

North Yorkshire Council

Executive

19 September 2023

Footway Lighting Upgrade

Report of the Corporate Director - Environment

1.0 PURPOSE OF REPORT

- 1.1 The purpose of this report is to seek approval for a 3-step plan to address significant ongoing maintenance and energy issues associated with Footway and Amenity lighting that has transferred to North Yorkshire Council following the recent Local Government Reorganisation.
- 1.2 This will include the replacement of decrepit concrete street lighting columns, the introduction of part-night operation and the conversion of obsolete inefficient footway lighting to energy efficient LED technology.
- 1.3 The report asks the Executive to consider an Invest to Save opportunity and to approve a £2.497million Capital investment that has the potential to deliver £440k annual energy savings (at current energy rates).

2.0 SUMMARY

- 2.1 Much of the existing footway lighting that has transferred from the former district and borough councils to North Yorkshire Council will be beyond repair within the next five years due to changes in EU legislation that made numerous lamp types obsolete.
- 2.2 The replacement of this equipment will offer the opportunity for an invest to save proposal as part of the developing service transformation plan in which a £2.497million capital budget can be utilised to upgrade the existing lighting to LED with a subsequent energy saving of 1.3million kw/h (340t CO₂) and £440k reduction in annual energy costs based on current energy rates.
- 2.3 The project will see the replacement of obsolete concrete columns from the highway. These are most prone to structural failure and their replacement will offer the opportunity to provide multi-purpose lighting columns that can be used to support attachments such as sensors, CCTV cameras, ANPR cameras, flower baskets, Christmas displays and next generation BT mobile phone transmitters.
- 2.4 Finally, the project will see the implementation of part-night lighting in the areas that were covered by lighting provided by the former district and borough councils wherever possible. Switching footway lighting off between midnight and 05:00 in line with the Council's existing roadway lighting, will further reduce energy consumption and contribute towards the Council's carbon reduction targets. The former North Yorkshire County Council previously converted roadway lighting to part-night between 2012 and 2016.

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3.0 BACKGROUND

- 3.1 The seven former District and Borough Councils maintained footway and amenity lighting comprising of approximately 10,650 streetlights. It is estimated that around 5000 of these use now obsolete light sources such as high-pressure mercury and low-pressure sodium, new installations of which were banned by EU legislation during 2015 and 2019 respectively.
- 3.2 Within the next 3-5 years these lanterns will fail, and we will be unable to repair them. If we replace the lanterns on an ad-hoc basis, as and when they fail, the process will be less efficient, more expensive and would place a strain on future revenue budgets as opposed to this capital Invest to Save proposal.
- 3.3 Between 2005 and 2010 the former North Yorkshire County Council replaced all 22,000 NYCC concrete street lighting columns following structural testing that identified a 40% failure rate. A number of catastrophic failures occurred and the insurers at the time (St Paul Travelers), expressed significant concerns over the condition of the stock:
- 3.4 Given that a further 12 years has elapsed since that project concluded, the condition of the former district and borough council's footway lighting columns is likely to have deteriorated further and therefore the risk of sudden failure has increased.

4.0 THE ISSUE

- 4.1 This report seeks approval for a 3-step plan to address significant ongoing maintenance and energy issues associated with Footway and Amenity lighting that have transferred to the new North Yorkshire Council as part of the recent Local Government Reorganisation (LGR).
- Step 1 Remove a total of approximately 900 aging concrete street lighting columns and replace with new steel columns complete with LED lanterns and part-night 20/20 photocells (where appropriate).
- Step 2 Remove all obsolete inefficient lanterns (approximately 4000 units) on existing steel columns, wooden poles and wall brackets and replace with new energy efficient LED lanterns complete with part-night 20/20 photocells (where appropriate).
- Step 3 Replace photocells on all existing LED lanterns (approximately 2000 units) with part-night 20/20 photocells (where appropriate).

5.0 CONSULTATION UNDERTAKEN AND RESPONSES

- 5.1 The business case for the project was considered by Management Board on 14 March 2023 and a copy of the full business case is available as Background information upon request.
- 5.2 A very limited consultation has been undertaken with North York Moors National Park to establish a base lantern specification that would be in keeping with the requirements of the International Dark Sky Reserve.
- 5.3 Where there is an intention to introduce part-night lighting, full public consultation will be undertaken including a leaflet to every household in the target areas ahead of the roll out. There will be appropriate engagement with local parish and town councils and with NYC members as outlined in Item 10.2 below.

6.0 CONTRIBUTION TO COUNCIL PRIORITIES

- 6.1 Previous part-night and LED projects on the Council's roadway lighting reduced our carbon footprint by approximately 3000t per year. Whilst smaller in scope, this proposed footway lighting project is expected to further reduce CO₂ by 340t per year. This will contribute towards the Council's goal of carbon neutrality by 2030.

7.0 ALTERNATIVE OPTIONS CONSIDERED

- 7.1 Do nothing.
The remaining concrete columns have exceeded their maximum designed life by many years and are deteriorating. The maximum design life was 25 years however the average age of a concrete lighting column in North Yorkshire is closer to 45 years. Previous testing on the Council's own roadway lighting stock, in 2004 and 2005, identified a high structural failure rate and these were all replaced between 2005 and 2010.
- 7.2 We are no longer able to procure the parts necessary to maintain high pressure mercury and low-pressure sodium lighting. These units will start to fail in the next year or two with 100% failure expected within the next 4 - 5 years. There will be significant reputational damage if we are unable to maintain operational street lighting.
- 7.3 Energy prices continue to rise, the "do nothing" position carries an initial energy liability exceeding £440k which is likely to increase with time.

