodate electric lights. These tend to fail from the joint between the top box and the swan neck due to corrosion.

- **Other -** Columns not included in the above categories, but are on the TR22 priority list, and which area staff consider to be in urgent need of replacement.

Medium Priority

- **Un-Galvanised Steel Columns (Others)** - During the column survey work a number of columns were identified for which neither the manufacturer, column protection system or erection date were unknown. These were listed as being non-galvanised so that these could be prioritised for replacement over galvanised columns.

As the TAMP was only approved on 2014, the processes for determining scheme selection for future years schemes are still in their infancy and may be subject to amendment to reflect lessons learnt.

14 - Improvement Plan

Whilst the electrical inventory is considered to be very accurate, other aspects such as column condition etc are not as accurate. This information now needs to be collected and stored in a consistent manner across all districts/database.

Although visual column inspections are being undertaken, not all results are fully recorded and records kept in case of need. Procedures need to be improved to enable this vital information to be collected, stored and retrieved as appropriate. It is thought the migration from HLPLUS to Symology's Insight which supports the use of hand held devices will greatly improve our knowledge in this area.

There is a wide variation of descriptions for commonly used inventory items. Whilst a degree of standardisation has taken place with regards electrical items, this needs to be expanded across all inventory descriptions and across all databases to enable comparative information/statistical information to be produced easier and quicker. . It is anticipated that the process of migrating data from HLPLUS to Symology's Insight will resolve this issue.

Repair crews currently advise about inventory changes that need to be made. This practise needs to be extended to the column types, manufacturer and column protection details.

LCC is required to record the position of underground street lighting cables. Many only exist in paper form. Work needs to be done to digitise those that only remain in paper form.

One of the biggest issues is the HLPLUS software. This is a DOS based system. Whilst at the leading edge in its day, it has failed to keep pace with competitors and is now hampering the efficient operation of the street lighting service. A new modern system will enable LCC to abandon support for old Windows98 PCs, enable repair crews etc to be issued with hand held devices which will enable information to be downloaded rather than printed out etc. It is anticipated that the process of migrating from HLPLUS to Symology's Insight will resolve this issue.

As the last customer survey took place in 2009 this needs to be repeated as a significant number of lights have been dimmed since that time.

A number of LCC COP relating to lighting date back to the 1990's. These need to be updated to reflect modern trends, practises and materials etc.

A summary of the improvement points are listed below

Action	By Whom	Work to Commence Target Date
Column Condition data	St Lighting Manager	April 2018
Visual inspection records	St Lighting Manager	April 2017
Uniform descriptions	Asset Manager	April 2017
Update Column descriptions	St Lighting Manager	April 2017
Digitise Cable Records	Asset Manager	April 2018
Replacing HLPLUS	One Connect	February 2017
Update Customer Survey	Highway Asset Manager	April 2017
Update Lighting COP	St Lighting Manager	April 2017

