Project Name:	*Conversion of street lighting to LED technology*

1. Applicant Details:

Project Lead:	Paul Leighton		
Project Support officer:	Elizabeth Thomas		
Phone numbers:	07831120871	**Email address:**	paul.leighton@walsall.gov.uk

Value of Walsall Council investment being sought:	£10,593,186
External Funding (being sought / secured)	£0
Value of Total Project:	£10,593,186
Cost-benefit projection (for example BCR or NPSV) - NET PRESENT VALUE	16,341,384

Note that to avoid pressures on the Pipeline Investment Fund in 2022/23, for which there is only a £8m allocation, it is proposed that the full street lighting investment is taken from the 2021/22 allocation, and unspend budgets be carried forward into 2022/23.

2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
£3,353,304	£6,495,608	£744,274			

Project Description: Please provide a summary of the project - aims and objectives:

To deliver a modern, energy efficient street lighting solution that provides the ability to finely control light output whilst significantly reducing energy consumption and contributing to the Council becoming carbon neutral by 2050. The project will convert 23000, old technology street lights to light emitting diode (LED) technology over a 24 month core investment period resulting in reductions in energy consumption of approximately 74%.

Project Background: Please provide a summary of the work completed to date prior to this bid and current status of project:

Cabinet has previously approved in principle the conversion of street lights to LED technology with an associated central monitoring and control system (CMS) instructing officers to develop the business case and amendments to the street lighting PFI project agreement necessary to facilitate the change. Officers have developed the necessary changes to the PFI project agreement and drafted the associated Deed of Variation that has to be signed to contractually bind the PFI operator to deliver the project in accordance with the Council specification, timeframe and cost.

Business Case Appraisal

In order to deliver an LED & CMS solution, the Council has to gain the approval of Walsall Public Lighting Limited given they will be required to install, maintain and operate the equipment for the period of the PFI contract. Walsall cannot simply instruct that the equipment be installed and maintained without developing the necessary changes to the amended and restated project agreement for the PFI contract. The proposed changes have been carefully drafted by Legal Service specifically to deliver the conversion project whilst maintaining the original risk balance between the Council and Walsall Public Lighting Limited.

Scheme development workshops have been held with Walsall Public Lighting Limited and Amey along with internal technical, legal and finance colleagues to develop the most cost effective solution for the borough wide replacement of street lighting infrastructure.

The Council is maximising the benefits of the PFI contractor's experience in successfully delivering similar projects in Manchester and Wakefield, both PFI street lighting contracts similar to Walsall.

The business case has been evaluated by the Council's in house technical, legal and finance teams.

What opportunity or barrier will this investment unlock?

Based on current electricity prices, this project will reduce the annual electricity bill by circa £1.326m and provide a level of mitigation against future increases in the cost of electricity. Our annual carbon footprint will be reduced by 5,126 tonnes as a result of the need for a lower level of electricity generation and consumption. The CMS system will provide fininite control and monitoring of the street lighting infrastructure that if required will allow every street light to be individually switched on and off at a time or background lighting level to meet local needs.

£1,326,413.03

Please indicate which of the Council's priorities the project will contribute to, including impact on Proud Programme:

ECONOMIC Growth for all people, communities and business
The provision of modern fit for purpose street lighting infrastructure will create an environment where business invests and everyone who wants a job can access one.

PEOPLE have increased independences, improved health and can positively contribute to their communities
The reduction in carbon emissions as a result of implementing LED street lighting technology will have positive impacts on health and support people to live a good quality of life.

INTERNAL Focus – All council services are efficient and effective
The operation of an LED & CMS lighting systems will enable the delivery of an energy efficient value for money street lighting service.

Communities are prospering and resilient with all housing needs met in safe and healthy places that build a strong sense of belonging and cohesion.
The provision of modern street lighting infrastructure will assist with the fear of crime as LED will provide instant light output at full power without the need for a gradual warm up period. LED lighting will also provide for better colour rendering and shape definition making it much easier to identify people and objects on the public highway.

Please indicate which other Strategic Plans (National, Regional, Local) the project will contribute to:
The project will contribute to the Council becoming Carbon neutral by 2050 and deliver against HM Treasury guidance, Making Savings in Operational PFI contracts.
Actions taken to address project conditions
In order to deliver an LED & CMS solution, the Council has to gain the approval of Walsall Public Lighting Limited given they will be required to install, maintain and operate the equipment for the remaining period of the PFI contract. Walsall cannot simply instruct that the equipment be installed and maintained without developing the necessary changes to the amended and restated project agreement for the PFI contract. The proposed changes have been drafted by Legal Service specifically to deliver the conversion project whilst maintaining the original risk balance between the Council and Walsall Public Lighting Limited.
Set out delivery plan
Scheme delivery will be through the existing street lighting PFI contract and delivered over a 30 month period. Planning permission will not be required as this is works on the highway that are exempt from planning permission requirements. Delay in implementing the LED and CMS programme risks the delivery of revenue savings detailed in the medium term financial plan. This risk is mitigated by the inclusion of financial penalties for failure to meet performance targets. Energy saving calculations have been made on the basis of the equipment manufacturers declared energy consumption. Whilst the manufacturer will not guarantee this level of energy consumption, actual energy consumption will be billed against the energy consumption code issued from Elexon who are the national body tasked with issuing codes that have to be used for billing of electrical equipment connected to unmetered supplies. The charge code is a 13 digit number assigned to apparatus customers wish to add to their inventories. This charge code is used to calculate volumes of electricity consumed and is based on test data that demonstrates the manufacturers stated energy consumption for their equipment. The use of this code, in conjunction with the actual burning hours recorded by the CMS system will determine the overall electricity consumption used for the calculation of electricity bills and is anticipated to be in line with the modelling undertaken.To ensure the overall project is delivered within the programmed timeframe, a fixed term post is proposed to be capitalised and will undertakle the design approval, monitoring and evaluation role for the Council.
Monitoring and evaluation plan*
The project will be delivered against a monthly profile for the conversion to LED street lights. Conversion works will be independently certified to confirm they meet the expected standard and performance objectives. The certification process will be the trigger to release payment to the contractor or initiate any remedial works. Progress against profile will be formally reviewed at the routine monthly PFI management board. Any delay in the profiled conversion programme will result in financial penalties to the contractor equivalent to the cost of the additional electricity that the Council will have to pay because the LED savings are not achieved.

Outputs/Outcomes	Metric	2020/21	2021/22	2022/23	2023/24	2024+	Further Detail
Businesses Assisted	no.						
Businesses Created	no.						
Skills – Learners assisted (exc. Apprenticeships)	no.						
Skills – Apprenticeships Starts	no.						
Skills – Apprenticeships Completed	no.						
Employment – Jobs Created (FTE)	no.						
Employment – Jobs Safeguarded (FTE)	no.						
Place – Houses Started	Units						
Place – Houses Completed	Units						
Place – Land Remediated	Hectares						
Place – New Employment floor space [Specify Use Class]	Sq. metre						
Length of newly built roads	Km						
Length of resurfaced roads	Km						
Length of new cycle ways	Km						
Street lights converted to LED and CMS technology	no.		7200	14400	1400		
For the outputs included above, please state whether they are direct outputs or indirect. If indirect, explain how the project is enabling the delivery of these outputs.							