8.0 IMPACT ON OTHER SERVICES/ORGANISATIONS

- 8.1 The replacement of all non-LED street lighting in both National Parks will complement their International Dark Sky Reserve status and comply with their revised (2022) requirements for colour temperature, i.e. 2700K rather than 3000K.
- 8.2 Correlated colour temperature (CCT) is a measure of the quality of white light. White light consists of a mix of different wavelengths and CCT describes the relative proportions of the low frequency reds and oranges and the higher frequency blues and violets in any particular white light.
- 8.3 Light at the blue end of the spectrum is thought to interfere with feeding patterns of insects and mammals and also with the sleep patterns and general health and wellbeing of humans. It is therefore recommended that light of a lower colour temperature, i.e. towards the red end of the visible spectrum is more environmentally friendly. A chart indicating lighting at various colour temperatures is included in item 12.5.

9.0 FINANCIAL IMPLICATIONS

- 9.1 The anticipated cost to replace 900 columns and brackets alongside approximately 4000 lanterns and the implementation of part night lighting will cost £2.4973million. This figure includes £273k staffing resource to deliver the project.

	Number	Estimated Cost	Saving	Payback (years)
Column & bracket replacement	900	£810,000	£80,816	
LED installation	4000	£1,320,000	£359,184	
Part Night	2000	£60,000	£20,000	
Staffing Costs (2 FTE Engineers for 3 years)	2	£273,540	-	
Total		£2,497,600	£440,000	5.68

Table 1

9.2 The proposed spend profile based on current prices is as follows:

2023/24	£400k
2024/25	£1,300k
2025/26	£797.6k

9.3 The savings are based on the current energy prices which continue to rise, and therefore to do nothing carries an initial energy liability exceeding £400k which can only increase. This figure does not include any savings that may arise in the future from reduced maintenance costs. Should members wish to allocate less than the requested amount of capital funding then the project is scalable however the full risks associated with concrete columns would have to be prioritised for safety reasons and therefore any energy savings would be disproportionately reduced.

10.0 LEGAL IMPLICATIONS

10.1 There is no legal requirement to install or maintain street lighting however there is a requirement to keep any lighting columns both electrically and structurally safe. This allows the Council to convert lighting to part-night operation. On-going maintenance and structural inspections will continue as usual.

10.2 The Council can replace lighting columns, wall brackets & wooden pole brackets and also convert lighting to LED without undertaking public consultation however switching lighting to part-night operation can attract the full range of responses. It is therefore recommended that a consultation exercise is undertaken on this element of the proposal. This consultation exercise will follow a similar format as that carried out by the former County Council when it introduced part-night lighting.

10.3 Consultation will comprise of initial meetings with NYC members followed by liaison with each parish/town council, press and media releases and finally, leaflets drops to every household in the target areas.

11.0 EQUALITIES IMPLICATIONS

11.1 A full Equality Impact Assessment is attached as Appendix 1. A summary of the assessment suggests that there is no reason to believe that the proposal will have a negative impact on any of the protected characteristics or in any particular area of the County.

11.2 There was no potential for discrimination or adverse impact identified in the EIA.

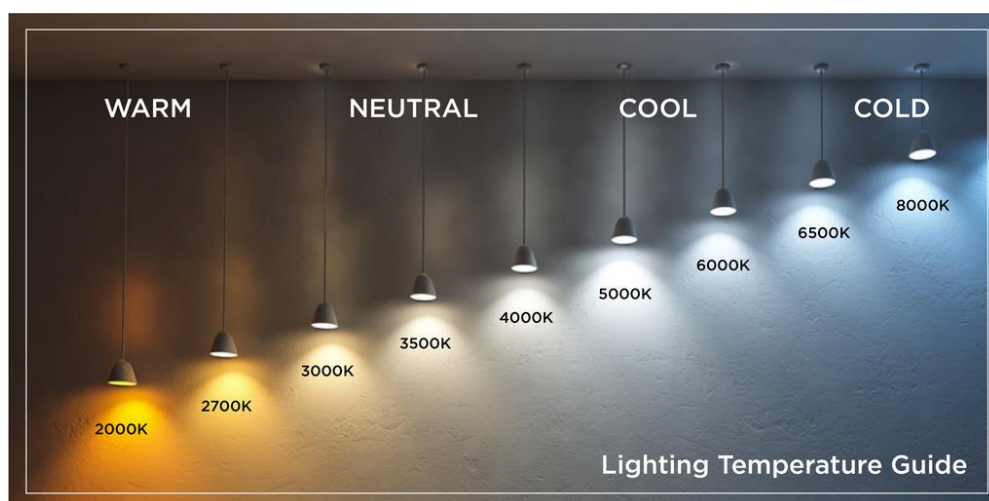
11.3 Early research suggests that LED lighting could negatively impact a small number of people with specific health or visual impairment issues. While the evidence is not fully understood, advice is to avoid using bluish-white light. The Council's previous LED project successfully introduced LED lighting to North Yorkshire with very few complaints or concerns raised.

That project used LEDs with a colour temperature of 4000K (neutral white). Advances in LED technology and the greater efficacy of the light source suggest that we can now install lighting at 2700K (warm white) which should further mitigate any impact whilst still delivering the financial and technical benefits of LED lighting.

- 11.4 Whilst LED lighting is mainly seen as an improvement there is a very small percentage of the population that perceive a negative impact. This is generally caused by the move from yellow to white light and we can mitigate this perception by offering front, side and rear shields around a lantern. It is proposed that these solutions will only be offered in response to complaints as they can impact on the lighting performance.