Appendix A

Lamp Type	Lamp Total	Lamp Type	Lamp Total
230V PULSA SIMSIGNS +MicroT	8	LED (12W) ZG	37
230V PULSA SIMSIGNS LED	272	LED (14W) ZG	305
24v LED Invinca INVL6/***	44	LED (15W) ZG	3845
24V LED SIMSIGN MODU/BEL/76	103	LED (96W) ZG	648
24V LED ZC SIMSIGN MODU/BEL/76	48	LED (59W) ZG	209
5W PULSA SIMSIGNS LED	5	LED (25W) ZG	654
CDM-T 35	19	LED (183W) ZG	2
CDM-T 70	186	LED (54W) LUMITRAY	23
CDM-T 70 (1%-ZEBC-50%)	49	LED (31W) LUXON	7
CDM-T 70 (ZEBA)	5	LED (21W) LUXON	6
CDM-T 70 (ZEBC)	1	LED (16W) LUXON	1227
CDM-T 150	65	LED 10	49
CDM-T 150 (ZEBC)	35	LED 10 (SC)	46
CDM-T 250	2	LED 10 (ZC)	226
CDM-TT 100	4	LED 21	67
CDM-TT 150 (1%-ZEBC)	30	LED 24 WRTL STELA RD	4
CDM-TT 70	1	LED 3 (3W) LUM	2184
CDM-TT 70 (ZEBA)	1	LED 3 (3W) RET	565
CDM-TT 70 (ZEBC)	9	LED 32	1
CDM-TT 70 RO (1%-ZEBC-50%)	6	LED 33 WRTL STELA LG	107
CDO-TT 70	490	LED 34 (18W) RET	19
CDO-TT 70 (1%-ZEBC)	10	LED 36 WRTL STELA	53
CDO-TT 70 (1%-ZEBC-50%)	153	LED 4 (SC)	320
CDO-TT 70 (ZEBA)	12	LED 5	8
CDO-TT 70 (ZEBC)	10	LED 5 (SC)	12
CDO-TT 70 (ZEBC-50%)	85	LED 52 WRTL STELA	61
CDO-TT 70 RO (ZEBC-50%)	5	LED 6 (4W)	130
CDO-TT 100	35	LED 7	1
CDO-TT 100 (1%-ZEBC)	6	LED 7 (SC)	85
CDO-TT 100 (1%-ZEBC-50%)	9	LED08 (11W) AXIA	322
CDO-TT 100 RO (1%-ZEBC-50%)	1	LED08 (21W) AXIA (DIM)	6960
CDO-TT 150	79	LED12 (16W) AXIA (DIM)	10
CDO-TT 150 (1%-ZEBC-50%)	59	LED16 (21W) AXIA (DIM)	3527
CDO-TT 150 (ZEBC)	5	LED16 (28W) AXIA (DIM)	1145
CDO-TT 150 1%-ZEBC150	11	LED18 (21w) STELA	5337
CDO-TT 150 RO (1%-ZEBC-50%)	6	LED18 (21w) STELA LG	4540
CDO-TT 250	27	LED18 (27w) STELA	4124
CDO-TT 250 RO (1%-ZEBC-50%)	6	LED24 (29w) AXIA (DIM)	367
Celstar2LED 11	302	LED28 (32w) STELA	657
Celstar2LED 11 (ZC)	212	LED28 (32w) STELA LG	46
H250D HPI 250	16	LED32 (41w) STELA	1
HPI-TT 250	1	LED48 (104W)TECEO1(DIM)	227
LED (10W) ZG	14	LED48 (79W) AXIA (DIM)	39

Lamp Type	Lamp Total	Lamp Type	Lamp Total
LED48 (79W) TECEO (DIM)	1163	PL-L 55	8
LED48 (79W)TECEO1(DIM)	3219	PL-L 55 H/F Gear	72
LED96 (106W) TECEO (DIM)	64	PL-L 9	98
LED 120 (193W) TECEO	14	PL-S 11	22
LED 136 216W TECEO	14	PL-S 11 H/F GEAR	2106
LED 144 (228W) TECEO (DIM)	27	PL-S 55 H/F Gear	13
MASTER City White CDO-TT 150W	10	PL-SE 11 H/F Gear	1
MASTER City White CDO-TT 250W	63	PL-T 26	1
MBF/U 125	18	PL-T 42	506
MBF/U 250	2	SIMSIGNS Pulsa 4004 LED (SC)	19
MBF/U 50	6	SIMSIGNS Pulsa 4004 LED+MT	13
MBF/U 80	7	SIMSIGNS Pulsa 4004 LED+MT(SC)	2
MBI 250	26	SOLAR LED	1
MCF 13	57	Son /T 150	1
MCF 15	116	Son De Luxe 150	1
MCF 16 2D	3	Son E cw ign 70	2
MCF 18	58	Son Elipticl 150	4
MCF 20	68	Son Elipticl 250	11
MCF 30	6	Son Elipticl 400	15
MCF 36	140	Son Elipticl 50	13
MCF 4	2	Son Elipticl 70	381
MCF 40	26	Son Elipticl 70 (ZEBA)	3
MCF 58	286	Son P/T 100	1106
MCF 6	8	Son P/T 100 (1%-ZEBC)	430
MCF 65	21	Son P/T 100 (ZEBA)	328
MCF 8	9002	Son P/T 100 (ZEBC)	407
Micro-Lynx 7	135	Son P/T 100 (ZEBC-50%)	499
MP (Metal Arc) 100	96	Son P/T 100 1%-ZEBC100-50%	846
MP (Metal Arc) 150	2	Son P/T 100 25%-ZEBC100	289
PL 11	4836	Son P/T 100 25%-ZEBC100-50%	379
PL 18	8	Son P/T 100 RO (1%-ZEBC-50%)	169
PL 24	41	Son P/T 100 RO (25%-ZEBC-50%)	2
PL 36	60	Son P/T 150	3633
PL 40	18	Son P/T 150 (1%-ZEBC)	917
PL 55	694	Son P/T 150 (1%-ZEBC-50%)	8247
PL 7	2	Son P/T 150 (DYNA-50%).	332
PL 9	133	Son P/T 150 (El. 150)	65
PL*E/C 11	141	Son P/T 150 (El.150-100)	66
PL*E/C 18	30	Son P/T 150 (RTML150)	11
PL/L 36	1	Son P/T 150 (SELC)	3
PL-L 11	371	Son P/T 150 (ZEBA)	404
PL-L 11 H/F Gear	5287	Son P/T 150 (ZEBC)	979
PL-L 18 H/F Gear	3	Son P/T 150 (ZEBC-50%)	5614
PL-L 36	37	Son P/T 150 25%-ZEBC150	79