1. For Place (property & infrastructure projects only) - Site Details	
Location (include full address and postcode)	N/A
Overall Site Area (Ha)	
Ownership / Occupation	
Existing / Former Use	
Existing Condition	
Planning Status of Project	
Any Other Comments	

1. Main project issues	
Issues	**Resolution**
Need to reduce energy and carbon consumption.	Develop and deliver an LED and CMS solution.
Cabinet has previously approved in principle the conversion to an LED and CMS solution, instructing officers to develop an appropriate solution for consideration of implementation.	The proposal has been developed in conjunction with the Council's street lighting PFI provider.

2. What are the main risks the Project will need to manage?	
Risks	**Mitigation**
Delay in implementing the LED and CMS programme risks the delivery of revenue savings detailed in the medium term financial plan.	This risk is mitigated by the inclusion of financial penalties for failure to meet performance targets.
The predicted energy efficiency of the LED lanterns is not as expected and fails to deliver the anticipated savings in electricity consumption.	This risk is mitigated by the use of energy consumption codes agreed and approved for use with equipment that is connected to the electricity supply but not through an electricity meter. In effect, the energy consumption for the lantern will be fixed in line with the manufacturers test data and billed accordingly. This will result in electricity savings in line with the model.

3. Please indicate how your project complies with Subsidy Law Regulations:
Not applicable
4. Any other Significant Constraints, risks or interdependencies to delivering the Project not mentioned above.
Not applicable

Strategic Case
Case for Change
The current street lighting stock uses outdated technology that consumes large amounts of electricity. Switch on and off is done through a photocell that provides very basic control opportunities. Conversion to LED and CMS technology will significantly reduce electricity consumption and associated carbon emissions whilst providing infinite control over when a street light is switched on and how bright that street light will illuminate the public highway. Conversion to LED and CMS technology forms part of the Council Climate Emergency action plan to become carbon neutral by 2050. Cabinet has already agreed in principle to the conversion to an LED and CMS system, instructing officers to work up detailed proposals for the scheme to be delivered through variation to the existing PFI contract.
Vision, Objectives and Outcomes
The aim of this project is to provide modern, controllable, energy efficient street lighting across the borough. This will be achieved through the conversion to LED and CMS of 7200 street lights in 2021/2022, 14,400 in 2022/23 and 1400 in 2023/2024. The outcome will be a street lighting system that has a positive impact on budgetary pressures and the health of Walsall residents as a direct result in the reduction of carbon emissions associated with the electricity generation. The new lighting will assist with the fear of crime as LED lighting will provide instant light output at full power without the need for a gradual warm up period and improved colour rendering and shape definition will making it much easier to identify people and objects on the public highway.
The Proposed Investment
Conversion to LED and CMS street lighting is recommended by the Department for Transport and the institute of Lighting Professionals.
How does the project fit with national, sub-regional and local investment plans and strategies?
This project aligns with the national, regional and local priority to address climate change by reducing carbon consumption.
What stakeholder consultation has been undertaken/support received? What stakeholder consultation remains to be undertaken?
As part of the Council commitment to become carbon neutral by 2050, the October 2020 Carbon Neutral Council Cabinet report draft action plan includes the intention to convert the existing street lighting to an LED and CMS system. Neighbourhoods Scrutiny and Performance Panel 9 April 2015 considered the merits of a major invest to save LED conversion project. The Panel endorsed this approach to the future management and operation of street lighting infrastructure. Public consultation was undertaken as part of the small-scale LED and CMS conversion trials previously implemented. Public feedback was positive.
Summarise the overall assumptions that have been made when planning this project. State the impact to the project if these turn out to be wrong.
Supply of LED and CMS components will be unaffected by supply chain issues. Any delay in supply could potentially extend the installation period beyond the assumed 24 month period. However, the project has been developed on the basis of having capacity to convert up to 1200 street lights per month and therefore a significant degree of flexibility is built into the project. Unit prices are fixed for the whole timescale of the project as the LED and CMS units will be purchased within the anticipated project timescale.
Summarise any project dependencies that the project has or if there are other projects/initiatives that are dependent on this delivery. State the impact to the project if these are not met.
This is a standalone project that has no major dependencies on other projects. The project will convert the existing street lighting lanterns attached to the top of existing street lighting columns to a new LED with CMS control lantern. There is an assumption that a small number of new street lighting columns may need to be installed and connected to the electricity supply network by Western Power Distribution (WPD). The project has no direct control over the timescale for this work. However WPD provide a target 28 day completion timescale for the provision of new electricity supplies.
A street works permit will be required to be obtained from the Council to install any new street lighting columns that may be required. There is no cost associated with this permit.

Economic Case - Options Appraisal

Options and Scenarios considered

Please describe the options that have been considered in selecting the project proposal. This should include a minimum of 3 options: -

The do nothing position would result in the Council continuing to spend approximately £2m per year on electricity for street lights. Reductions in carbon consumption that have direct impacts on public health would not be realised. The expected contribution to the Council's climate emergency action plan would not be delivered. The preferred option A, will reduce the cost of electricity consumption by £1.326m and carbon consumption by 5126 tonnes per annum whilst meeting all of the aims and objectives of the scheme. All alternative options considered would deliver a legally and technically compliant solution but due to the differing electricity efficiency ratings of the different equipment for each option, the NPV varies.

Option Name:	Description:	Total Cost:	Amount requested	Outputs
Reference Case	Do nothing	N/A	N/A	N/A
Proposed Option	Option A	£10.593m	£10.593m	NPV of £16.093m
Alternative Options:	Option B	£9.983m	£9.983m	NPV of £15.742m
	Option C	£11.189m	£11.189m	NPV of £15.263m
	Option D	£12.936m	£12.936m	NPV of £13.736m
	Option E	£12.514m	£12.514m	NPV of £13.616m

Please explain why the proposed option has been selected.

The preferred option delivers a technically and legally compliant solution with the highest net present value.

Option Name:	Advantages:	Disadvantages:	Fit with Project Objectives:	Other comments
Reference Case	No capital investment required	No ability to reduce electricity and carbon consumption. No ability to contribute to the Council's climate Emergency action plan	No fit	
Proposed Option	Meets scheme aims and objectives with the highest NPV	Capital investment required	Good fit	
Alternative Options:	Meets scheme aim and objectives but with lower NPV levels	Lower NPV for all other options considered	Good fit	

Specify the Preferred Option, with supporting justification for selection.

Option A as this represents the option with the highest net present value

Economic Benefits
The project will create at least 2 office based temporary posts and potentially 2 additional temporary posts to undertake the physical LED and CMS conversion works. 1 capitalised fixed term post will be created within the Council and a further 3 temporary posts are anticipated to be created by the PFI contractor Amey. The cost of all posts required by Amey to deliver the project are already built into the capital cost of the conversion works.
Non-Quantified Benefits
The provision of modern street lighting infrastructure will assist with the fear of crime as LED will provide instant light output at full power without the need for a gradual warm up period. Road safety will be improved as LED lighting will provide for better colour rendering and shape definition making it much easier to identify people and objects on the public highway.
Service Delivery options considered, with Pro's & Con's. e.g. using a 3rd party for delivery
Because street lighting is delivered through PFI arrangements, this is the only viable delivery mechanism for the project.
How do outputs compare for different options?
NPV values differ for each option
Outline any market testing which has been undertaken to evidence the demand case
Small scale trials of conversion to LED and CMS technology have been carried out in Bloxwich, Leamore, Brownhills and Walsall South. Overall, public feedback was positive and associated energy and carbon savings were achieved.

