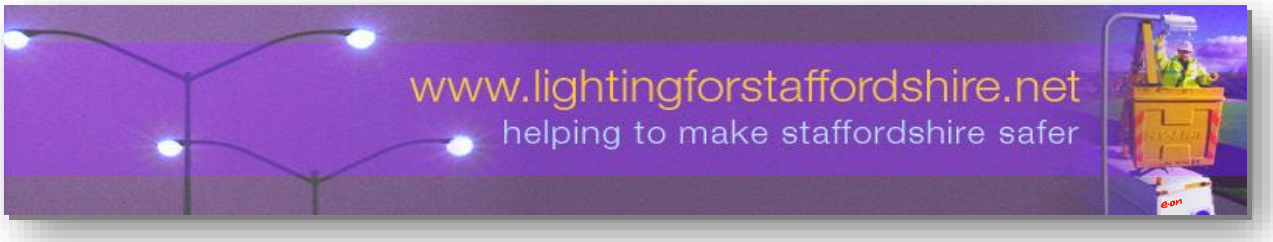
Energy Solutions Limited

Infrastructure Services

STAFFORDSHIRE COUNTY COUNCIL
HIGHWAY LIGHTING
PRIVATE FINANCE INITIATIVE CONTRACT

ANNUAL SERVICE REPORT FOR PERIOD
19TH MAY 2018 TO 18TH MAY 2019

Staffordshire County Council



Introduction

This report is prepared by the Service Provider, E.ON Energy Solutions Limited, in accordance with its obligations contained under Schedule 4, Part B.

Contents

1.0 INTRODUCTION AND FOREWORD BY STAFFORDSHIRE COUNTY COUNCIL

Prior to the commencement of the Street Lighting Private Finance Initiative (PFI) contract Staffordshire County Council was responsible for 99,000 units of street lighting equipment. With an average design life for a street light of 25 - 30 years and with 24 % of street lights age expired, there was significant risk to the public from street lighting column failure. The annual investment budget fell considerably short of providing an acceptable solution to a rapidly degrading lighting stock and hence a longer term solution was developed in the form of a PFI. In May 2003 Lighting for Staffordshire commenced a programme of renewal and maintenance works for the 25 year term PFI contract. This would ensure the condition of the County's road lighting stock would be maintained at the appropriate level for the foreseeable future.

The Project will therefore provide a continuous investment programme that will halt and reverse equipment degradation through the provision of a modern standard of road lighting which is and will continue to be designed to provide an economic and effective level of lighting whilst protecting and enhancing the environment.

The PFI project forms an integral part of Staffordshire County Council's priority outcomes and aims by the provision of good lighting and an efficient lighting service to support our Vision – A connected Staffordshire, where everyone has the opportunity to prosper, be healthy and happy.

Helen Fisher
Cabinet Member for
Highways and Transport

Staffordshire County Council

2.0 PROJECT OVERVIEW, MAY 2019

The Staffordshire Highway Lighting PFI project launched in May 2003 as a partnership between Staffordshire County Council and Lighting for Staffordshire targeting the County's 99,000+ street lights, illuminated signs and bollards to provide longevity through structured maintenance and replacement regimes to assist in improving road safety, reductions in crime and the fear of crime.

Maintenance activities including timely lamp changes, lantern and bollard cleaning, periodic electrical and structural inspections keep the assets in good working order whilst those assets reaching the end of their maintainable life are programmed for replacement.

24 hours a day, 365 days a year coverage is provided as standard to ensure that those unforeseen emergency events that could cause harm to residents or property are dealt with quickly and professionally to reduce risks.

Performance monitoring of the services provided is ongoing and continuous by Lighting for Staffordshire, Staffordshire County Council and Government appointed National Auditors.

Over the past 16 years the street lighting industry has grown and developed at a significant and amazing pace which can be partly attributed to funding investments through PFI's and the genuine desire to provide innovative energy saving solutions to provide sustainable support to something most people take for granted. There are continuing developments such as lamp sources that use up to 70% less energy, systems that use Wi-Fi to remotely control lights and in built dimming capabilities that reduce power consumption and output whilst most of us sleep.

This report concentrates on the targets and achievements of year 11 of the Annual Apparatus Renewal Programme (AARP), 19 May 2018 to 18 May 2019 as well as a look ahead to our future plans and aspirations.

Paul Slade
Regional Operations Manager
e·on Energy Solutions Limited
Infrastructure Services

3.0 Introduction to E.ON

We are one of the UK's leading power and gas companies - generating electricity, and retailing power and gas. We're part of the E.ON group, the world's largest investor-owned energy service provider employing around 9,400 people in the UK and 43,000 worldwide.

Our core focus is to provide decentralised, green, and interconnected solutions that address the needs of our customers and those of the environment. We aim to lead the global shift towards new technology by working with customers, companies and across communities to make energy simpler, smarter and more sustainable.

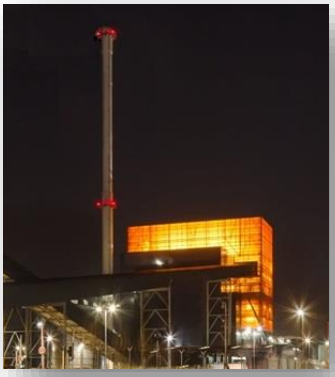
Around 4.3 million people choose E-on for their electricity and gas making us one of the leading energy companies in the UK.

Our business mirrors the major changes that are happening in energy today. These are the increasing demand for innovative solutions, global growth of renewables to tackle climate change and transformation to a smarter energy system.

All residential electricity we provide is matched from a renewable source such as wind, biomass and solar. Every unit of electricity is backed by 100% renewable electricity from our renewable assets, the power we buy from independent wind power generators in the UK, and from renewable energy certificates.

Since 2007 we've invested more than €9.5 billion in wind (onshore and offshore), solar, biomass, and other renewables.

Renewables, which are increasingly self-financing, will continue to be a key focus going forward. Our investment into renewable energy technology means we're one of the leading green generators in the UK, with wind farms located from Cambridgeshire to Kintyre. We also own and operate one of the UK's largest dedicated biomass power stations at Lockerbie.