Lamp Type	Lamp Total
PL-L 40	4
Son P/T 150 RO (1%-ZEBC-50%)	1510
Son P/T 250	2459
Son P/T 250 (1%-ZEBC)	13
Son P/T 250 (1%-ZEBC-50%)	1005
Son P/T 250 (DYNA-50%)	212
Son P/T 250 (ZEBC-50%)	11
Son P/T 250 METROLIGHT	53
Son P/T 250 RO (1%-ZEBC-50%)	46
Son P/T 400	87
Son P/T 400 (SELC)	3
Son P/T 50	13549
Son P/T 50 (1%-ZEBC-50%)	18561
Son P/T 50 (RTML)	22
Son P/T 50 (SELC-2000)	217
Son P/T 50 (ZEBA)	5589
Son P/T 50 (ZEBC)	3395
Son P/T 50 (ZEBC-50%)	10106
Son P/T 50 1%-ZEBC50	1009
Son P/T 50 25%-ZEBC50	203
Son P/T 50 25%-ZEBC50-50%	872
Son P/T 50 RO (1%-ZEBC-50%)	1583
Son P/T 50 RO (25%-ZEBC-50%)	74
Son P/T 50 RO (ZEBC-50%)	7
Son P/T 70	3799
Son P/T 70 (1%-ZEBC)	1129
Son P/T 70 (1%-ZEBC-50%)	5070
Son P/T 70 (El.70-50)	38
Son P/T 70 (SELC-2000)	19
Son P/T 70 (ZEBA)	733
Son P/T 70 (ZEBA70)	15
Son P/T 70 (ZEBC)	1370
Son P/T 70 (ZEBC-50%)	1370
Son P/T 70 25%-ZEBC70	138
Son P/T 70 25%-ZEBC70-50%	362
Son P/T 70 RO (1%-ZEBC-50%)	499
Son P/T 70 RO (25%-ZEBC-50%)	3
Son P/T 70 RO (ZEBC-50%)	6
Son P/T 100 (1%-ZEBC-50%)	837
Son (int.ign) 70	10
Son/T 150	8
Son/T 250	50
Son/T 250 (RTML)	2
Son/T(P) 150	107
Son/T(P) 150 (El.150-100)	23
Son P/T 150 25%-ZEBC150-50%	989
Son/T (P) 150 (El.150-50%)	76
Son/T (P) 150 (El.150-100/66%)	12
Son/T(P) 150 (SELC)	151
Son/T(P) 400	40
SonE 70	8
Sox 135	42
Sox 35	319
Sox 55	27
Sox 90	3
Sox Low Loss 18	2
Sox Low Loss 35	170
Sox Low Loss 55	23
Sox Low Loss 135	18
STAYFAST LED 13 (ZC)	4
STAYFAST LED 18	6
Tung Hal 12V 50 (ZC)	7
Tungsten GLS 40	1
Tungsten GLS 50 (ZC)	1
Tungsten GLS 60	2
Tungsten GLS 60 (SC)	26
Tungsten GLS 60 (ZC)	1
Tungsten GLS 100	2
Tungsten GLS 100 (SC)	8
Tungsten GLS 100 (ZC)	2
Tungsten Hal (50) ZC	12
Zebrite LED 15w (ZC)	8
Grand Total	**177526**