12.0 CLIMATE CHANGE IMPLICATIONS

- 12.1 The Climate Change Impact Assessment is attached as Appendix 2.
- 12.2 A summary of the assessment suggests that the project should have zero negative impact on climate however there are several environmental benefits associated with the installation of LED streetlighting. The project will generate a reduction in energy consumption exceeding 1.3million kwh which in turn reduces the Council's carbon footprint by over 340t per year.
- 12.3 In addition to the quantifiable saving in energy consumption, the installation of LEDs will also reduce the requirement for ongoing maintenance and defect repairs. This will cut future transport costs and diesel consumption.
- 12.4 The project includes the safe disposal of obsolete lamps that contain toxic substances such as mercury and sodium.
- 12.5 As previously suggested, light at the blue end of the visible spectrum may have an adverse effect on the migration and feeding patterns of nocturnal insects, small mammals and bats. The use of LEDs with a colour temperature of 2700k should mitigate this issue. There will a minor difference compared with existing high pressure sodium, and low pressure sodium lighting however we anticipate that there will be a significant improvement compared with the existing compact fluorescent, metal halide and high pressure Mercury fittings.
- 12.6 The chart below is a visual representation of the various colour temperatures provided by white light:



13.0 PERFORMANCE IMPLICATIONS

13.1 New LED lighting has the following performance related benefits:

1. Long Life – up to 100,000 hours life, potentially 20 years with a reduction in defects and ongoing maintenance requirements.
2. Energy Efficiency – similar light output at a significantly lower wattage.
3. Ecologically Friendly and recyclable.
4. Durable Quality
5. Design Flexibility
6. Operational in Extremely Cold or Hot Temperatures
7. Good Colour Rendering
8. Instant Lighting & Frequent Switching
9. Future proof for

14.0 POLICY IMPLICATIONS

14.1 Replacing aging concrete lighting columns, installing energy efficient LED lighting and converting our assets to part-night operation are all in keeping with the requirements of the Council's Street Lighting Asset Management Plan.

14.2 Reducing CO2 will contribute to the goals outlined in the Council's Carbon Reduction Policy.

15.0 RISK MANAGEMENT IMPLICATIONS

15.1 The replacement of obsolete concrete lighting column and wall/pole brackets will remove aging equipment before it becomes a danger to the public.

15.2 This is good risk management practice and will reduce the risk of structural failure on very old assets that will in turn minimise exposure to litigation.

16.0 HUMAN RESOURCES IMPLICATIONS

16.1 There is a requirement for the addition of two Project Engineer posts to the establishment in order to ensure the effective and efficient delivery of the project. These are therefore essential to the successful delivery of this project and will be responsible for all surveying, consultation, design, management and supervision in addition to ensuring that our asset database is regularly updated, and the Council immediately benefits from the associated energy savings.

16.2 The full cost for both posts will be met from the capital budget associated with the project as shown in Table in section 9.1 above.

16.3 As well as delivering the work outlined in this report, the two Project Engineers will deliver added value by contributing towards a further target in the service transformation plan to identify and realise additional income through attachments to columns. This may include, Christmas Displays, Wi-Fi, Flower Baskets, Banners, BT mobile phone transmitters and CCTV cameras. It is intended that the two posts will be self-funding through income by the end of the three-year Footway Lighting project.

16.4 Full details of income potential associated with attachments on streetlighting columns will be the subject of a future report to the Corporate Director, Environment and the Executive Member for Highways and Transportation.

17.0 ICT and FUTURE PROOFING

- 17.1 The Electrical Engineering design team has assessed the possibility of including the implementation of a Central Management System (CMS) which would take advantage of, and assist in the expansion of, the Council's LoRaWan and WiFi networks.
- 17.2 Street lighting CMS systems generally involve the installation of node points on every lighting column with geographically located control points monitoring multiple nodes, potentially several thousand.
- 17.3 Consideration for a county wide CMS will be the subject of a future report. Such a system will not only allow more accurate and flexible control over the Council's streetlighting network but will also facilitate the inclusion of many different types of sensors including but not limited to CCTV, ANPR, traffic flow, temperature monitoring and air quality. At present, the benefits of a CMS may be more fully realised in North Yorkshire's more urban areas however we will continue to investigate ongoing improvements in the available technology, the result of which will be included in the future report.
- 17.4 None of the work outlined in this proposal would prevent or impede the implementation of a county-wide street lighting CMS system at a later date. The standard use of 7 pin NEMA sockets on each new lantern will facilitate the attachment of the necessary node points outlined in 17.2.
- 17.5 The key benefits of an operational CMS system are:
- Variable operational hours, trimming (reducing burning hours) and part-night switching without the requirement for attending site and replacing photocells. This would assist in maintaining lighting during events and during night-time maintenance activities.
 - Accurate measurement of burning hours and energy consumption (only paying for what is used)
 - Reduced street lighting outages by monitoring performance and predicting failures
 - Reduced requirement for night-time scouting with associated reduction in transport costs and CO2
 - A flexible approach, allowing remote changes to lighting policy, again without the need to visit site, reducing exposure to health and safety risk and labour costs. This could include reacting to increases in crime during switch off periods (00:00-05:00) and converting back to all-night operation where appropriate.
 - The ability to allow the CMS to directly react to external sources such as traffic counts, pedestrian movements etc.
- 17.6 Whilst this report includes the provision of around 5000 new LED streetlights, their installation does not create the opportunity for the attachment of additional hardware on the existing columns. Many of the former district council's footway lighting columns are over 20 years old and were only designed to accept the attachment of a small sign <0.3sq.m. Where concrete columns are being replaced as part of this project, the new columns will be designed to support an additional attachment such as Christmas displays, banners, flower baskets, CCTV, ANPR cameras, wi-fi, LoRaWan and any sensors as outlined in 17.3.

18.0 COMMUNITY SAFETY IMPLICATIONS

- 18.1 There are no community safety implications aside from the removal of obsolete equipment and the safe disposal of toxic chemicals contained within those assets.