We've also built a number of Combined Heat and Power (CHP) plants, which are much more efficient than traditional power plants. As well as making energy cleaner, we want to make it simpler. We've talked to customers to find out what they want and have introduced things like clear, single-sheet bills and fewer tariffs that are easier to understand. We're doing more to help customers save energy and money too, by giving them free energy saving hints and tips.

E.ON Energy Solutions Limited is responsible for offering low carbon energy solutions to businesses and Local Authorities across the UK, through a full value chain of services to our customers, from initial research and development through to retail energy supplies. Our solutions can range from simple advice, to a complete, design, supply, install and on-going maintenance of "turnkey" packages utilising all onsite renewable technology on both new and existing developments ranging from a single property, such as a school, through to complete heat and power networks and energy centres on large regeneration or new build projects including ESCo provision.

Electric Vehicle charging is at the heart of E.ON's strategy to be partner of choice for sustainable energy and mobility solutions. As part of this vision we have created a global E.ON Drive business which is focussed on delivering electric vehicle infrastructure on scale and support our drive to have one of the largest networks in the UK and Europe.

E.ON has a strong track record in installing and operating EV networks on a large scale across major cities in Europe and also connecting cities and countries with our network. We are committed to developing innovative solutions and being at the forefront of new and emerging technologies. We offer a full end to end solutions including hardware, fully integrated backend systems and digital solutions. We install, manage and operate extensive networks across many countries such as Denmark where we manage a network of 3500 posts.

The E.ON Energy Solutions team of Infrastructure Services has extensive operational and management experience in the external lighting market; providing a true one-stop-shop offering from design, consultancy and construction through to connection and long term maintenance for street lighting.

We have continued to transform our business to meet demands and expectations of the future. We provide consistent support to our strategic objectives and improve efficiency through closer sharing of best practice, resource and knowledge and have continued to welcome new people who will energise, focus and invigorate what is already a highly frenetic and motivated team.

We have continued with investment into our Street Lighting fleet to the tune of over £2 million and now have vehicles that are not only more efficient but also carry additional safety features.

To support our sustainable growth, we have expanded our portfolios outside of our normal geographic boundaries as well as the solutions we can offer to both new and existing customers. With the advent of 'smart city' technologies, the humble street light plays an important part as the most prolific and strategically placed asset to assist in the necessary upgrading and development of the infrastructure in the new age.

Our recent transition into becoming an accredited internal training provider for our Apprenticeship Programme, coupled with our positive mentoring scheme, ensures our Apprentices receive the very best training and support throughout their development. In terms of numbers for the Staffordshire PFI, 11 Apprentices have been registered in since 2012 and of these, 3 have successfully completed their programmes, 2 are due to complete this year and 6 are progressing well along their journey.

4.0 PROGRESS REPORT

4.1 Asset Renewal Progress Update

Our asset renewal teams review the condition of every lamppost within the County considering their age profile to make sure that they continue to be structurally safe, economically viable to maintain and not likely to become structurally defective through age degradation or environmental factors. Those units failing any of the categories are programmed, using an additional assessment of risk, for replacement either as single units or as complete schemes where most of the lampposts in the road are affected and require replacement.

Every road throughout the County has a designated classification, which is not simply dependent upon a road being an A or B road, but also considers usage, location, speed, traffic flows, and the like. This classification is what ultimately determines the appropriate level of lighting required for that road and it is from this information that the lighting design can be determined.

Furthermore, we can determine where we can implement dimming strategies to reduce night time light levels and with that, the energy consumed. When considering new schemes and any alterations required to meet this, existing locations are considered to reduce unnecessary disturbance to the footpaths and ultimately the community. Where this is not possible, new locations are selected as sympathetically as possible within the existing road layout but this may mean new positions where street lights have not previously been.

Staffordshire remains the only operational PFI with an asset replacement programme spanning the 25-year contract term. Other contracts replace all units within an intensive 5-year programme irrespective of condition, rather than utilising the maximum life of the asset and replacing units when necessary. This method of contract delivery provides a smoother, more sustainable and affordable replacement programme when the new assets require review again in approximately 40 years.

The continuous cycle of replacement has enabled us to consider new technologies as they emerge. When new products or wholesale technological advancements become available we can consider benefits such as reductions in ongoing maintenance costs, improved

lighting abilities that may reduce the number of assets requiring to be installed, reduced power consumption which reduces energy costs alongside other factors that may detrimentally affect how we deliver quality into the lighting stock.

LED (Light Emitting Diode) technology has been one of the fastest growing and most beneficial advancements to the industry since the external lighting market commenced. We initially introduced the new lanterns into residential areas of Staffordshire for two reasons - this represented a higher proportion of the assets and provided the same type of white light technology we were already using. After considering the level of energy savings that could be made alongside the potential reductions in maintenance, this became a viable solution. Good value has continued to be returned when considering the excellent performance of the lanterns and the ability to utilise multilevel dimming.

Initially, we held off using this technology to meet our primary, higher classification road lighting solutions due to the initial investment costs failing to balance the investment and return. However, as the technology progressed and the highly competitive market drove down costs, the solution reached the point where it could be rolled out as a standard solution throughout replacement programmes. There will always be occasions where this solution is not viable or suitable for the location and in those instances more traditional lamp sources will still be used.

To better explain the benefits and considerations that led us to implement LED technologies the following adequately sums up the history and primary reasons why this was, and still is, too good to refuse; all previous street lighting lanterns utilised lamp technology based upon how elemental gases and chemicals generate light when they are ignited or subject to heat. All lanterns therefore had an initial "warm up" period as the temperature of the gases increased to the point where optimum light was produced.