Commercial case – External Procurement (if appropriate)
What Partners / contractual arragements (i.e. private or public development partners) will be required to deliver project outputs, at what stage are discussions/negotiations?
Street lighting in Walsall is managed through PFI arrangements with Walsall Public Lighting Limited (WPLL). The day to day delivery is through Amey as the contractor to Walsall Public Lighting Limited. Given that the lighting infrastructure assets is in effect maintained by WPLL with the risk transfer that occurred when the PFI was signed in 2002, WPLL has to be the delivery partner for this project. The necessary variations to the PFI project agreement have been agreed with WPLL. Amey on behalf of WPLL have undertaken the necessary tendering exercise to obtain costs for the project. Subject to SIB and Cabinet approval to the project, the necessary Deed of Variation to the PFI project Agreement will be signed to implement the scheme.
Detail any 3rd party services that will be used to deliver this project, e.g. Legal, Finance, other consultancy. Are they all included in costings as necessary?
An independent certifier will be appointed to certify the conversion works prior to payment for those works. The cost of this is factored into the overall scheme cost.
Outline the Procurement Options: with a rationale for preferred option
Procurement will be through variation to the existing street lighting PFI contract as this is the only option available whilst the PFI is in operation. **Regulation 72 (1) (b) & (c) of The Public Contract Regulations 2015 allows for additional works, services or supplies to the original PFI contract even where they were not included in the original procurement:** **Modification of contracts during their term** **72.—(1) Contracts and framework agreements may be modified without a new procurement procedure in accordance with this Part in any of the following cases:—** **(b) for additional works, services or supplies by the original contractor that have become necessary and were not included in the initial procurement, where a change of contractor—** **(i) cannot be made for economic or technical reasons such as requirements of interchangeability or interoperability with existing equipment, services or installations procured under the initial procurement.** **(ii) would cause significant inconvenience or substantial duplication of costs for the contracting authority,** **(c) where all of the following considerations are fulfilled:** **(i) the need for the modification has been brought about by circumstances which a diligent contracting authority could not have foreseen;** **(ii) the modification does not affect the overall nature of the contract;** **(iii) any increase in price does not exceed 50% of the value of the contract or framework agreement.**
Outline the chosen Procurement Strategy and Timescales, including statutory and other consents.
Procurement will be through Deed of Variation to the existing street lighting PFI project agreement. **The project will be delivered over a 24 month installation period commencing October 2021.**
Will your Procurement trigger the OJEU /FTS process?
The Council will sign a Deed of Variation to the existing street lighting PFI contract. The PFI operator will then enter into contractual arrangement with the equipment supplier as part of their overall PFI equipment supply arrangements.
Are there any HR / Personnel Implications, Inc. TUPE? (approx. 200 words)
The project finance model includes for the capitalisation of a fixed term post as the existing staff resource is insufficient to deliver the day to day lighting function and support the delivery of this project.
Is Planning Permission required? If so, provide evidence of planning permission (submit a copy of decision notice or committee resolution with this application), or a clear explanation of the timeframe for achieving this and how it fits with broader planning strategy.
Planning permission is not required for this project
Are CPO powers required to deliver all or a part of the project? If so please set out in full, together with expected timeframes

CPO powers are not required for this project

#	Question	Applicant Response
1	Please complete full costings on "green" financial tabs	**Completed**
2	What is appraisal period and how was this determined? Does it align with the Useful Economic Life of the asset?	**The 20 year appraisal period aligns with the useful economic life of the asset.**
3	Can the Council Investment be recycled? Has any future financial return been factored into the business case?	**The investment is forecast to generate a net present value of c£16m. The preferred option budget shows that after taking into account savings assumed in the Councils MTFP, and borrowing costs, surplus savings will be generated over the 20 year life, from 2026/27 onwards. This surplus will be free to be reinvested in Council activities, although with the PFI ending in 7 years time, it may be prudent to ringfence the surplus savings until the PFI exit plan is fully worked up and financial implications known.**
4	Is the Council Investment the Fund of last resort? Have all other funding avenues been exhausted i.e. EU, LEP, WMCA, private sector etc?	**Yes - the Council made a bid for EU funds, but were not succesful. In addition, alternative interest free loan were pursued from Salix (government quango that offered interest free loan for energy saving schemes) but the scheme has closed at the date the business case was being drawn up.**
5	Please outline the strategy for securing the match funding as outlined above, and the progress made to date. What is the level of certainty of match funding remaining in place across the project duration? Please provide evidence to support any assumptions made.	**N/A**
6	Project slippage – is there provision for dealing with the financing of any time or cost overruns?	**The financial implications of project slippage are dealt with through contract clauses that introduce financial penalty for failure to convert in accordance with the project plan.**
7	What risk contingencies are included in your cost estimates? Set out assumptions on optimism bias.	**Financial modelling for the preferred option includes £0.314m for non-compliance correction costs. This is the contingency to cover the cost of installing new lighting columns and associated LED lanterns in the small number of locations where lighting standard could not otherwise be met as a result of the existing column spacing. No further contigencies required as the LED lanterns and installations are fixed.**
8	How sensitive is the data to key assumptions?	**The data will be sensitive to energy savings/ price increases assumed within the model. However, with NPV estimated at £16m, there is significant headroom to cover overestimated energy savings, before the investment became breakeven, hence low sensitivity risk overall.**
9	Have the running costs of this investment been calculated and are they built into the Financial tabs?	**Yes, this project will significantly reduce ongoing running costs associated with electricity consumption. Maintenance costs, and borrowing costs have also been factored in.**

10	Explanation of how costs have been obtained, evidence to support the costs and whether a risk assessment has been undertaken. How robusts are these costings?	**Tendering has been undertaken to identify the cost of LED lanterns and their associated CMS technology. This is a fixed cost per unit and will not change during the life of the project.**
11	If match funding is included in the Finance tabs, how secure is this? If not secured, what steps are required to secure that funding and when?	**N/A**
12	Does the funding package have an implication on VAT and our partial exemption limits - has the Council's VAT accountant (Robert Page) been consulted?	**Robert Page has been consulted on this project . There is no impact on VAT and partial exemption limits.**
13	Does the project have an impact on Financial Reporting and accounting treatment - have the Financial Reporting Team (Richard Walley/Robert Page) been consulted?	**Yes ; Kelly Valente met with Treasury and Financial Reporting colleagues to discuss loan and MRP assumptions. No significant financial reporting issues.**
14	If Council borrowing has been assumed, is this in the Capital Programme, and have the Council's Treasury team (Richard Walley/Lloyd Haynes) been consulted?	**Cabinet is asked to approve that the capital budget of £10,593,186 is profiled as follows: £3,353,304 (2021/2022), £6,495,608 (2022/23), £744,274 (2023/24), and funded from the pipeline investment fund included in the Council's approved 2021/22 capital programme. Treasury have been consulted.**
15	Has the impact of Covid been considered as part of the costs?	**Yes**
16	Are there any further material financial risks or issues not covered by questions above?	**N/A**