18.2 As with previous part-night lighting schemes there are likely to be public concerns relating to night-time crime. There were very few instances of increased crime following the 2012-2016 scheme in which 55% of the former County Council's lighting was switched off between midnight and 05:00. As with that project, we will continue to reassess the lighting arrangement should NY Police report an increase in crime following the conversion to part-night.

19.0 CONCLUSIONS

19.1 Whilst it is possible to replace all obsolete footway lighting over a longer period of time, the Council's lighting stock would likely experience numerous defects due to unavailable parts which in turn would cause an increase in public complaints due to the outages.

19.2 Overall costs would be significantly higher when taking in to account the loss of "economy of scale," ongoing inflationary pressure, and the possibility of even higher energy costs. Each of these would place additional burdens on the Council's future Revenue budgets.

19.3 Completing the project over three years allows the Council to achieve the expected savings much earlier than the "do nothing" position and makes a significant contribution to the Council's Transformation Plan savings targets. The removal of aging lighting stock over three years also reduces the risks associated with obsolete equipment in a more positive and manageable timeframe.

19.4 The anticipated pay back of 5.6 years represents a very good rate of return on the £2.497million capital investment with the additional benefits of improved lighting, reduced maintenance requirements, fewer defects and full compliance with the National Parks' Dark Sky Reserve status.

20.0 REASONS FOR RECOMMENDATIONS

20.1 Much of the existing footway lighting stock is dated and very inefficient compared with new LED technology. With energy prices at an all-time high there are some significant energy savings to be made. A complete replacement of all non-LED fittings can generate an ongoing £440k energy saving together with a 1.3million kw/h, 340t reduction in the Council's carbon footprint.

20.2 The pay-back period for this invest to save project is 5.6 years.

20.3 Undertaking the work at a slower pace than recommended by this report would place an increased financial burden on the Council's revenue budgets both in installation costs and reduced (short-term) energy saving and may expose the Council to criticism due to the higher number of street lighting defects

21.0 RECOMMENDATIONS

21.1 It is recommended that the Executive approve:

- i. A £2.497million capital investment to replace former District/Borough Council footway lighting with new energy efficient LED technology. This includes the replacement of obsolete concrete lighting columns and cast-iron wall/post bracket.
- ii. The introduction of part-night lighting in the areas that were covered by footway lighting provided by the former district and borough councils wherever possible.

APPENDICES:

Appendix 1 – Equality Impact Assessment

Appendix 2 – Climate Change Impact Assessment

BACKGROUND DOCUMENTS:

1. Street Lighting Asset Management Plan
2. LGR Business Case: Report to Management Board

KARL BATTERSBY

Corporate Director – Business and Environmental Services

County Hall

Northallerton

Report Author – Paul Gilmore (Electrical Engineering Manager)

Presenter of Report – Barrie Mason (Assistant Director: Highways and Transportation)

Note: Members are invited to contact the author in advance of the meeting with any detailed queries or questions.

Equality impact assessment (EIA) form: evidencing paying due regard to protected characteristics

(Form updated April 2023)

Footway Lighting Upgrade

If you would like this information in another language or format such as Braille, large print or audio, please contact the Communications Unit on 01609 53 2013 or email communications@northyorks.gov.uk.

যদি আপনি এই ডকুমেন্ট অন্য ভাষায় বা ফরমেটে চান, তাহলে দয়া করে আমাদেরকে বলুন।

如欲索取以另一語文印製或另一格式製作的資料，請與我們聯絡。

اگر آپ کو معلومات کسی دیگر زبان یا دیگر شکل میں درکار ہوں تو برائے مہربانی ہم سے پوچھئے۔



Equality Impact Assessments (EIAs) are public documents. EIAs accompanying reports going to County Councillors for decisions are published with the committee papers on our website and are available in hard copy at the relevant meeting. To help people to find completed EIAs we also publish them in the Equality and Diversity section of our website. This will help people to see for themselves how we have paid due regard in order to meet statutory requirements.

Name of Directorate and Service Area	Environment – Highways & Transportation, Parking Services, Street Scene, Parks & Grounds
Lead Officer and contact details	Paul Gilmore, Electrical Engineering Manager
Names and roles of other people involved in carrying out the EIA	
How will you pay due regard? e.g. working group, individual officer	Individual Officer, reviewing larger NYCC LED scheme undertaken between 2018 and 2022
When did the due regard process start?	May 2023

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Section 1. Please describe briefly what this EIA is about. (e.g. are you starting a new service, changing how you do something, stopping doing something?)

The proposal is to accelerate the installation of energy efficient LED lanterns on footway lighting columns, formerly owned by the seven District and Borough Councils prior to Local Government Reorganisation.

Previously NYCC replaced over 40,000 older-style street lighting lanterns with LED equipment.

This proposal will be to replace approximately 5000 obsolete non-LED lanterns with new energy efficient LED equipment over a manageable 3-year period. The proposal also covers the replacement of equipment approaching the end of useable life (columns/brackets) and the possibility of implementing of part-night lighting.

The scope is limited to footway lighting, now owned by NYC. Parish or Town Council streetlights are not part of this proposal.

Section 2. Why is this being proposed? What are the aims? What does the authority hope to achieve by it? (e.g. to save money, meet increased demand, do things in a better way.)

Between 2015 and 2019, EU legislation effectively made High Pressure Mercury and Low-Pressure Sodium lighting obsolete. As a result, NYC is no longer able to maintain these lantern types which make up a large proportion of the former District Councils' footway lighting stock. These lights will gradually fade and cease to operate over the next 4-5 years.

All non-LED streetlights are very inefficient when compared with LED technology. At current rates it is estimated that the annual energy bill for relevant lanterns will be reduced from £600k to £160k

LED streetlights offer a number of technical and financial benefits over the range of older technology non-LED lights.