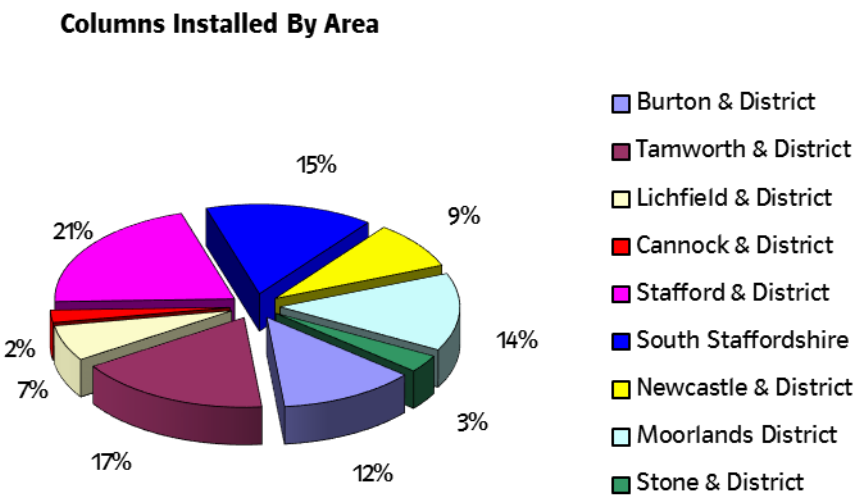
Switch on times were therefore set to allow the lamp warm up to be completed when the light was needed. LED lamp switch on is instantaneous and by removing the warm up period we can switch lights on fractionally later, and whilst seven or eight minutes per lantern per night may not sound like a huge saving, when this is multiplied across the whole of the UK's lighting network, it quickly becomes tangible and substantial.

LED lanterns offer a versatile light output whilst significantly reducing energy consumption. In 2003 SOX lamps were used and the 26-watt output lamp consumed 59 watts of energy to generate this. Next onto the market came PLL (compact fluorescent lighting) and the 36-watt output lamp consumed the same energy to generate this, which was a significant improvement as it represented a 38% saving in energy for every change made. We can now utilise the LED equivalent scheme, which in most cases can be achieved with a lamp that consumes less than 22 watts per hour.

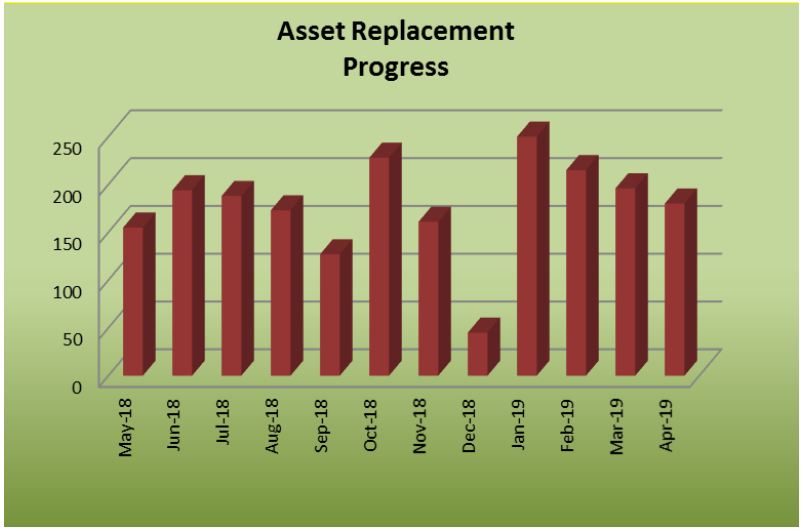
Compared to PLL, this presents a saving of 38%, and when compared back to SOX lamps that were used at the start of the contract, we are now making a combined saving of over 62% without any further consideration for the potential to apply dimming. These efficiencies further benefit from the optical distribution ability of LED lanterns, which means we can utilise more of the existing column positions to mitigate any growth in the number of assets a road needs to illuminate it to the standards required.

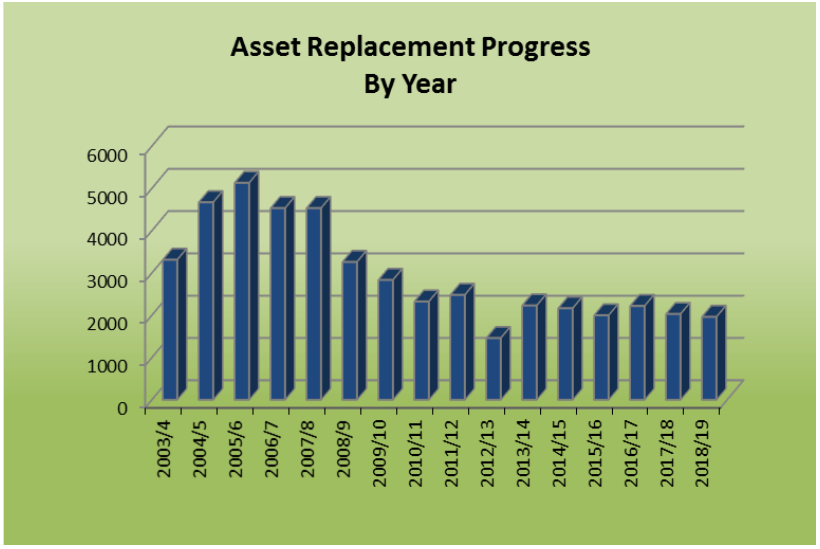
Our delivery objective has always been to ensure that our replacement programme is distributed throughout the County over each period as opposed to concentrating solely in one district or area. This allows the benefits the new lighting brings to be displayed regionally and reduces prolonged disruption in any area.

The following activity report shows the districts across the region that have benefited from new column installation in the last year;



To date we have replaced more than 47,000 street lights and the graphs below indicate the number of columns replaced each month during the 2018/2019 period along with the overall street lighting replacement progress since contract commencement;





4.2 Programme Delivery

Our planned delivery programme is updated every three months and to ensure this is visible and readily available, it is shared with Staffordshire County Council, and other district and borough councils within the county.

Columns are primarily selected for replacement in accordance with their age, but we also understand that some columns are more resilient than others and plan our anticipated working patterns by using data collected over the past 15 years, data collected by the Authority prior to project commencement, and our extensive industry knowledge.

We have completed a full programme review to determine a general programme of commencement for each and every road up until the contract conclusion in 2028. Whilst this may be subject to small changes through accelerated deterioration, planning in line with other County developments and the like, we can now provide better information for any interested party regarding our whereabouts for the remainder of the project.