Appendix B

Current Service Standard v National Codes of Practice and Guidance

Function	Current Practice	Guidance	Risk
Emergency Response	On site within 1 hour between 8am - 5pm on a working day and 2hrs outside of these from time of notification.	2 hours	None - in accordance with guidance
Fault Repairs	All faults attended within 5 working days apart from faults on those roads that are subject to traffic management where repairs will take longer.	5 working days	In accordance with guidance
Bulk Change / Lantern Clean	Son lamps every 6 years, Sox lamps every 3 years, Sign lamps every 2 years LED clean every 6 years	To be arranged in accordance with lamp type	In accordance with guidance
Electrical Test	Every 6 years	Intervals of up to six years in accordance with the requirements of BS 7671: Requirements of Electrical	As public have no access to electrical components the risk of deviating from guidance is considered small.
Night Inspection	Average every 14 working days	At an appropriate frequency. Typically 14 calendar days but may be extended in summer or in remote rural areas.	In accordance with guidance
Structural Inspection	Visual Inspection only carried out at electrical test visit.	A visual inspection should be carried out at every visit and a written report made stating the equipment's condition and any remedial works required.	As written reports are only produced when defects are found. LCC may have trouble proving in court that assets are inspected.
Structurally Test	Undertaken on an ad-hoc basis only in response to problem.	Structural testing should be carried out to a pre-determined programme	LCC at risk of third party claim should an asset fail and cause injury / damage.
Lighting Designs	New lighting associated with S278 and new housing etc is designed in accordance with BSEN 5489. New columns installed to replace old decayed lighting currently on a one for one basis – i.e. lighting not redesigned.	British Standards determine appropriate lighting level based on location, traffic flow, crime figures etc.	Pre 1980 lighting not to current BS and can be considered sub-standard. By doing one for one replacements of pre-1980s lighting - LCC at risk of third party claim in case of injury / damage for not installing compliant lighting levels.

APPENDIX C

LEVELS OF SERVICE – STREET LIGHTING

Detailed below are the levels of service users of the asset should expect at each of the 5 service standards i.e. POOR, ACCEPTABLE, FAIR, GOOD, and EXCELLENT. The performance of this asset grouping is measured by the % of columns deemed to pose a high/medium risk.

POOR Standard
Condition for this standard - likely to be greater than 50%
Investment (excluding energy) associated with this standard - likely to be below £1.5m

A service offering aimed at maintaining the safety of the asset enabling only essential, critical and affordable repairs to be undertaken. Availability of lighting on non-strategic routes and in rural locations will be limited as faults will take significantly longer to repair than faults on residential or strategic routes. The assets in this group are not being replaced when they reach the end of their design life, resulting in an increasingly aging asset group. In addition, there is an increased number of lights out and other faults take longer to attend to.

The possible risks, consequences and outcomes of maintaining the asset grouping to this standard are:-

- There is an under investment of approx. £6.9m per year, below the amount required to maintain the asset in a steady state in terms of both condition and functionality;
- No cyclic maintenance means lamps are allowed to burn to extinction. This causes big increase in number of lighting faults and increased time taking to repair faults;
- Widespread public dissatisfaction and increased complaints by members of the public;
- Increased lamp outages adversely affect availability and uniformity of lighting and contributes towards reduced road safety, as poorly illuminated roads lead to increased accidents;
- Lighting repairs are prioritised towards high-speed strategic routes. Response times to faults in rural locations will be very slow;
- Increase risk of people killed or seriously injured due to poor structural condition and age of street lighting columns;
- An increase in the street lighting maintenance backlog with the attendant decrease in the value of the asset;
- Increased crime and disorder associated with poor street lighting;
- Growing backlog of obsolete columns. Column replacements restricted to potential hazardous locations.