- a) Use less energy.
- b) Longer lasting – requiring less routine maintenance.
- c) More resilient – require less reactive maintenance.
- d) Throw a more focused light beam downwards onto pavements and highways (ie the areas that we want to light), with less light thrown upwards and sideways (reduced light pollution).

The proposal will see an investment of £2.497m over a 3-year timeframe. We expect it to deliver a revenue budget saving of £440k per year at current energy rates.

The proposal will also reduce the environmental footprint of North Yorkshire streetlighting by saving an estimated 340 tonnes CO2 per year.

Section 3. What will change? What will be different for customers and/or staff?

The proposal is to accelerate the replacement of footway lights with LED alternatives. To this point about 5000 LED streetlights have previously been installed by the former District Councils, primarily Hambleton District, however many have been upgraded in Richmondshire, Ryedale and Scarborough area also.

Over a 3 year period, many North Yorkshire residents will see their streetlights migrate to energy efficient equipment so that by 2026, all NYC owned footway lights will utilise LED technology. The proposal does not include any change to the location of streetlights however, it may include

a reduction in burning hours as some lights could switch off between midnight and 5am whilst road use is at a minimum.

The proposals will not impact on streetlights owned by Town, or Parish Councils.

Footway lighting is not designed to any particular standard however the replacement of inefficient lanterns with LED is likely to generate a marginal improvement in performance of the lights with a significant saving in energy.

Any impact on residents will be due to the different look and feel of LED streetlights. All new lighting will have a colour temperature of 2700k in keeping with the requirements of International Dark Sky reserves.

Research suggests that some residents including those with some visual impairments have reported finding 4000k and 5000k LED light harsh. Limiting the new light source to 2700k will minimise that effect, providing a warmer light while retaining the technical and financial benefits associated with LED.

There should be no difference for staff.

Section 4. Involvement and consultation (What involvement and consultation has been done regarding the proposal and what are the results? What consultation will be needed and how will it be done?)

None so far, however consultation with Parish and Town Councils will be undertaken in relation to both LED installation and the implementation of part-night lighting.

Many local authorities across the country, including NYC, have successfully adopted LED technology and the Council has successfully converted over 26,000 street lighting columns to part-night operation.

There may need to be some limited consultation with Parish/Town Councils to ascertain which footway lighting can be switched off between midnight and 5am.

Section 5. What impact will this proposal have on council budgets? Will it be cost neutral, have increased cost or reduce costs?

The proposal is to invest £2.497m over a three-year period, replacing approximately 5000 lanterns with LED technology. We expect this project to deliver an annual £440k revenue saving.

Section 6. How will this proposal affect people with protected characteristics?	No impact	Make things better	Make things worse	Why will it have this effect? Provide evidence from engagement, consultation and/or service user data or demographic information etc.
Age		X		Marginal improvement in lighting performance, reduction in light pollution, reduction in energy consumption and subsequent reduction in carbon footprint.
Disability		X		As above. There is no reason to believe that the proposal will have any negative effect due to disability.

Sex		X		As above. There is no reason to believe that the proposal will have any negative effect due to Sex.
Race		X		As above. There is no reason to believe that the proposal will have any negative effect due to race.
Gender reassignment		X		As above. There is no reason to believe that the proposal will have any negative effect due to gender reassignment.
Sexual orientation		X		As above. There is no reason to believe that the proposal will have any negative effect due to sexual orientation.
Religion or belief		X		As above. There is no reason to believe that the proposal will have any negative effect due to religion or belief.
Pregnancy or maternity		X		As above. There is no reason to believe that the proposal will have any negative effect due to pregnancy or maternity.
Marriage or civil partnership		X		As above. There is no reason to believe that the proposal will have any negative effect due to marriage or civil partnership.

Section 7. How will this proposal affect people who...	No impact	Make things better	Make things worse	Why will it have this effect? Provide evidence from engagement, consultation and/or service user data or demographic information etc.
..live in a rural area?		X		Potential improvement in lighting levels and effectiveness of the new LED installations.
...have a low income?	X			
...are carers (unpaid family or friend)?	X			

Section 8. Geographic impact – Please detail where the impact will be (please tick all that apply)	
North Yorkshire wide	<p>The proposal is for NYC to roll out 2700K lanterns which is a warm white as recommended for use in the International Dark Sky Reserves. Therefore, there is little reason to expect the new lighting to impact on sleep patterns.</p> <p>It is our intention to offer a directional shield around the streetlight for customers for whom the roll-out causes a specific problem. For example, where a streetlight is directly outside a window.</p> <p>Part-night operation may have an impact on residents who are particularly sensitive to crime, perceived crime and fear of crime and antisocial behaviour. These could include protected groups such as Age, Race, Gender, Sex etc.</p> <p>To mitigate this perception, an assessment will be undertaken on all streetlights to determine whether they should remain operational throughout the night. Criteria to be considered include:</p>

	<ul style="list-style-type: none"> • crime, • accidents, • presence of CCTV, • traffic calming, • proximity to sheltered accommodation, and/or • proximity 24hr emergency services. <p>As with the County Council's previous part-night exercise, consultation will be carried out with Parish and Town Councils to determine whether the existing lighting meets the criteria outlined above.</p>
Craven district	
Hambleton district	
Harrogate district	
Richmondshire district	
Ryedale district	
Scarborough district	
Selby district	
If you have ticked one or more districts, will specific town(s)/village(s) be particularly impacted? If so, please specify below.	

Section 9. Will the proposal affect anyone more because of a combination of protected characteristics? (e.g. older women or young gay men) State what you think the effect may be and why, providing evidence from engagement, consultation and/or service user data or demographic information etc.