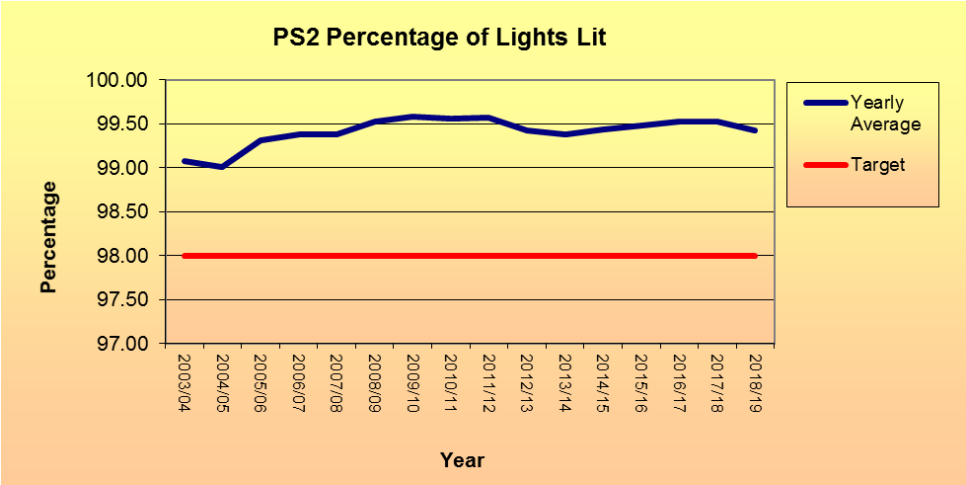
A summary of the data is also accessible by all members of the public and any other interested parties via our dedicated website. The website also includes an overview of our contract activities, answers to Frequently Asked Questions and links to Staffordshire County Council and E.ON websites.

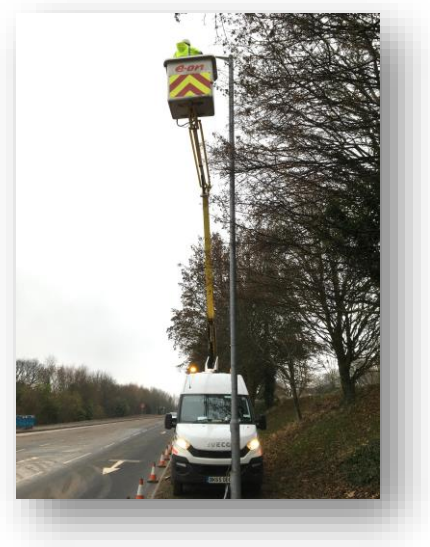
4.3 Maintenance Progress Update

Well planned, well managed and suitably invested cyclic maintenance regimes are, to us, the most important part of the project. Our dedicated teams ensure that all street lights, illuminated signs and bollards remain lit and in a good condition – safe and operationally.

This involves a strict programme of lantern cleaning, lamp changes, electrical and structural inspections as well as night patrols and illuminance checks to make sure that each asset continues to perform as designed and required. The project includes a specific performance target to maintain the number of lights that are lit across the County; above a threshold of 98% which, when you consider that we currently maintain over 108,500 units within the County, this is no small achievement.

The following chart shows the progress since contract commencement against the target requirements and with an average of 99.42% lights lit, it is an excellent achievement and demonstrates our year on year commitments.



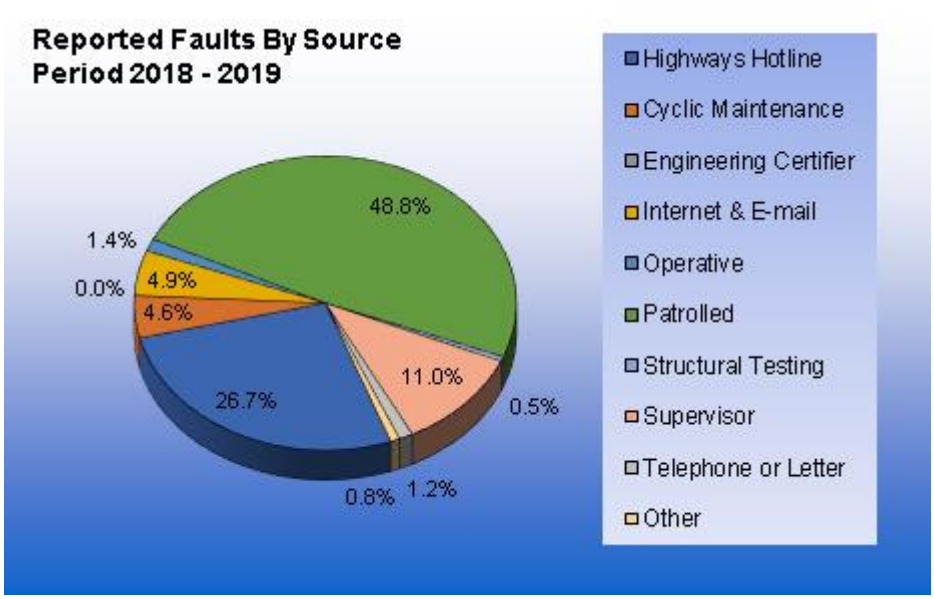


Although street lights are designed to be robust to endure the environmental impacts of day to day operation, it is not surprising that faults occur when we factor in the stresses caused by temperature shifts ranging from -20°C to +30°C, driving rain, heavy winds and snowfall. There are several ways that we can be made aware of faults by members of the public – telephone calls and emails directly or via the Staffordshire County Council Highways Hotline. We also undertake night patrols that look at every street light and lit sign once a month to check whether they are operating effectively. Our maintenance teams, supervisors, engineers and managers also provide input by reporting issues they find.

Due to the investment in equipment, increase in maintenance inspections and robust work programming (such as clean and change schedules), we have observed a general decrease in the number of reactive faults that are reported.

Each fault received is recorded within the Asset Management System to ensure the details are recorded to create a detailed history for each individual asset. This provides data that can be reviewed to identify trends, support strategic plans, and assist external agencies, such as the Police when investigation road traffic incidents or other criminal investigations.

The chart below shows the percentage split of where fault reports are generated from, the general public plays an important role in this with over one third of all information coming from this route.