In adopting this service standard we will:-
- Reduce the frequency of maintenance to a minimum;
- Only replace lamps when they fail;
- Remove assets from service at every opportunity;

- Have an ageing stock;
- Have an increased risk of catastrophic failure on one of our units;
- Have an increasing future liability due to any addition to the inventory from new developments.

In adopting this service standard we will not:-

- Undertake preventative bulk lamp change programmes apart from lighting on strategic routes;
- Replace anything except damaged columns on strategic routes;
- Contain future energy costs;
- Test any standing columns;
- Have a column replacement programme.

ACCEPTABLE Standard

Condition for this standard - likely to be within the range: - 50% to 35%
Investment (excluding energy) associated with this standard - Approximately £3m,

A service offering aimed at maintaining the safety and availability of the street lighting asset grouping by undertaking only essential and critical repairs. Investment in street lighting is minimal and is below the amount required to maintain the functionality and availability of all lighting on all roads. Street Lighting assets are mostly repaired through reactive maintenance. Availability might be compromised particularly on non-strategic routes and in rural locations as faults will take significantly longer to repair. There is limited replacement of those columns which have are deteriorated beyond repair. All safety defects are addressed in a timely fashion.

The possible risks, consequences and outcomes of maintaining the asset grouping to this standard are:-

- There is an under investment of approx. £5.4m per year, below the amount required to maintain the asset in a steady state in terms of both condition and functionality;
- Replacement programmes limited by resources to the bare minimum. Columns only replaced as they become deteriorated beyond repair. Rate of replacement doesn't match rate of decay, leading to increasing risk of columns collapsing, aging column stock and a future problem would be accumulating;
- No testing of standing columns taking place;
- Routine maintenance ensures that the asset is maintained in a safe condition as possible;
- Carry out bulk lamp replacement programmes ensures lamps are replaced just before they reach the end of their life expectancy reduces the number of reactive call outs;
- Night-time inspections help to reduce the number of non-operational street lights reported by the public and speeds up repair times.

In adopting this service standard we will:-

- Support a bulk lamp replacement programme as required;
- Provide basic maintenance and column replacement programmes;
- Manage an ageing stock;
- Prioritise column replacements on a risk basis.

In adopting this service standard we will not:-

- Keep pace with the column replacements required;
- Replace all suspect columns rapidly;
- Be able to manage to replace current technology with energy efficient technology**;**
- Satisfying the requirements of TR22 as no testing of the stock is carried out.

FAIR Standard

Condition for this standard - likely to be within the range: - 35% to 20%
Investment (excluding energy) associated with this standard - Approximately £4.4m

A service offering aimed at maintaining the safety and availability of the street lighting asset grouping by undertaking only essential and critical repairs. Investment in street lighting is minimal and represents an under investment of the required amount. Street lighting is mostly repaired through reactive maintenance and all lights on all roads are maintained consistently within an acceptable timescale. There is insufficient investment to enable all columns to be replaced before they reach a poor state. Safety defects are addressed in a timely fashion.

The possible risks, consequences and outcomes of maintaining the asset grouping to this standard are:-

- There is an under investment of approx. £4m per year, below the amount required to maintain the asset in a steady state in terms of both condition and functionality;
- Bulk lamp change programmes help to reduce number of reported faults, and lead to improved performance and greater public satisfaction;
- Increased investment in column replacements reduces risk of column failure;
- As rate of replacement matches rate of decay average age of column stock is stabilised;

In adopting this service standard we will:-

- Support a bulk lamp replacement programme as required;
- Provide basic maintenance;
- Provide a column replacement programme which maintains the average age of columns in the asset;
- Produce a prioritised replacement programme based on asset type and location in accordance with TR22;
- Implement a fit for purpose testing programme to identify and quantify risk;
- Identify opportunity for reducing the number of lighting columns to maximise future replacement programmes;

- Produce a five year strategy for column replacement.