There is no reason to expect that the proposal will have an increased effect due to a combination of protected characteristics.

Section 10. Next steps to address the anticipated impact. Select one of the following options and explain why this has been chosen. (Remember: we have an anticipatory duty to make reasonable adjustments so that disabled people can access services and work for us)	Tick option chosen
1. No adverse impact - no major change needed to the proposal. There is no potential for discrimination or adverse impact identified.	✓
2. Adverse impact - adjust the proposal - The EIA identifies potential problems or missed opportunities. We will change our proposal to reduce or remove these adverse impacts, or we will achieve our aim in another way which will not make things worse for people.	
3. Adverse impact - continue the proposal - The EIA identifies potential problems or missed opportunities. We cannot change our proposal to reduce or remove these adverse impacts, nor can we achieve our aim in another way which will not make things worse for people. (There must be compelling reasons for continuing with proposals which will have the most adverse impacts. Get advice from Legal Services)	

4. Actual or potential unlawful discrimination - stop and remove the proposal
 – The EIA identifies actual or potential unlawful discrimination. It must be stopped.

Explanation of why option has been chosen. (Include any advice given by Legal Services.)

The financial and sustainability benefits are very significant and well understood. The proposal is also likely to deliver a range of difficult to measure benefits to a large group of people through improved personal safety on better lit roads and pavements, and improved perceptions of safety.

The proposal takes in to consideration and mitigates against issues raised in the previous LED project therefore there should be little, if any, adverse impact to any individuals regardless of demographic or protected characteristics.

Section 11. If the proposal is to be implemented how will you find out how it is really affecting people? (How will you monitor and review the changes?)

Concerns and/or complaints about LED street lighting have tended to be limited to requests for light screens which are generally provided whenever possible.

With regard to part-night lighting, continuous monitoring of feedback from residents and the Police will be taken into consideration to make further changes where it is deemed necessary.

For example, should North Yorkshire Police identify specific areas where there has been a significant increase in crime or accidents which they consider to be as a direct result of the part night scheme, we will immediately review the lighting in that area.

The previous part-night project saw over 26,000 lights converted to part night operation. Since the implementation of that project in 2012, less than 100 lights have been switched back to all-night operation.

The previous LED project on the County Council's roadway lighting was completed using 4000k LEDs. These were generally accepted with very few complaints about the neutral-cool white nature of the fittings, around 10-15 complaints/year. The current project acknowledges this and allows for 2700k lanterns which are a much warmer light, closer to the red end of the spectrum. These lanterns are also Dark Sky Complaint and acceptable within both of North Yorkshire's National Parks.

Upon completion, any associated correspondence will be monitored

Section 12. Action plan. List any actions you need to take which have been identified in this EIA, including post implementation review to find out how the outcomes have been achieved in practice and what impacts there have actually been on people with protected characteristics.

Action	Lead	By when	Progress	Monitoring arrangements

Section 13. Summary Summarise the findings of your EIA, including impacts, recommendation in relation to addressing impacts, including any legal advice, and next steps. This summary should be used as part of the report to the decision maker.

The financial and sustainability benefits of LEDs are very significant and well understood. The proposal is also likely to deliver a range of difficult to measure benefits to a large group of people through improved personal safety on better lit roads and pavements, and improved perceptions of safety.

Research suggests that LED lighting could negatively impact a small number of people with specific health or visual impairment issues. While the evidence is not fully understood, advice is to avoid using bluish-white light. The Council's previous LED project successfully introduced LED lighting to North Yorkshire with very few complaints or concerns raised. This project used LEDs with a colour temperature of 4000k. Advances in LED technology suggest that we can now install lighting at 2700k (warm white) which should mitigate any impact whilst still delivering the financial and technical benefits of LED lighting.

We will also mitigate any potential negative impact through offering to install front, side and rear shields around a lantern if it causes specific problems eg directly outside somebody's bedroom window. These will be offered in response to complaints as they impact on the lighting performance.

Therefore, the overall conclusion is to continue the proposal, while being ready to offer potential solutions on a case by case basis to mitigate specific problems.

Section 14. Sign off section

This full EIA was completed by:

Name: Paul Gilmore

Job title: Electrical Engineering Manager

Directorate: BES

Signature:

Completion date: 30 May 2023

Authorised by relevant Assistant Director (signature): Barrie Mason

Date: 18/08/2023

Climate change impact assessment

The purpose of this assessment is to help us understand the likely impacts of our decisions on the environment of North Yorkshire and on our aspiration to achieve net carbon neutrality by 2030, or as close to that date as possible. The intention is to mitigate negative effects and identify projects which will have positive effects.

This document should be completed in consultation with the supporting guidance. The final document will be published as part of the decision making process and should be written in Plain English.

If you have any additional queries which are not covered by the guidance please email climatechange@northyorks.gov.uk

Version 2: amended 11 August 2021

Please note: You may not need to undertake this assessment if your proposal will be subject to any of the following:

Planning Permission
Environmental Impact Assessment
Strategic Environmental Assessment

However, you will still need to summarise your findings in the summary section of the form below.

Please contact climatechange@northyorks.gov.uk for advice.

Title of proposal	Footway Lighting Upgrade
Brief description of proposal	The replacement of obsolete footway lighting lanterns with energy efficient LED technology and the implementation of part-night lighting where possible in the former District areas.
Directorate	BES
Service area	Highways & Transportation, Parking Services, Street Scene, Parks & Grounds
Lead officer	Paul Gilmore
Names and roles of other people involved in carrying out the impact assessment	
Date impact assessment started	31 May 2023

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Options appraisal

Were any other options considered in trying to achieve the aim of this project? If so, please give brief details and explain why alternative options were not progressed.