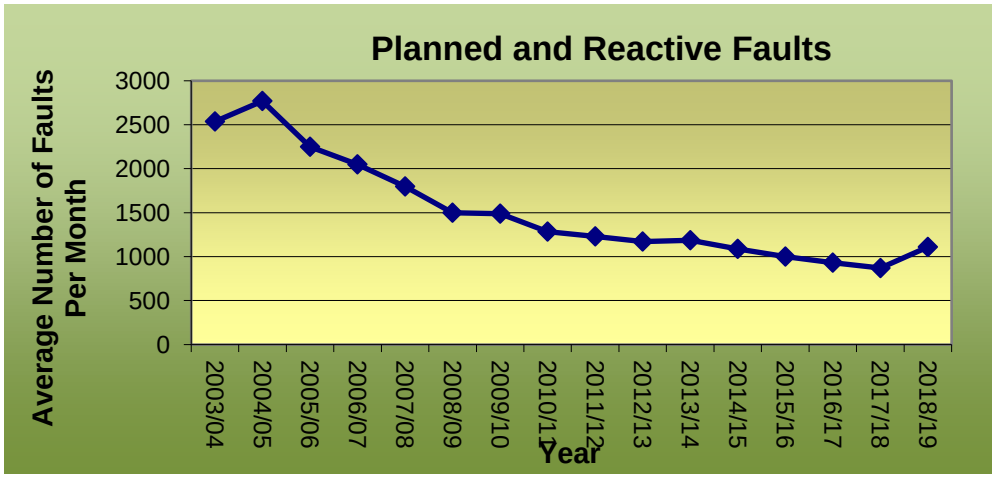


Fault repairs have specific timescales and targets for completion, such as 5 working days to attend and rectify an out of light fault. This timescale commences when we become aware of the issue and financial penalties are applied when the timescales are not met. Of the 291,142 fault reports received since project commencement, we have completed 951 of these outside of the target response time, which equates to only 0.33%.

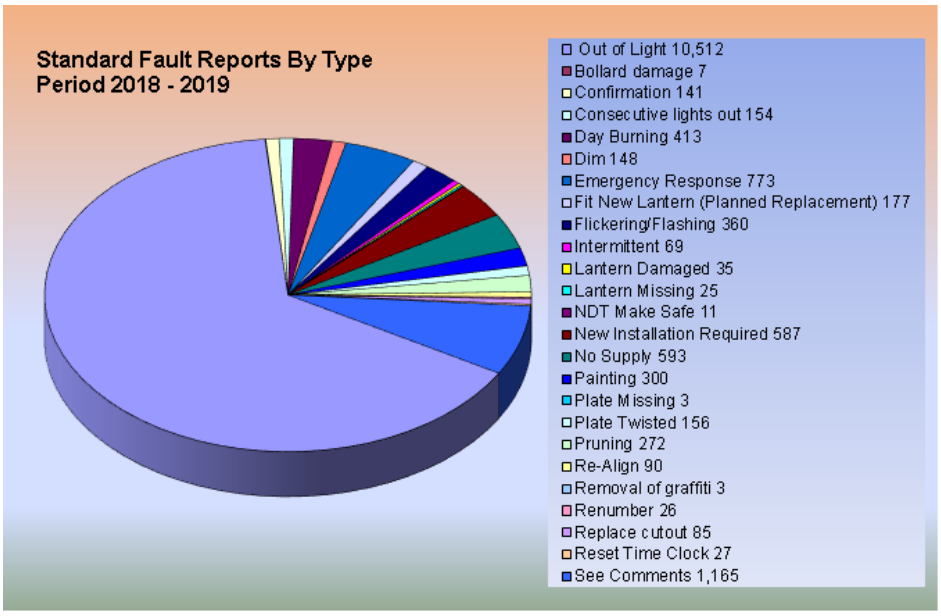
Where street lights are fed directly from the underground electrical network owned and operated by Western Power Distribution, the Distribution License Holder (DLH) for the region, any necessary power failures caused by cable faults and the like can only be repaired by them. Each regional DLH is regulated by OFGEM for their response and duties to attend all kinds of electrical faults. Whilst this takes a little longer than our normal 5 day response times we still continue to monitor attendance times and ensure work is completed quickly and efficiently.

Where we identify equipment that does not meet our standard, we will complete rectification work with the aim of minimising loss of service to the public and preventing a system failure. For the purpose of this report, such work has been excluded from the data to provide a clearer indication of the actual failures rather than internally monitored works.

The following indicates the total number of faults we have attended to each year since project commencement;

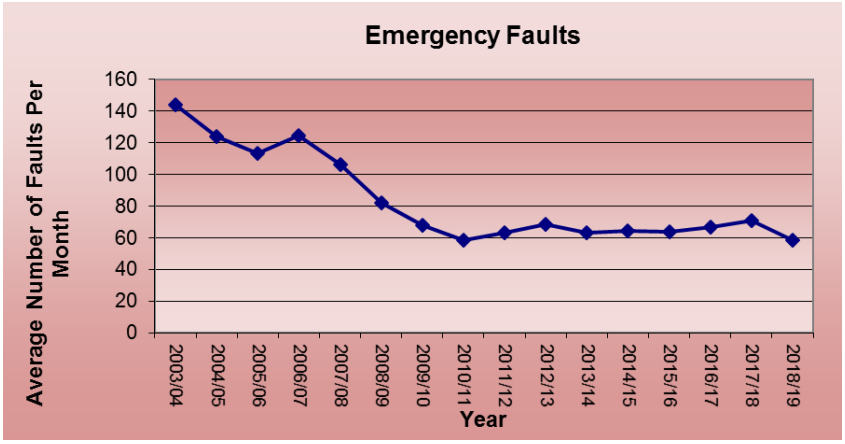


The following chart indicates the type of faults we have attended to over the year, and by maintaining this level of data we are able to spot trends year on year which help us plan future works and strategies;



Emergency events are those that have the potential to cause serious harm or damage to members of the public or property. Our permitted response time to attend and make events of this nature safe is limited to two hours. Our teams are available 24 hours a day, 365 days a year and out of the 701 reported emergency events in this period, all were attended to within these timescales. Of the 16,060 emergency events that have been reported since project commencement, only 12 were attended to outside the target.

The following chart shows the average number of emergency call-outs our teams have attended to each year since the project began. It is good to see that well-targeted asset investment has also helped to reduce these events since contract commencement;



The decorative appearance of the assets can play an important part in making the street scene look clean and attractive.

All new lampposts carry an industrial appearance due to the galvanised finish, which is applied to help prevent rust and limit environmental damage, but they quickly become part of the landscape. Any units we identify that fail to meet the strict criteria that surrounds the decorative condition, but are still otherwise serviceable, may be painted to restore a good appearance and provide a protective finish.