In adopting this service standard we will not:-

- Be able to reduce potential risks from the current stock rapidly;
- Support equipment replacement to energy efficient equipment;
- Be able to prevent column failure entirely.

GOOD Standard

Condition for this standard - likely to be within the range: - 20% to 5%
Investment (excluding energy) associated with this standard - Approximately £7.9m

A service offering aimed at maintaining the safety and functionality of the street lighting asset. Level of investment slightly exceeds the minimum required to maintain all aspects of the asset. Rate of investment matches rate of decay leading to a minor reduction in the average age of the street lighting stock and a reduction in the number of columns in use beyond their design life. Increased quantity of new equipment increases reliability of equipment and further reduces dependence on reactive maintenance. Maintenance backlog broadly maintained at the same level.

The possible risks, consequences and outcomes of maintaining the asset grouping to this standard are:-

- The level of investment is such that the rate of renewal is the same as the rate of decay and a steady state has been achieved in terms of both condition and functionality;
- Cyclic maintenance undertaken with faults minimised;
- Appearance of stock improving;
- Replacement of columns at a level where obsolete units and potential hazards reducing;
- Greater public satisfaction;
- Should improve the operational and structural condition of the asset;
- Should stabilise or improve asset value;
- Should help drive down the number of killed or seriously injured accidents;
- Structural / condition based inspection will allow review of whole life costs and potential savings against replacement programme.

In adopting this service standard we will:-

- Support a bulk lamp replacement programme;
- Provide basic maintenance;
- The asset would be well defined allowing educated decisions to be made on the replacement regime required;
- Implement a prioritised replacement programme based on asset type and location in accordance with TR22 to reduce the overall risk of the asset year on year;
- Column replacement programme maintains the average age of columns in the asset;
- Implement a fit for purpose testing programme to identify and quantify risk;

- Identify potential areas of reduction of lighting provision;
- Inspection regimes would be less than ideal but would be in place at a lower than excellent level.

In adopting this service standard we will not:-

- Be able to reduce potential risks from the current stock rapidly;
- Support a major programme of equipment replacement to energy efficient equipment;
- Be able to prevent column failure entirely.

EXCELLENT Standard

Condition for this standard - likely to be less than 5%
Investment (excluding energy) associated with this standard - Approximately £12.4m

A service offering aimed at maintaining the safety and functionality of the street lighting asset network. Rate of investment exceeds rate of decay enabling column replacement programmes to be expanded, resulting in well maintained street lighting assets. The average age of the lighting stock is falling quickly. Better quality components mean that lighting is more reliable and energy efficient. Increased levels of inconvenience will be experienced due to an increase road works associated with renewing and replacing street lighting assets.

The possible risks, consequences and outcomes of maintaining the asset grouping to this standard are:-

- Provide a column replacement programme which reduces the average age of columns in the asset and reduce the overall risk of the asset year on year;
- Produce a prioritised replacement programme based on asset type and location in accordance with TR22;
- By 2020 have significantly reduced the risks of unexpected column failure;
- Asset condition would be well documented with prioritised replacement programmes in place;
- Inspection regimes would be in place to satisfy due diligence defence and would be a suitable proportion of the 150,000 columns to be defensible;
- Adequate street lighting is maintained to enable safe and easy night driving on all urban streets;
- Street scene enhanced by appearance of equipment;
- Increasing use of high quality energy efficiency equipment including electronic control gear and remote monitoring equipment to reduce energy consumption.

In adopting this service standard we will:-

- Increasing use of energy efficient equipment such as LEDs;
- Make big in-roads in reducing backlog of columns needing replacement;
- Produce a well-defined well managed stock with a clear maintenance programme supported by a modest fit for purpose replacement programme;

- Identify potential areas of reduction of lighting provision;
- Identify a ten year programme to remove all current columns considered to fall into risk category one over that period;
- Implement a fit for purpose testing programme to identify and quantify risk;
- Implement a column replacement programme which is condition and location focussed.