The proposed Footway Lighting Upgrade project incorporates a 3-step plan to address significant ongoing maintenance and energy issues associated with Footway and Amenity lighting that has transferred to the new North Yorkshire Council as part of the recent Local Government Reorganisation (LGR).

Step 1 Remove and replace “at risk” concrete street lighting columns and replace with new plascoated, galvanised steel columns complete with LED lanterns, part-night 20/20 photo-cells (where appropriate).

Step 2 Remove and replace all obsolete inefficient lanterns on existing steel columns, pole and wall brackets and replace with new energy efficient LED lanterns complete with part-night 20/20 photo-cells (where appropriate).

Step 3 Replace photo-cells on all existing LED lanterns and install part-night 20/20 photo-cells (where appropriate).

This replicates steps taken by North Yorkshire County Council on its own roadway lighting stock

The Council considered not undertaking the project, i.e. “do nothing” and simply replace any lanterns as and when they fail. This would place a huge burden on the Council’s Revenue budget for the next 4-5 years and would not realise the initial savings that this project is expected to achieve.

In addition to the loss of up to 5 years of savings, the installation costs would be higher as we would lose any benefit of scale and the environmental impact would be higher as significantly more travel would be required.

Further to this, the procurement of lanterns on a piecemeal basis would add significant cost to the scheme as well as increasing deliveries and the associated transport costs

What impact will this proposal have on council budgets? Will it be cost neutral, have increased cost or reduce costs?

Please explain briefly why this will be the result, detailing estimated savings or costs where this is possible.

The three-year project is expected to cost £2.497million however the reduction in energy consumption is expected to generate a £440k annual saving in energy costs offering a payback within 6 years at current energy rates.

On completion, the project is also expected to offer a reduction in ongoing maintenance costs as the equipment being removed is some of the oldest streetlighting equipment that the Council is responsible for.

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<p>How will this proposal impact on the environment?</p> <p>N.B. There may be short term negative impact and longer term positive impact. Please include all potential impacts over the lifetime of a project and provide an explanation.</p>	Positive impact (Place a X in the box below where	No impact (Place a X in the box below where	Negative impact (Place a X in the box below where	<p>Explain why will it have this effect and over what timescale?</p> <p>Where possible/relevant please include:</p> <ul style="list-style-type: none"> • Changes over and above business as usual • Evidence or measurement of effect • Figures for CO₂e • Links to relevant documents 	<p>Explain how you plan to mitigate any negative impacts.</p>	<p>Explain how you plan to improve any positive outcomes as far as possible.</p>	
<p>Minimise greenhouse gas emissions e.g. reducing emissions from travel, increasing energy efficiencies etc.</p>	Emissions from travel	X			<p>The project will minimise ongoing requirements for routine cyclical maintenance and defect repairs therefore reducing travel requirements for these elements of work. At this stage it is difficult to quantify the reduction.</p>		
	Emissions from construction		X				
	Emissions from running of buildings		X				
	Emissions from data storage		X				

How will this proposal impact on the environment? N.B. There may be short term negative impact and longer term positive impact. Please include all potential impacts over the lifetime of a project and provide an explanation.	Positive impact (Place a X in the box below where	No impact (Place a X in the box below where	Negative impact (Place a X in the box below where	Explain why will it have this effect and over what timescale? Where possible/relevant please include: <ul style="list-style-type: none"> • Changes over and above business as usual • Evidence or measurement of effect • Figures for CO₂e • Links to relevant documents 	Explain how you plan to mitigate any negative impacts.	Explain how you plan to improve any positive outcomes as far as possible.	
	Other	X			The replacement of obsolete streetlighting equipment with energy efficient LED technology will generate a reduction in energy consumption exceeding 1.3million kwh which in turn reduces the Council's carbon footprint by over 340t.		Each location will be reviewed to determine the minimum wattage of the proposed lanterns and to assess whether it is appropriate for the light to be converted to part-night operation. This will maximise the energy reduction potential.
Minimise waste : Reduce, reuse, recycle and compost e.g. reducing use of single use plastic		X			New LED lanterns are primarily aluminium alloy and are over 98% recyclable. The older lanterns that they are replacing are up to 50 years old with higher plastic/bakelite content and are more difficult to recycle.	In 2016 Doncaster MBC entered into an agreement with a prison where inmates dismantled old lanterns and recovered all recyclable materials to reduce landfill. NYC will	

<p>How will this proposal impact on the environment?</p> <p>N.B. There may be short term negative impact and longer term positive impact. Please include all potential impacts over the lifetime of a project and provide an explanation.</p>	<p>Positive impact (Place a X in the box below where</p>	<p>No impact (Place a X in the box below where</p>	<p>Negative impact (Place a X in the box below where</p>	<p>Explain why will it have this effect and over what timescale?</p> <p>Where possible/relevant please include:</p> <ul style="list-style-type: none"> • Changes over and above business as usual • Evidence or measurement of effect • Figures for CO₂e • Links to relevant documents 	<p>Explain how you plan to mitigate any negative impacts.</p>	<p>Explain how you plan to improve any positive outcomes as far as possible.</p>
					<p>try and access a similar agreement.</p> <p>Old lamps will be disposed of using accredited recycling companies.</p>	
<p>Reduce water consumption</p>		<p>X</p>				
<p>Minimise pollution (including air, land, water, light and noise)</p>	<p>X</p>			<p>The optical control on new LED lighting is very carefully designed, maximising efficiency by directing all available light down on to the highway with a zero upward light output ratio.</p> <p>The LED lanterns operate at a colour temperature recommended by the International Dark Sky Reserves and are approved for use within the two National Parks.</p>	<p>The introduction of part night lighting (where possible) will also contribute to a reduction in potential light pollution across the primarily rural locations affected by the proposal.</p>	<p>LED lanterns have a number of optical arrangements which allow the designer to improve the lighting whilst minimising energy consumption and light spillage. Each location will be individually</p>