Painting, except in certain conservation areas where it is purely provided as a decorative finish, is only applied as an aid against the aging process. The paint systems used are selected because of their high durability, anti-graffiti coating, long lasting anti-fade properties, and anti-rusting agents, which help to not only prevent premature ageing but in some cases, can also help to slow down any rusting that has commenced.

5.0 CUSTOMER CARE

5.1 Progress Update

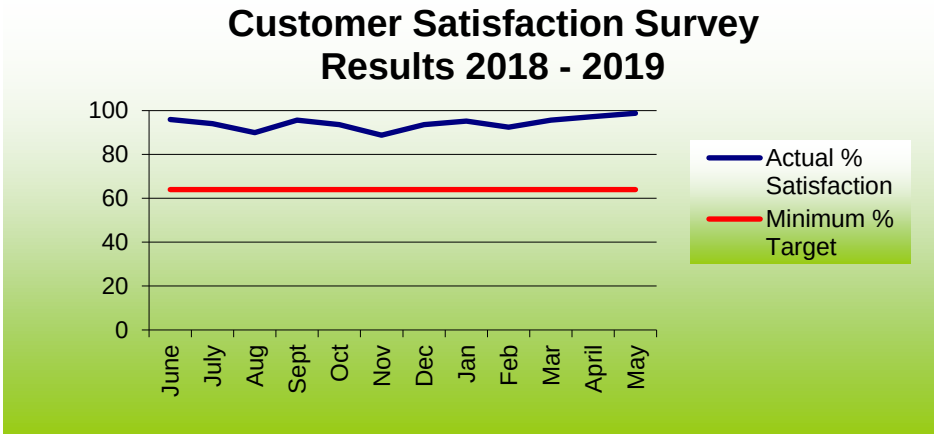
Staffordshire is home to over 870,000 people and covers a geographically diverse area of some 1,047 square miles. It is therefore important that as a project team we apply a consistent, practical and even approach to all concerns, enquiries and complaints received. Ensuring that there is a balance between the requirements of the individual, the community and any statutory or contractual duties placed upon us can, at times, be difficult and challenging. Every concern is considered on its own merits and where possible we try to put ourselves in the position of the complainant, however there are sometimes concerns that cannot be resolved to everyone's satisfaction.

Our customer care process starts at the design stages of any scheme, with consideration being given to the planned locations and positioning of the lampposts. In considering how to proceed we must balance the final locations required to meet the design with the existing positions, the potential aesthetic impact, and of course the overall safety impact for highway users. However, where customer relocation requests do not meet with our priority factors of reducing energy consumption and street clutter, they will not be considered.

We do appreciate that the final positioning of some units can be unpopular at an individual level. However, this is often due to alternative solutions carrying high economic and environmental impact, such as the net increase of the number of units in a street – which in turn increases energy and maintenance costs unreasonably. We also look at the benefits to the community and throughout the County when considering our outcome.

The team respond to each concern or complaint raised individually either in person, by telephone, letter or e-mail. In some cases where an agreement cannot initially be reached, Staffordshire County Council mediate by reviewing the concern and recommendations proposed before deciding upon a solution.

We also monitor customer satisfaction with maintenance activities we have carried out. We contact individuals who have reported a fault within the month and complete a telephone survey, which consists of a series of questions designed to provide feedback on how easy it was to make contact with us, how easy it was to report the fault and how quickly we completed the repair. The chart below indicates the level of customer satisfaction throughout the year against the baseline target;



By working closely with Local Authorities, Parish Councils and law enforcement agencies as part of our planning and day to day activities we aim to deliver an acceptable scheme. In Conservation areas and Areas of Special Interest the level of consultation and agreement via the local Conservation Officers and Local Authorities enables us to secure approval and, where necessary, additional funding to enhance the aesthetics of a new lighting system.

Our website, www.lightingforstaffordshire.net , contains links to report faulty lights, documents our Customer Care Charter and Customer Concerns procedure, Frequently Asked Questions, and an updated list of roads to be included within asset renewal programme.

6.0 CRIME AND SAFETY IMPROVEMENT PLAN

6.1 Project Progress

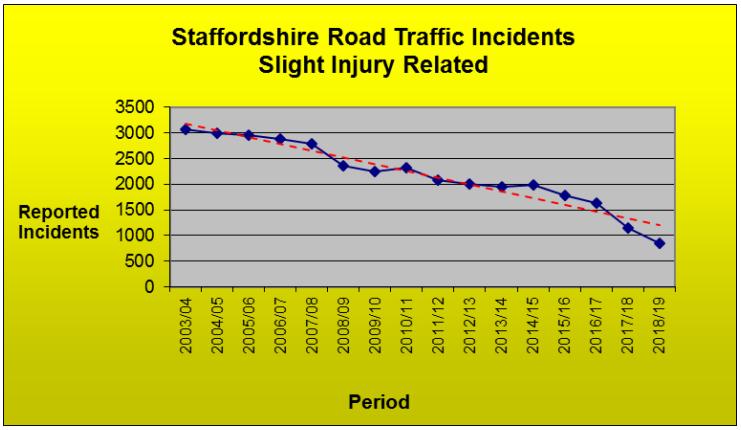
With more and more cars on the road each year, coupled with investment in smart motorways and primary road networks, it is important to consider safety.

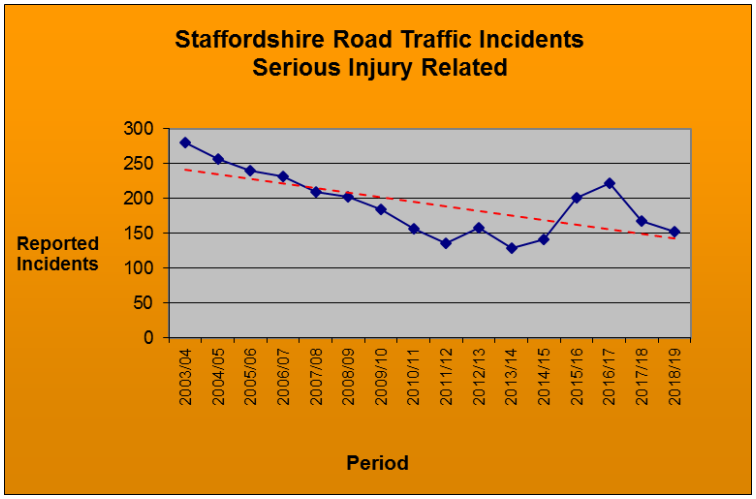
Studies are undertaken every year to establish the best way of doing something, and whilst some often appear conflicting it is important to consider that each must be taken in context for the situation, which will naturally differ depending on the road type, speed and general usage. It is unlikely that any single strategy will can eliminate all incidents and road traffic collisions but combinations of different strategies being sensibly delivered will make improvements over time.