Management Case - Achievability of Project Components	
Key Milestone	**Delivery Date**
Sign Deed of Variation to the PFI Project Agreement	30 June 2021
Begin detailed technical design work for LED and CMS technology conversion	01 July 2021
Appoint independent certifier	01 October 2021
Begin conversion to LED and CMS technology on street	01 October 2021
Complete conversion of 7200 street lights to LED and CMS technology	31 March 2022
Complete conversion of an additional 14400 street lights to LED and CMS technology	31 March 2023
Complete conversion of an additional 1400 street lights to LED and CMS technology, concluding the whole conversion programme	31 March 2024

Project Governance: Key roles & Responsibilities		
Please set out the Key Roles in governing the Project, with named officers, which will oversee, deliver and close the project		
Name	***Project Role***	***Principal Responsibility for Delivery***
Dave Brown, Director, Place & Environment	Project Sponsor	Project Board – Ultimately accountable for the project, ensuring that it meets its objectives and realise the expected benefits. Empowered to direct the project and take decisions.
Kathryn Moreton / Paul Leighton	Project Board members / Project Manager	Leading, managing and co-coordinating all activity in conjunction with the project team.
Elizabeth Thomas	Lighting Manager and Project Board Member	Technical specialist who will lead on technical queries and sign off for detailed lighting designs prior to implementation on street.
New capitalised fixed term post	Technical specialist supporting implementation of the project	Technical specialist who will provide support on technical queries and sign off for detailed lighting designs prior to implementation on street.
Walsall Public Lighting Ltd (The PFI operator)	Project Board member and PFI operator	PFI operator - Ultimately accountable for the performance of Amey street lighting in the delivery of this project.

Amey street lighting (The day to day delivery contractor for the PFI operator)	Suppliers/Vendors	Facilitate project execution by prepare detailed engineering design in accordance with project specification and supplying materials, equipment and personnel to undertake the conversion programme.
Kelly Valente and Rachel Walls	Financial Advisors	To advise on any financial matters that may arise during the project lifetime.
Richard Ackroyd	Legal Advisors	To advise on any legal and contractual matters that may arise during the project lifetime.
Independent certifier TBC	Appointed specialists	Independent certifier, to check and certify that the street lights have been converted to specification.

Provide a summary of proposed project management approach/methodology

This project will be delivered through the existing PFI street lighting contract. Project management will be integrated into the existing PFI project board that meets on a monthly basis to review performance against specification, consider/address any health and safety matters, consider / address any contractual matters, consider / address any project delivery matters and approve payment for works completed. The service finance business partner will continue to be engaged on a monthly basis as part of the ongoing PFI budget management procedures. Any additional specialist financial support will be sought as and when required.

Project Lifecycle: Please set out the different key stage of the project:

Project/Programme Phase:	*Strategy:*
Detailed design and technical approval of design	An initial 4 months package of design, and approval to those designs, will be undertaken before the main installation works begin in October 2021. Following this an ongoing monthly package of design, and approval to designs, will be undertaken to ensure suficient design approvals are already in place to deliver the project within the programme timescale.
Implementation	An agreed monthly package of LED and CMS conversions will be implemented by Amey and independently certified to ensure compliance with project milestones.
Project Board review	The PFI Project Board will meet on a monthly basis to review delivery of the project and address any issues to ensure the project is delivered within the project timescale.

Section G: Communications Plan or strategy

Elizabeth Thomas, the PFI manager and Project Board member will liaise with the Council's communications team to ensure that information about the intended locations for the conversion to LED and CMS technology are publicly disseminated thought the Council's media channels.

Quality Assurance, Monitoring and Evaluation
Outline your proposed monitoring and evaluation arrangements to assess whether the project achieves its objectives and outputs. (approx. 300 words)
As detailed above, the monitoring and evaluation of this project will be fully integrated into the existing monthly street lighting PFI Project Board, with any additional internal specialist legal and financial support being sought as and when required.

Option	Information provided by Amey																	COUNCIL MODEL	
		Amey LG Captal Cost	Non Compliance correction costs	SPV fees	SPV Legal and subsistence	Finance	Project Management	LED Certifier	Total Captal Costs	Unit Rate Exc. SPV fees	Estimated Energy Saving	KV adjusted - contingency @10%TBC	Anticipated lighting standard compliance first time	Estimated Whole life cost to the Authority 20yrs	Estimated Cost of current system 20yrs	Saving	Net saving after borrowing (AMEY)	AMEY rank	Net present value/(net present cost)	Rank
A	Supplier 1 Lowe	£9,761,898	£314,600	£230,000	£60,000	£3,000	£103,688	£120,000	£10,593,186	£424.43	73.82%	66.44%	96%	23,486,425	51,538,334	£ 28,051,910	54%	1	16,341,384	1
B	Supplier 1 Lowe	£9,152,126	£314,600	£230,000	£60,000	£3,000	£103,688	£120,000	£9,983,414	£397.92	71.23%	64.11%	96%	24,216,603	£ 51,538,334	£ 27,321,731	53%	3	15,981,980	2
C	Supplier 2	£9,616,951	£1,055,600	£230,000	£60,000	£3,000	£103,688	£120,000	£11,189,239	£418.13	72.91%	65.62%	86%	23,810,650	£ 51,538,334	£ 27,727,685	54%	1	15,508,485	3
D	Supplier 3 Lowe	£10,133,209	£2,286,700	£230,000	£60,000	£3,000	£103,688	£120,000	£12,936,597	£440.57	72.90%	65.61%	70%**	£ 24,322,204	£ 51,538,334	£ 27,216,130	53%	3	13,981,253	5
E	Supplier 3 Lowe	£9,711,557	£2,286,700	£230,000	£60,000	£3,000	£103,688	£120,000	£12,514,945	£422.24	71.47%	64.32%	70%**	£ 24,646,575	£ 51,538,334	£ 26,891,759	52%	4	13,856,927	4

Per contract £9,740,252 based on 22,949 bulbs. Modelled at higher value for prudence

No. of lanterns	23,000	
Current electricity price	£0.14	
Saving	£0.10	73.82%
New electricity cost	£0.04	
Current electricity price	£0.14	
Saving	£0.09	66.44%
New electricity cost	£0.05	