Appendix D

Breakdown of Columns by Material Type, Age and by District

Burnley	Sum of age 0 - 20	Sum of age 21 - 30	Sum of age 31 - 40	Sum of age >40	Total
MST	2,053	3,055	2,049	230	7,387
WALL	5	50	184	0	239
CONC	6	254	784	1,305	2,349
WOOD	6	2	8	0	16
COMP	0	19	32	0	51
ALUM	4	2	106	34	146
CAST	0	0	1	66	67
SST	0	0	3	0	3
Total	**2,074**	**3,382**	**3,167**	**1,635**	**10,258**

Chorley	Sum of age 0 - 20	Sum of age 21 - 30	Sum of age 31 - 40	Sum of age >40	Total
MST	5,268	3,543	313	51	9,175
WALL	55	88	6	0	149
CONC	3	2,489	489	367	3,348
WOOD	65	79	7	0	151
COMP	21	122	13	0	156
ALUM	8	5	0	0	13
CAST	0	4	0	0	4
SST	10	368	7	0	385
Total	**5,430**	**6,698**	**835**	**418**	**13,381**

Fylde	Sum of age 0 - 20	Sum of age 21 - 30	Sum of age 31 - 40	Sum of age >40	Total
MST	5,019	1,006	42	2	6,069
WALL	6	12	4	0	22
CONC	13	2,470	277	520	3,280
WOOD	1	1	1	0	3
COMP	2	214	30	0	246
ALUM	2	14	0	0	16
CAST	3	21	0	0	24
SST	1	346	40	0	387
Total	**5,047**	**4,084**	**394**	**522**	**10,047**

Hyndburn	Sum of age 0 - 20	Sum of age 21 - 30	Sum of age 31 - 40	Sum of age >40	Total
MST	3,900	4,057	40	4	8,001
WALL	3	16	0	0	19
CONC	2	287	361	122	772
WOOD	8	8	0	0	16
COMP	0	0	0	0	0
ALUM	4	30	13	0	47
CAST	4	57	0	30	91
SST	10	275	0	0	285
Total	**3,931**	**4,730**	**414**	**156**	**9,231**

Lancaster	Sum of age 0 - 20	Sum of age 21 - 30	Sum of age 31 - 40	Sum of age >40	Total
MST	5809	3409	369	12	9599
WALL	158	74	53	0	285
CONC	6	1046	3183	1040	5275
WOOD	16	44	19	0	79
COMP	10	92	264	0	366
ALUM	1	0	0	0	1
CAST	30	2	0	22	54
SST	0	64	31	0	95
Total	**6030**	**4731**	**3919**	**1074**	**15754**

Pendle	Sum of age 0 - 20	Sum of age 21 - 30	Sum of age 31 - 40	Sum of age >40	Total
MST	3744	2817	414	764	7739
WALL	93	44	5	32	174
CONC	517	886	84	336	1823
WOOD	6	23	0	2	31
COMP	5	2	0	0	7
ALUM	4	12	0	4	20
CAST	18	5	3	5	31
SST	1	0	0	0	1
Total	**4388**	**3789**	**506**	**1143**	**9826**

Preston	Sum of age 0 - 20	Sum of age 21 - 30	Sum of age 31 - 40	Sum of age >40	Total
MST	6092	4667	31	465	11255
WALL	94	22	63	0	179
CONC	11	3704	503	809	5027
WOOD	0	2	0	0	2
COMP	1	61	1	0	63
ALUM	0	0	0	0	0
CAST	60	97	0	29	186
SST	0	76	4	0	80
Total	**6258**	**8629**	**602**	**1303**	**16792**

Ribble Valley	Sum of age 0 - 20	Sum of age 21 - 30	Sum of age 31 - 40	Sum of age >40	Total
MST	3,062	1,116	31	1	4,210
WALL	34	137	5	0	176
CONC	1	1,228	204	155	1,588
WOOD	12	15	1	1	29
COMP	217	86	10	0	313
ALUM	9	26	0	0	35
CAST	0	7	0	0	7
SST	1	241	12	0	254
Total	**3,336**	**2,856**	**263**	**157**	**6,612**