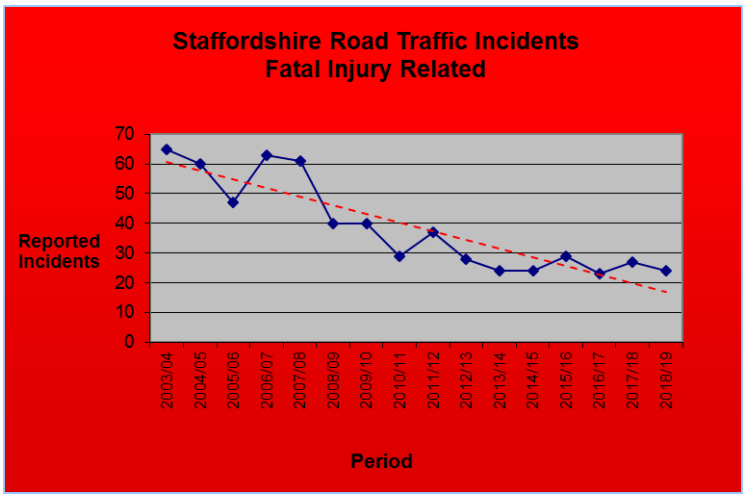
Whilst there is clear evidence to show that traffic calming measures such as speed humps will have an immediate impact on vehicle speed and therefore reduce incidents, the same cannot be said for new lighting schemes. It is documented that white light technology enhances colour at night leading to an increase in object definition, and therefore the ability to better judge distance and speed and the recognise hazards and obstacles, makes a significant difference to road safety.

The new street lights delivered since project commencement combine with other primary highway strategies and initiatives to help provide a safer network and environment for residents, pedestrians and drivers as well as a deterrent for criminal activity. Studies continue to maintain that well-lit streets lead to a reduction in the fear of crime as communities are more inclined to venture out after the hours of darkness; and the resultant increase and confidence in people traffic can deter criminals from their activities.

The overall downward trend of road traffic incidents resulting in personal injury has continued within Staffordshire over the past 15 years as can be seen from the attached charts. Note the information contained below includes our regions motorway networks but excludes the City of Stoke on Trent;


Staffordshire Road Traffic Incidents
Slight Injury Related
Reported Incidents
3500
3000
2500
2000
1500
1000
500
0
2003/04
2004/05
2005/06
2006/07
2007/08
2008/09
2009/10
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
Period


Staffordshire Road Traffic Incidents
Serious Injury Related
Reported Incidents
300
250
200
150
100
50
0
2003/04
2004/05
2005/06
2006/07
2007/08
2008/09
2009/10
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
Period


Staffordshire Road Traffic Incidents
Fatal Injury Related
Reported Incidents
70
60
50
40
30
20
10
0
2003/04
2004/05
2005/06
2006/07
2007/08
2008/09
2009/10
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
Period

7.0 ANNUAL ENVIRONMENTAL PLAN

7.1 Project Aims and Progress

E.ON holds social responsibility at the core of all business activities whether it is delivering clean sustainable energy through on or off--shore wind farms or investment into the development of clean technologies such as battery storage to store renewable energy derived from our district heating plants to be able to release back into the community when needed.

As part of our commitment to the environment we ensure that our processes and operations continue to be challenged and externally audited within the strict guidelines of our national accreditation to ISO 14001; Environmental Management standards.

Within the street lighting industry our focus is to ensure that our environmental impact is reduced so far as practicable in terms of; the waste that we produce, how we dispose of our waste, our carbon footprint from the energy consumed, and the way that we procure and use new materials and products.

7.2 Waste Management

Naturally, removing and replacing faulty or life expired parts creates waste, from lamps and lanterns right through to the soil we dig up to access the underground electrical cable network.

It is a requirement for all waste electrical products to be treated in accordance with the WEEE (Waste Electrical and Electronic Equipment) directives. All waste lamps, of which some may contain potentially environmentally harmful chemicals, gases and coatings, are segregated and collected by specialist carriers and treated to ensure that the chemicals are neutralised and the glass components are separated from the metal elements for onward recycling and reuse.

Where possible, we reuse good quality lanterns from defective units to be able to maintain some of the more traditional stock throughout the County, which reduces our waste impact at source.

Careful selection and management of our waste contract partners ensures that we do as much as we can to reduce our environmental impact. As part of our initial waste management, we provide separate skips for different waste types such as metal, concrete, WEEE, tarmac and spoil. This means we can reduce follow-up costs by ensuring

that secondary segregation at waste transfer stations is minimal and contamination is reduced. In working this way throughout all parts of our highways business we have an impressive record of waste management and control with less than 1% of our entire waste product streams being sent to landfill.

The increased usage of LED technology will not necessarily improve our recycling statistics, over 99% would be hard to beat, but the move away from traditional lamp sources will reduce the types of waste and improve the overall environmental impact with chemical waste being removed from the manufacturing and recycling of the product.

7.3 Energy Consumption

Since the contract commenced in 2003 the unit cost of energy has soared. Throughout the country this has placed significant strain upon households and businesses alike, including the provisions of public services such as street lighting.

The wholesale cost of energy only equates to around 35% of the overall street lighting unit rate. Network costs, costs of the underground and overhead cable network and distribution system make up a further 23%, with environmental and social obligations supporting 'green' initiatives and taxation contributing a further 30%. The final portion is made up from the operating costs of the energy suppliers.

Social responsibility therefore comes at a cost but the interventions and investments ultimately reduce losses and wastage at the consumption end of the chain which will ultimately save cost and increase efficiency in the long run.