Budget Implications - preferred option 230

YEAR		0	1	2	3	4	5	6
YEAR	**TOTAL**	**2021/22**	**2022/23**	**2023/24**	**2024/25 ***	**2025/26**	**2026/27**	**2027/28**
Capital Budgets:								
LED installations	9,761,898	3,055,899	6,111,797	594,202				
Non-compliance correction costs	314,600	98,483	196,967	19,150				
SPV Fees (£200k plus £30k subsistence)	230,000	80,000	75,000	75,000				
Project Manager	103,688	25,922	51,844	25,922				
SPV Legal £125k total, already paid £69k. Balance rounded	60,000	60,000						
Finance support	3,000	3,000						
LED Certifier	120,000	30,000	60,000	30,000				
Total Capital	**10,593,186**	3,353,304	6,495,608	744,274	0	0	0	0
Revenue Budgets:								
Operational Savings (with energy increases)		0	-431,428	-1,332,071	-1,459,838	-1,502,494	-1,546,415	-1,591,638
Operational Savings ** (without energy increases)		0	-374,158	-1,122,475	-1,403,094	-1,403,094	-1,403,094	-1,403,094
SPV on the energy consumption over the baseline	2%		64,000	64,000	64,000	64,000	64,000	64,000
Interest ***	2.14%	35,880	226,694	226,694	226,694	226,694	226,694	226,694
MRP				0	446,055	453,950	461,985	470,162
Revenue budget (savings)/additional budget required		**35,880**	**-83,464**	**-831,781**	**-666,345**	**-658,450**	**-650,415**	**-642,238**
Savings assumed in MTFP		-450,000	-450,000	-450,000	-450,000	-450,000	-450,000	-450,000
Savings (excess) or deficit		485,880	366,536	-381,781	-216,345	-208,450	-200,415	-192,238
Savings (excess) or deficit cumulative		485,880	852,416	470,635	254,290	45,840	-154,574	-346,812
Payback, including savings target	10,593,186	11,079,066	11,445,602	11,063,821	10,401,421	9,739,022	9,076,622	8,414,222
Payback, excluding savings target	10,593,186	10,629,066	10,545,602	9,713,821	8,601,421	7,489,022	6,376,622	5,264,222

* MRP calculated year after project completion

** Energy increase to zero for saving against budget for cabinet report rather than mitigation against future price increases. Savings need to be when compared to a only looking at 88% of energy costs

***net present value discounted cash flow modelling (for option decision only) assumes no interest in YR 1, as 0 savings and fittings in year 1. However borrowing of on the £3.4m assumed (installation from October)

7 2028/29	8 2029/30	9 2030/31	10 2031/32	11 2032/33	12 2033/34	13 2034/35	14 2035/36	15 2036/37	16 2037/38	17 2038/39	18 2039/40	20 2040/41
0	0	0	0	0	0	0	0	0	0	0	0	0
-1,638,202	-1,686,146	-1,735,512	-1,786,342	-1,838,680	-1,892,571	-1,948,060	-2,005,195	-2,064,026	-2,124,602	-2,186,977	-2,251,203	-2,317,335
-1,403,094	-1,403,094	-1,403,094	-1,403,094	-1,403,094	-1,403,094	-1,403,094	-1,403,094	-1,403,094	-1,403,094	-1,403,094	-1,403,094	-1,403,094
64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000
226,694	226,694	226,694	226,694	226,694	226,694	226,694	226,694	226,694	226,694	226,694	226,694	226,694
478,484	486,953	495,572	504,344	513,271	522,356	531,601	541,011	550,587	560,332	570,250	580,343	590,615
-633,916	**-625,447**	**-616,828**	**-608,056**	**-599,129**	**-590,044**	**-580,799**	**-571,389**	**-561,813**	**-552,068**	**-542,150**	**-532,057**	**-521,785**
-450,000	-450,000	-450,000	-450,000	-450,000	-450,000	-450,000	-450,000	-450,000	-450,000	-450,000	-450,000	-450,000
-183,916	-175,447	-166,828	-158,056	-149,129	-140,044	-130,799	-121,389	-111,813	-102,068	-92,150	-82,057	-71,785
-530,728	-706,175	-873,003	-1,031,059	-1,180,188	-1,320,231	-1,451,030	-1,572,419	-1,684,232	-1,786,300	-1,878,449	-1,960,506	-2,032,291
7,751,822	7,089,422	6,427,022	5,764,622	5,102,223	4,439,823	3,777,423	3,115,023	2,452,623	1,790,224	1,127,824	465,424	-196,976
4,151,822	3,039,422	1,927,022	814,622	-297,777	-1,410,177	-2,522,577	-3,634,977	-4,747,377	-5,859,776	-6,972,176	-8,084,576	-9,196,976

actual budgets, and remember the modelling is

£3.4m assumed in year 1 hence 1 years interest

Walsall Street Lighting PFI assumption agreed
Major Invest to Save

Assumptions

7% Energy price Growth	1.03	SEE TAB B
5% Carbon Rate Growth	1.02	

YEAR	**ASSUMPTIONS**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**ES AND EVIDENCE**
YEAR		**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**2028/29**	**2029/30**	**2030/31**	**2031/32**	**2032/33**	**2033/34**	**2034/35**	**2035/36**	**2036/37**	**2037/38**	**2038/39**	**2039/40**	**2040/41**	**2041/42**	
Current position																							
Energy Consumption																							
Consumption kWh	88%	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	
Price per kWh	0.14	0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.17	0.18	0.18	0.19	0.19	0.20	0.20	0.21	0.22	0.22	0.23	0.24	0.24	0.25	
Cost		1,886,810	1,943,414	2,001,717	2,061,768	2,123,621	2,187,330	2,252,950	2,320,538	2,390,154	2,461,859	2,535,715	2,611,786	2,690,140	2,770,844	2,853,969	2,939,589	3,027,776	3,118,609	3,212,168	3,308,533	3,407,789	
Carbon Consumption (yr)																							
Price per kWh	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Cost		109,657	111,872	114,132	116,438	118,790	121,189	123,637	126,135	128,683	131,282	133,934	136,640	139,400	142,216	145,088	148,019	151,009	154,059	157,171	160,346	163,585	
CURRENT ANNUAL COST (lights to be converted)		**1,996,467**	**2,055,287**	**2,115,849**	**2,178,206**	**2,242,411**	**2,308,519**	**2,376,587**	**2,446,673**	**2,518,837**	**2,593,141**	**2,669,649**	**2,748,426**	**2,829,540**	**2,913,060**	**2,999,058**	**3,087,608**	**3,178,785**	**3,272,669**	**3,369,339**	**3,468,879**	**3,571,374**	
LEDs + new PECU																							
Energy efficiency	33.562%																						
Energy Consumption																							
Consumption kWh		4,538,005	4,538,005	4,538,005	4,538,005	4,538,005	4,538,005	4,538,005	4,538,005	4,538,005	4,538,005	4,538,005	4,538,005	4,538,005	4,538,005	4,538,005	4,538,005	4,538,005	4,538,005	4,538,005	4,538,005	4,538,005	-66.44% Savings calculation check
Price per kWh		0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.17	0.18	0.18	0.19	0.19	0.20	0.20	0.21	0.22	0.22	0.23	0.24	0.24	0.25	
Cost		633,251	652,249	671,816	691,971	712,730	734,112	756,135	778,819	802,184	826,249	851,037	876,568	902,865	929,951	957,849	986,585	1,016,182	1,046,668	1,078,068	1,110,410	1,143,722	
Carbon Consumption (yr)																							
Price per tonne		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Cost		36,803	37,547	38,305	39,079	39,868	40,674	41,495	42,333	43,189	44,061	44,951	45,859	46,785	47,730	48,695	49,678	50,682	51,705	52,750	53,815	54,903	
Affected Maintenance (year)																							
Saving per Legal variation		- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	
SPV on the energy consumption over the baseline		64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	
Total cost - new LED bulbs		657,373	677,114	697,440	718,369	739,917	762,104	784,949	808,471	832,691	857,629	883,307	909,746	936,969	965,000	993,863	1,023,582	1,054,183	1,085,692	1,118,137	1,151,544	1,185,944	
Percentage LEDs installed (cumulative)		**0%**	**31%**	**94%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	Tab D
Annual Phased cost		**1,996,467.43**	**1,623,858.92**	**783,778**	**718,369**	**739,917**	**762,104**	**784,949**	**808,471**	**832,691.17**	**857,629.09**	**883,307**	**909,746**	**936,969**	**965,000**	**993,863**	**1,023,582**	**1,054,183**	**1,085,692**	**1,118,137**	**1,151,544**	**1,185,944**	
Walsall Loan required	10,593,186																						
Loan Repayment																						10,593,186.13	Loan receipt and payments to Amey assumed to offset, MRP dealt with separately in budgets tab (as MRP not cashflow)
Interest	2.14%		226,694.18	226,694.18	226,694.18	226,694.18	226,694.18	226,694.18	226,694.18	226,694.18	226,694.18	226,694.18	226,694.18	226,694.18	226,694.18	226,694.18	226,694.18	226,694.18	226,694.18	226,694.18	226,694.18	226,694.18	
NEW ANNUAL COST (lights to be converted)		**1,996,467**	**1,850,553**	**1,010,472**	**945,063**	**966,611**	**988,798**	**1,011,643**	**1,035,166**	**1,059,385**	**1,084,323**	**1,110,001**	**1,136,440**	**1,163,663**	**1,191,694**	**1,220,557**	**1,250,276**	**1,280,877**	**1,312,386**	**1,344,831**	**1,378,238**	**12,005,824**	
COST saving /(increase)	**20,597,095**	**0**	**204,734**	**1,105,377**	**1,233,143**	**1,275,800**	**1,319,721**	**1,364,944**	**1,411,508**	**1,459,452**	**1,508,818**	**1,559,648**	**1,611,986**	**1,665,876**	**1,721,365**	**1,778,501**	**1,837,332**	**1,897,908**	**1,960,283**	**2,024,508**	**2,090,641**	**-8,434,450**	
Discount factor	**3%**	**1**	**0.971**	**0.943**	**0.915**	**0.888**	**0.863**	**0.837**	**0.813**	**0.789**	**0.766**	**0.744**	**0.722**	**0.701**	**0.681**	**0.661**	**0.642**	**0.623**	**0.605**	**0.587**	**0.570**	**0.554**	Note: Used same discount factor as recent financial modelling i.e. WTS/HWRC
Net realisable value (cos	**16,341,384**	**0**	**198,771**	**1,041,924**	**1,128,501**	**1,133,532**	**1,138,403**	**1,143,119**	**1,147,685**	**1,152,105**	**1,156,383**	**1,160,525**	**1,164,533**	**1,168,412**	**1,172,166**	**1,175,799**	**1,179,313**	**1,182,714**	**1,186,003**	**1,189,185**	**1,192,263**	**-4,669,950**	