<p>How will this proposal impact on the environment?</p> <p>N.B. There may be short term negative impact and longer term positive impact. Please include all potential impacts over the lifetime of a project and provide an explanation.</p>	<p>Positive impact (Place a X in the box below where</p>	<p>No impact (Place a X in the box below where</p>	<p>Negative impact (Place a X in the box below where</p>	<p>Explain why will it have this effect and over what timescale?</p> <p>Where possible/relevant please include:</p> <ul style="list-style-type: none"> • Changes over and above business as usual • Evidence or measurement of effect • Figures for CO₂e • Links to relevant documents 	<p>Explain how you plan to mitigate any negative impacts.</p>	<p>Explain how you plan to improve any positive outcomes as far as possible.</p>
						<p>assessed to maximise those benefits. Where requested, front, side or rear light screens can be fitted.</p>
<p>Ensure resilience to the effects of climate change e.g. reducing flood risk, mitigating effects of drier, hotter summers</p>	<p>X</p>			<p>The proposed LEDs are more resilient/reliable than the obsolete units they are replacing.</p> <p>They are manufactured with a high IP rating to minimise ingress of water or dust and a high IK rating to prevent accidental (or deliberate) damage.</p> <p>The completion of the project should see a reduction in our ongoing maintenance liability and generate fewer defects. This will reduce transport requirement, reliance on fossil fuels and exhaust emissions from the Council's fleet.</p>		<p>The lantern specification will include an extended warranty.</p>

<p>How will this proposal impact on the environment?</p> <p>N.B. There may be short term negative impact and longer term positive impact. Please include all potential impacts over the lifetime of a project and provide an explanation.</p>	<p>Positive impact (Place a X in the box below where</p>	<p>No impact (Place a X in the box below where</p>	<p>Negative impact (Place a X in the box below where</p>	<p>Explain why will it have this effect and over what timescale?</p> <p>Where possible/relevant please include:</p> <ul style="list-style-type: none"> • Changes over and above business as usual • Evidence or measurement of effect • Figures for CO₂e • Links to relevant documents 	<p>Explain how you plan to mitigate any negative impacts.</p>	<p>Explain how you plan to improve any positive outcomes as far as possible.</p>
<p>Enhance conservation and wildlife</p>		<p>X</p>		<p>All equipment carries the CE mark that ensures the product meet EU safety, health and environmental requirements.</p> <p>It has been suggested that the use of LED at the blue end of the visible spectrum ($\geq 4000\text{k}$) may adversely impact migration and feeding patterns for bats and insects.</p>	<p>All lanterns will have a maximum colour temperature of 2700k and where possible they will be converted to part night operation.</p> <p>At 2700k the light output will be similar or better than existing and in the case of compact fluorescent and Mercury, these LEDs are closer to the red end of the visible spectrum and should have a reduced impact on wildlife.</p>	

<p>How will this proposal impact on the environment?</p> <p>N.B. There may be short term negative impact and longer term positive impact. Please include all potential impacts over the lifetime of a project and provide an explanation.</p>	Positive impact (Place a X in the box below where	No impact (Place a X in the box below where	Negative impact (Place a X in the box below where	<p>Explain why will it have this effect and over what timescale?</p> <p>Where possible/relevant please include:</p> <ul style="list-style-type: none"> Changes over and above business as usual Evidence or measurement of effect Figures for CO₂e Links to relevant documents 	<p>Explain how you plan to mitigate any negative impacts.</p>	<p>Explain how you plan to improve any positive outcomes as far as possible.</p>
<p>Safeguard the distinctive characteristics, features and special qualities of North Yorkshire's landscape</p>	X			<p>The lantern types proposed on this project are in keeping with the requirements of the National Parks' International Dark Sky Reserve status.</p> <p>The introduction of part night lighting will further enhance the Dark Skies experience.</p>		<p>No additional streetlights will be installed, this is a direct one-for-one exchange therefore a village/town daytime and night-time appearance will not be affected.</p>
<p>Other (please state below)</p>	X			<p>The project will see the safe removal and disposal of toxic substances from the Council's streetlighting stock including Mercury and Sodium.</p>		

Are there any recognised good practice environmental standards in relation to this proposal? If so, please detail how this proposal meets those standards.

The project mirrors the previous LED project carried out on the Council’s own roadway lighting between 2019 and 2021 for which we received a Green Apple Award from Craven District and a National Green Apple Award for Environmental Best Practice.

Summary Summarise the findings of your impact assessment, including impacts, the recommendation in relation to addressing impacts, including any legal advice, and next steps. This summary should be used as part of the report to the decision maker.

The assessment has not yielded any negative impacts however the significant reduction in energy consumption will contribute towards the County Council’s carbon reduction targets.

There are a number of positive impacts:

- 1.3million kwh reduction in energy consumption with associated drop in CO2 of approximately 340t.
- Removal of toxic elements such as Mercury and Sodium from the highway network
- Longer-life equipment with reduced ongoing maintenance requirements and associated reduction in transport/travel

Upon approval, the next step will be to survey all footway lighting and assess the opportunities for part-night lighting. This will include limited engagement with the local parish and town councils. As part of this process, all lighting will be assessed to determine the appropriate LED replacement and to calculate actual energy savings that will be reported back to the Project Board.

Sign off section

This climate change impact assessment was completed by:

Name	Paul Gilmore
Job title	Electrical Engineering Manager
Service area	Highways & Transportation, Parking Services, Street Scene, Parks & Grounds
Directorate	Environment

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Signature	Paul Gilmore
Completion date	May2023
Authorised by relevant Assistant Director (signature): Barrie Mason	
Date: 18/08/2023	

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