Rossendale	Sum of age	Sum of age	Sum of age	Sum of age	Total

	0 - 20	21 - 30	31 - 40	>40	
MST	2,952	1,406	1,672	1,110	7,140
WALL	8	6	58	29	101
CONC	3	176	502	819	1,500
WOOD	4	10	49	0	63
COMP	0	0	0	0	0
ALUM	1	1	129	18	149
CAST	1	4	5	4	14
SST	0	0	0	0	0
Total	**2,969**	**1,603**	**2,415**	**1,980**	**8,967**

South Ribble	Sum of age 0 - 20	Sum of age 21 - 30	Sum of age 31 - 40	Sum of age >40	Total
MST	7,018	3,136	49	157	10,360
WALL	30	25	3	0	58
CONC	0	3,060	470	66	3,596
WOOD	84	73	5	0	162
COMP	3	38	0	0	41
ALUM	87	3	0	0	90
CAST	3	16	0	0	19
SST	5	73	0	0	78
Total	**7,230**	**6,424**	**527**	**223**	**14,404**

West Lancs	Sum of age 0 - 20	Sum of age 21 - 30	Sum of age 31 - 40	Sum of age >40	Total
MST	5,597	3,220	3,365	321	12,503
WALL	301	609	53	455	1418
CONC	0	1,712	3,765	361	5,838
WOOD	138	105	14	4	261
COMP	72	99	16	6	193
ALUM	2	30	15	0	47
CAST	10	3	11	0	24
SST	4	274	63	0	341
Total	**6,124**	**6,052**	**7,302**	**1,147**	**20,625**

Wyre	Sum of age 0 - 20	Sum of age 21 - 30	Sum of age 31 - 40	Sum of age >40	Total
MST	5,799	1,251	190	16	7,256
WALL	17	8	1	0	26
CONC	54	1,681	702	2,715	5,152
WOOD	12	25	1	0	38
COMP	7	127	11	0	145
ALUM	33	15	2	10	60
CAST	1	34	13	4	52
SST	0	69	0	0	69
Total	**5,923**	**3,210**	**920**	**2,745**	**12,798**

Appendix E

Procedure to Populate Lighting Inventory Following Adoption by LCC

No.	Action	By Whom
1)	Proposed lighting designs and proposed equipment types - all in accordance with LCC Design Brief.	External Designers / Area Street Lighting Team
2)	In accordance with Design Brief the proposed cable network owner (DNO/IDNO) to be identified at earliest opportunity, ideally at the initial design stage. Area street lighting team to advise the relevant development team officer if an IDNO is being proposed as soon as possible.	Area Street Lighting Team
4)	Prior to the adoption, the relevant SL team will complete a final inspection and ensure all assets on site are included in the plans / drawings and that the appropriate DNO / IDNO has been identified to enable the inventory to be updated.	Area Street Lighting Team
5)	Upon a successful inspection and receipt of electrical test certificates the area street lighting team to advise the relevant development team officer.	Area Street Lighting Team
6)	If the developer proposes to use an IDNO a Service Level Agreement (SLA) needs to be entered into with LCC and IDNO - which only comes into effect upon adoption of street lighting.	Paul Smith /Jason Lancaster Development team
7)	All S278, S38 and adoptions full agreement details and IDNO SLA (if appropriate) to be sent to the Highways Asset Team – highwaysassetmanagem@lancashire.gov.uk	Paul Smith / Jason Lancaster Development team
8)	The full agreement details for S278, S38 and adoptions and IDNO SLA (if appropriate) will be circulated to the relevant area street lighting team and Paul Guy, Highway Asset Energy Team.	Highways Asset Team
9)	The inventory database will be updated with the street lighting, illuminated sign and DNO / IDNO information within 1 month of receipt of adoption.	Area street lighting team
10)	When the street lighting database is updated Paul Guy to be advised.	Area street lighting team
11)	Highway Asset Group to routinely monitor that the information supplied in 6 above has been actioned correctly. Advise Area Offices of any omissions / discrepancies.	Paul Guy / Emma May