Walsall Street Lighting PFI assumption agreed
Major Invest to Save

Assumptions

7% Energy price Growth		1.03	SEE TAB B
5% Carbon Rate Growth		1.02	

YEAR	**ASSUMPTIONS**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**ES AND EVIDENCE**
YEAR		**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**2028/29**	**2029/30**	**2030/31**	**2031/32**	**2032/33**	**2033/34**	**2034/35**	**2035/36**	**2036/37**	**2037/38**	**2038/39**	**2039/40**	**2040/41**	**2041/42**	
Current position																							
Energy Consumption																							
Consumption kWh	88%	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	
Price per kWh	0.14	0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.17	0.18	0.18	0.19	0.19	0.20	0.20	0.21	0.22	0.22	0.23	0.24	0.24	0.25	
Cost		1,886,810	1,943,414	2,001,717	2,061,768	2,123,621	2,187,330	2,252,950	2,320,538	2,390,154	2,461,859	2,535,715	2,611,786	2,690,140	2,770,844	2,853,969	2,939,589	3,027,776	3,118,609	3,212,168	3,308,533	3,407,789	
Carbon Consumption (yr)																							
Price per kWh	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Cost		109,657	111,872	114,132	116,438	118,790	121,189	123,637	126,135	128,683	131,282	133,934	136,640	139,400	142,216	145,088	148,019	151,009	154,059	157,171	160,346	163,585	
CURRENT ANNUAL COST (lights to be converted)		**1,996,467**	**2,055,287**	**2,115,849**	**2,178,206**	**2,242,411**	**2,308,519**	**2,376,587**	**2,446,673**	**2,518,837**	**2,593,141**	**2,669,649**	**2,748,426**	**2,829,540**	**2,913,060**	**2,999,058**	**3,087,608**	**3,178,785**	**3,272,669**	**3,369,339**	**3,468,879**	**3,571,374**	
LEDs + new PECU																							
Energy efficiency	35.893%																						
Energy Consumption																							
Consumption kWh		4,853,185	4,853,185	4,853,185	4,853,185	4,853,185	4,853,185	4,853,185	4,853,185	4,853,185	4,853,185	4,853,185	4,853,185	4,853,185	4,853,185	4,853,185	4,853,185	4,853,185	4,853,185	4,853,185	4,853,185	4,853,185	-64.11% Savings calculation check
Price per kWh		0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.17	0.18	0.18	0.19	0.19	0.20	0.20	0.21	0.22	0.22	0.23	0.24	0.24	0.25	
Cost		677,233	697,550	718,476	740,030	762,231	785,098	808,651	832,911	857,898	883,635	910,144	937,448	965,572	994,539	1,024,375	1,055,107	1,086,760	1,119,363	1,152,943	1,187,532	1,223,158	
Carbon Consumption (yr)																							
Price per tonne		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Cost		39,359	40,154	40,966	41,793	42,637	43,499	44,377	45,274	46,188	47,121	48,073	49,044	50,035	51,045	52,077	53,128	54,202	55,297	56,414	57,553	58,716	
Affected Maintenance (year)																							
Saving per Legal variation		- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	
SPV on the energy consumption over the baseline		64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	
Total cost - new LED bulbs		703,911	725,023	746,761	769,142	792,188	815,916	840,347	865,503	891,405	918,075	945,536	973,812	1,002,926	1,032,904	1,063,771	1,095,554	1,128,280	1,161,978	1,196,676	1,232,404	1,269,192	
Percentage LEDs installed (cumulative)		**0%**	**31%**	**94%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	Tab D
Annual Phased cost		**1,996,467.43**	**1,638,856**	**830,097**	**769,142**	**792,188**	**815,916**	**840,347**	**865,503**	**891,405.27**	**918,075**	**945,536**	**973,812**	**1,002,926**	**1,032,904**	**1,063,771**	**1,095,554**	**1,128,280**	**1,161,978**	**1,196,676**	**1,232,404**	**1,269,192**	
Walsall Loan required	9,983,414																						
Loan Repayment																						9,983,413.94	Loan receipt and payments to Amey assumed to offset, MRP dealt with separately in budgets tab (as MRP not cashflow)
Interest	2.14%		213,645.06	213,645.06	213,645.06	213,645.06	213,645.06	213,645.06	213,645.06	213,645.06	213,645.06	213,645.06	213,645.06	213,645.06	213,645.06	213,645.06	213,645.06	213,645.06	213,645.06	213,645.06	213,645.06	213,645.06	
NEW ANNUAL COST (lights to be converted)		**1,996,467**	**1,852,501**	**1,043,742**	**982,788**	**1,005,833**	**1,029,561**	**1,053,993**	**1,079,148**	**1,105,050**	**1,131,720**	**1,159,181**	**1,187,457**	**1,216,571**	**1,246,549**	**1,277,416**	**1,309,199**	**1,341,925**	**1,375,623**	**1,410,321**	**1,446,049**	**11,466,251**	
COST saving /(increase)	**20,223,020**	**0**	**202,785**	**1,072,107**	**1,195,418**	**1,236,578**	**1,278,958**	**1,322,595**	**1,367,525**	**1,413,787**	**1,461,421**	**1,510,468**	**1,560,969**	**1,612,969**	**1,666,511**	**1,721,642**	**1,778,409**	**1,836,860**	**1,897,046**	**1,959,018**	**2,022,830**	**-7,894,877**	
Discount factor	**3%**	**1**	**0.971**	**0.943**	**0.915**	**0.888**	**0.863**	**0.837**	**0.813**	**0.789**	**0.766**	**0.744**	**0.722**	**0.701**	**0.681**	**0.661**	**0.642**	**0.623**	**0.605**	**0.587**	**0.570**	**0.554**	Note: Used same discount factor as recent financial modelling i.e. WTS/HWRC
Net realisable value (cos	**15,981,980**	**0**	**196,879**	**1,010,564**	**1,093,977**	**1,098,684**	**1,103,241**	**1,107,652**	**1,111,923**	**1,116,056**	**1,120,058**	**1,123,930**	**1,127,677**	**1,131,304**	**1,134,813**	**1,138,208**	**1,141,493**	**1,144,670**	**1,147,744**	**1,150,717**	**1,153,592**	**-4,371,202**	