Day to day, almost everything we do relies in some part on energy consumption and due to cost increases, we have all had to rethink our personal strategies in the workplace and at home to reduce energy. Energy reduction has always been a driver for the contract operationally. However, the significant increases in energy costs have forced us, and the industry, to rethink our approach to creating, delivering and maintaining sustainable, low energy street lighting solutions.

Like the phasing out of domestic tungsten filament lamps, our early intervention to remove mercury tungsten lamps netted initial savings of over 500,000 kWh per year and the asset renewal programme has continued to steadily reduce energy costs through the careful design and lantern selection processes adopted.

The technologies available in 2003 were set to save around 30% of energy consumption, and, as previously set out, LED based lanterns have far exceeded these expectations. Previous reports have detailed the additional investment strategy of applying dimmable

controls to the majority of newly installed lanterns providing multiple stepped reductions in light output, and subsequent energy cost, to suit the environment.

Since 2012 we have measured the direct impact of asset renewal and the implementation of the dimming strategy and this has a cumulative effect of providing annual energy savings of over 1,769,380 kWh.

In September 2015 we completed a significant two year investment programme to retrofit dimmable control gear into existing higher wattage lanterns. The investment package saw sustainable annual savings of over 3.8 million kWh which equates in today's rates to almost £500,000.

Staffordshire County Council have provided additional investment in the last few years for further intervention measures which will have long term advantages. These include the de-illumination of various signs and bollards throughout the region which under changes in the Traffic Signs Regulations no longer need to be lit.

Over the course of the last 15 years we have, through the ongoing commitment and determination of those involved in the project, delivered savings in energy that mean we now have an energy consumption significantly less than where we started in 2003 even though there are now almost 9,400 more assets on the network due to new housing developments, new roads and other investments in the road network than we started with.

7.4 Light Pollution

Light pollution has remained a challenging perception for the last 10 years, but this has now effectively been combatted by technological advancements. Upward light spillage, or the city glow effect, has been significantly been reduced as new lanterns have an upwards light ration of less than 1% compared to 35% for ones being removed, which in turn means that there is more light focussed on the highway.

Whilst it will never be possible to completely stop resident concerns regarding light pollution, our records indicate that there is a reduction.

8.0 ANNUAL INNOVATION PLAN

8.1 Project Progress

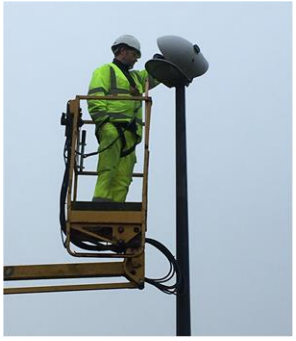
As previously mentioned, innovation and technological advancement has been significant during the last few years. The industry has been revolutionised by affordable LED solutions, stand-alone dimmable controls and a range of other measures that reduce energy consumption and increase light output. Whilst the momentum of change is set to continue, we have maintained our focus on ensuring products we have invested in are protected rather than being pushed aside by other new developments.

8.2 Contract Modernisation

In 2012 we completed the Contract Modernisation Review which looked at the key delivery outputs of the services required under the contract. In doing this we could address some elements of the output requirements to rationalise maintenance regimes and realise savings. The following summarises the ongoing benefits we have seen from this process.

8.3 Contract Modernisation – Maintenance

Maintenance activities, which account for over 60% of the contract deliverable cost, have been addressed to make significant savings by changing basic cyclic attendances. We have realigned dates for all maintenance activities to ensure that we complete all activities in one visit therefore improving efficiency and reducing vehicle costs associated with multiple visits. We also reduced the number of night patrols and bollard washes to align winter and summer regimes.



We have now achieved net savings and cost reductions in excess of £1.5 million to date. In addition to this, we have also made significant energy reductions, which provides a monthly financial saving for the project. We anticipate that the savings will meet or exceed the £4.5 million target by the end of the contract period.

8.4 Contract Modernisation – Asset Renewal

To embrace the emerging technological advancements and energy saving devices, a full review of design parameters and requirements was undertaken to ensure we continue to be efficient and relevant in meeting the lighting requirements and objectives for Staffordshire.

The full use of LED technology within the residential areas, combined with multi-static dimming features to reduce light output and energy consumption, is providing savings in line with planned forecasts and the more recent inclusion of higher classification roads will now start to show increased benefits.

The energy saving benefits as described earlier in this report will be carefully monitored as we progress and we fully expect further improvements and enhancements over the coming years.

8.5 Future Plans

In close partnership with Staffordshire County Council, we are working towards completing a feasibility study to assess the viability of an energy reduction investment. The programme will review the energy consumption of the existing stock and assess the energy reduction that could be achieved with the installation of low wattage LEDs.

We currently operate a full remote monitoring system within our northern region PFI's which is a Wi-Fi linked, management system capable of making individual or blanket changes to lanterns. This can include the switch on or off times, the amount and time when dimming will apply as well as monitoring the status of the lantern to determine if it is on or off and some predictive likely causes of a failure. Whilst the cost and need within Staffordshire has kept us away from delivering this, there are locations that would benefit from this.

9.0 SUMMARY

The 2018/19 period has seen the project focus on consolidating processes and operational deliverables in a back to basics approach delivering a good quality, efficient, cost effective and robust service. Operational changes at higher level will lead to localised changes to enhance and provide better accountability of the services we offer.

We have continued to provide best value through our chosen technology solutions, annual energy reduction, and combined maintenance regime changes, which have all delivered savings back to the Authority.

The Asset renewal and maintenance operations are on or ahead of target having replaced almost 2,000 units in the period taking us to over 47,000 assets replaced since project commencement, light lit have been well above the target of 98% with an annual average of 99.42%.

We have attended to over 13,000 routine fault reports as well as 700 emergency events, night patrols have continued throughout which equates to over 1.3 million individual inspections and maintenance activities has seen over 33,000 assets attended to for routine checks.

If you would like to find out more about the Staffordshire PFI Project or E.ON UK, please visit our websites at www.lightingforstaffordshire.net or www.eon-uk.com or write to us at:

E.ON Energy Solutions Limited
Staffordshire PFI Team
Woolsthorpe Close
Bilborough
Nottingham
NG8 3JP

If you would like to report a street lighting fault please visit the Lighting for Staffordshire or Staffordshire County Council website, telephone the Highways Hotline on 0300 111 8000 or e-mail the details to highways@staffordshire.gov.uk