Walsall Street Lighting PFI assumption agreed
Major Invest to Save

Assumptions

7% Energy price Growth	1.03	SEE TAB B
5% Carbon Rate Growth	1.02	

YEAR	ASSUMPTIONS	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	ES AND EVIDENCE
YEAR		**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**2028/29**	**2029/30**	**2030/31**	**2031/32**	**2032/33**	**2033/34**	**2034/35**	**2035/36**	**2036/37**	**2037/38**	**2038/39**	**2039/40**	**2040/41**	**2041/42**	
Current position																							
Energy Consumption																							
Consumption kWh	88%	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	
Price per kWh	0.14	0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.17	0.18	0.18	0.19	0.19	0.20	0.20	0.21	0.22	0.22	0.23	0.24	0.24	0.25	
Cost		1,886,810	1,943,414	2,001,717	2,061,768	2,123,621	2,187,330	2,252,950	2,320,538	2,390,154	2,461,859	2,535,715	2,611,786	2,690,140	2,770,844	2,853,969	2,939,589	3,027,776	3,118,609	3,212,168	3,308,533	3,407,789	
Carbon Consumption (yr)																							
Price per kWh	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Cost		109,657	111,872	114,132	116,438	118,790	121,189	123,637	126,135	128,683	131,282	133,934	136,640	139,400	142,216	145,088	148,019	151,009	154,059	157,171	160,346	163,585	
CURRENT ANNUAL COST (lights to be converted)		**1,996,467**	**2,055,287**	**2,115,849**	**2,178,206**	**2,242,411**	**2,308,519**	**2,376,587**	**2,446,673**	**2,518,837**	**2,593,141**	**2,669,649**	**2,748,426**	**2,829,540**	**2,913,060**	**2,999,058**	**3,087,608**	**3,178,785**	**3,272,669**	**3,369,339**	**3,468,879**	**3,571,374**	
LEDs + new PECU																							
Energy efficiency	34.381%																						
Energy Consumption																							
Consumption kWh		4,648,744	4,648,744	4,648,744	4,648,744	4,648,744	4,648,744	4,648,744	4,648,744	4,648,744	4,648,744	4,648,744	4,648,744	4,648,744	4,648,744	4,648,744	4,648,744	4,648,744	4,648,744	4,648,744	4,648,744	4,648,744	-65.62% Savings calculation check
Price per kWh		0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.17	0.18	0.18	0.19	0.19	0.20	0.20	0.21	0.22	0.22	0.23	0.24	0.24	0.25	
Cost		648,704	668,165	688,210	708,857	730,122	752,026	774,587	797,824	821,759	846,412	871,804	897,958	924,897	952,644	981,223	1,010,660	1,040,980	1,072,209	1,104,375	1,137,507	1,171,632	
Carbon Consumption (yr)																							
Price per tonne		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Cost		37,701	38,463	39,240	40,032	40,841	41,666	42,508	43,366	44,242	45,136	46,048	46,978	47,927	48,895	49,883	50,890	51,918	52,967	54,037	55,129	56,242	
Affected Maintenance (year)																							
Saving per Legal variation		- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	
SPV on the energy consumption over the baseline		64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	
Total cost - new LED bulbs		673,724	693,947	714,769	736,208	758,282	781,011	804,413	828,510	853,320	878,867	905,171	932,255	960,143	988,858	1,018,425	1,048,869	1,080,217	1,112,495	1,145,732	1,179,954	1,215,193	- -
Percentage LEDs installed (cumulative)		**0%**	**31%**	**94%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	Tab D
Annual Phased cost		**1,996,467.43**	**1,629,128**	**800,052**	**736,208**	**758,282**	**781,011**	**804,413**	**828,510**	**853,320.45**	**878,867**	**905,171**	**932,255**	**960,143**	**988,858**	**1,018,425**	**1,048,869**	**1,080,217**	**1,112,495**	**1,145,732**	**1,179,954**	**1,215,193**	
Walsall Loan required	11,189,239																						
Loan Repayment																						11,189,238.74	Loan receipt and payments to Amey assumed to offset, MRP dealt with separately in budgets tab (as MRP not cashflow)
Interest	2.14%		239,449.71	239,449.71	239,449.71	239,449.71	239,449.71	239,449.71	239,449.71	239,449.71	239,449.71	239,449.71	239,449.71	239,449.71	239,449.71	239,449.71	239,449.71	239,449.71	239,449.71	239,449.71	239,449.71	239,449.71	
NEW ANNUAL COST (lights to be converted)		**1,996,467**	**1,868,578**	**1,039,502**	**975,658**	**997,732**	**1,020,461**	**1,043,863**	**1,067,959**	**1,092,770**	**1,118,317**	**1,144,621**	**1,171,705**	**1,199,593**	**1,228,308**	**1,257,875**	**1,288,319**	**1,319,667**	**1,351,945**	**1,385,181**	**1,419,404**	**12,643,882**	
COST saving /(increase)	**19,308,559**	**0**	**186,709**	**1,076,347**	**1,202,548**	**1,244,679**	**1,288,059**	**1,332,724**	**1,378,714**	**1,426,067**	**1,474,825**	**1,525,028**	**1,576,721**	**1,629,947**	**1,684,752**	**1,741,183**	**1,799,289**	**1,859,118**	**1,920,724**	**1,984,158**	**2,049,475**	**-9,072,507**	
Discount factor	**3%**	**1**	**0.971**	**0.943**	**0.915**	**0.888**	**0.863**	**0.837**	**0.813**	**0.789**	**0.766**	**0.744**	**0.722**	**0.701**	**0.681**	**0.661**	**0.642**	**0.623**	**0.605**	**0.587**	**0.570**	**0.554**	Note: Used same discount factor as recent financial modelling i.e. WTS/HWRC
Net realisable value (cos	**15,508,485**	**0**	**181,271**	**1,014,560**	**1,100,502**	**1,105,881**	**1,111,091**	**1,116,135**	**1,121,020**	**1,125,751**	**1,130,330**	**1,134,764**	**1,139,057**	**1,143,212**	**1,147,234**	**1,151,127**	**1,154,895**	**1,158,541**	**1,162,070**	**1,165,484**	**1,168,787**	**-5,023,227**	

Walsall Street Lighting PFI assumption agreed
Major Invest to Save

Assumptions

7% Energy price Growth	1.03	SEE TAB B
5% Carbon Rate Growth	1.02	

YEAR	ASSUMPTIONS	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	ES AND EVIDENCE
YEAR		**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**2028/29**	**2029/30**	**2030/31**	**2031/32**	**2032/33**	**2033/34**	**2034/35**	**2035/36**	**2036/37**	**2037/38**	**2038/39**	**2039/40**	**2040/41**	**2041/42**	
Current position																							
Energy Consumption																							
Consumption kWh	88%	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	
Price per kWh	0.14	0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.17	0.18	0.18	0.19	0.19	0.20	0.20	0.21	0.22	0.22	0.23	0.24	0.24	0.25	
Cost		1,886,810	1,943,414	2,001,717	2,061,768	2,123,621	2,187,330	2,252,950	2,320,538	2,390,154	2,461,859	2,535,715	2,611,786	2,690,140	2,770,844	2,853,969	2,939,589	3,027,776	3,118,609	3,212,168	3,308,533	3,407,789	
Carbon Consumption (yr)																							
Price per kWh	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Cost		109,657	111,872	114,132	116,438	118,790	121,189	123,637	126,135	128,683	131,282	133,934	136,640	139,400	142,216	145,088	148,019	151,009	154,059	157,171	160,346	163,585	
CURRENT ANNUAL COST (lights to be converted)		**1,996,467**	**2,055,287**	**2,115,849**	**2,178,206**	**2,242,411**	**2,308,519**	**2,376,587**	**2,446,673**	**2,518,837**	**2,593,141**	**2,669,649**	**2,748,426**	**2,829,540**	**2,913,060**	**2,999,058**	**3,087,608**	**3,178,785**	**3,272,669**	**3,369,339**	**3,468,879**	**3,571,374**	
LEDs + new PECU																							
Energy efficiency	34.390%																						
Energy Consumption																							
Consumption kWh		4,649,961	4,649,961	4,649,961	4,649,961	4,649,961	4,649,961	4,649,961	4,649,961	4,649,961	4,649,961	4,649,961	4,649,961	4,649,961	4,649,961	4,649,961	4,649,961	4,649,961	4,649,961	4,649,961	4,649,961	4,649,961	-65.61% Savings calculation check
Price per kWh		0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.17	0.18	0.18	0.19	0.19	0.20	0.20	0.21	0.22	0.22	0.23	0.24	0.24	0.25	
Cost		648,874	668,340	688,390	709,042	730,313	752,223	774,789	798,033	821,974	846,633	872,032	898,193	925,139	952,893	981,480	1,010,925	1,041,252	1,072,490	1,104,664	1,137,804	1,171,939	
Carbon Consumption (yr)																							
Price per tonne		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Cost		37,711	38,473	39,250	40,043	40,852	41,677	42,519	43,378	44,254	45,148	46,060	46,990	47,940	48,908	49,896	50,904	51,932	52,981	54,051	55,143	56,257	
Affected Maintenance (year)																							
Saving per Legal variation		- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	
SPV on the energy consumption over the baseline		64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	
Total cost - new LED bulbs		673,904	694,132	714,959	736,404	758,484	781,219	804,627	828,730	853,547	879,100	905,411	932,503	960,398	989,120	1,018,695	1,049,147	1,080,503	1,112,790	1,146,035	1,180,267	1,215,515	
Percentage LEDs installed (cumulative)		**0%**	**31%**	**94%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	Tab D
Annual Phased cost		**1,996,467.43**	**1,629,186**	**800,231**	**736,404**	**758,484**	**781,219**	**804,627**	**828,730**	**853,547.15**	**879,100**	**905,411**	**932,503**	**960,398**	**989,120**	**1,018,695**	**1,049,147**	**1,080,503**	**1,112,790**	**1,146,035**	**1,180,267**	**1,215,515**	
Walsall Loan required	12,936,597																						
Loan Repayment																						12,936,597.41	Loan receipt and payments to Amey assumed to offset, MRP dealt with separately in budgets tab (as MRP not cashflow)
Interest	2.14%		276,843.18	276,843.18	276,843.18	276,843.18	276,843.18	276,843.18	276,843.18	276,843.18	276,843.18	276,843.18	276,843.18	276,843.18	276,843.18	276,843.18	276,843.18	276,843.18	276,843.18	276,843.18	276,843.18	276,843.18	276,843.18	
NEW ANNUAL COST (lights to be converted)		**1,996,467**	**1,906,029**	**1,077,074**	**1,013,247**	**1,035,327**	**1,058,062**	**1,081,471**	**1,105,573**	**1,130,390**	**1,155,943**	**1,182,254**	**1,209,346**	**1,237,241**	**1,265,963**	**1,295,538**	**1,325,990**	**1,357,346**	**1,389,633**	**1,422,878**	**1,457,110**	**14,428,955**	
COST saving /(increase)	**16,808,525**	**0**	**149,257**	**1,038,775**	**1,164,959**	**1,207,084**	**1,250,457**	**1,295,117**	**1,341,100**	**1,388,447**	**1,437,198**	**1,487,395**	**1,539,080**	**1,592,299**	**1,647,096**	**1,703,520**	**1,761,617**	**1,821,439**	**1,883,036**	**1,946,461**	**2,011,769**	**-10,857,581**	
Discount factor	**3%**	**1**	**0.971**	**0.943**	**0.915**	**0.888**	**0.863**	**0.837**	**0.813**	**0.789**	**0.766**	**0.744**	**0.722**	**0.701**	**0.681**	**0.661**	**0.642**	**0.623**	**0.605**	**0.587**	**0.570**	**0.554**	Note: Used same discount factor as recent financial modelling i.e. WTS/HWRC
Net realisable value (cos	**13,981,253**	**0**	**144,910**	**979,145**	**1,066,102**	**1,072,478**	**1,078,655**	**1,084,640**	**1,090,437**	**1,096,053**	**1,101,492**	**1,106,761**	**1,111,864**	**1,116,806**	**1,121,592**	**1,126,227**	**1,130,715**	**1,135,060**	**1,139,268**	**1,143,341**	**1,147,284**	**-6,011,579**	

Walsall Street Lighting PFI assumption agreed
Major Invest to Save

Assumptions

7% Energy price Growth	1.03	SEE TAB B
5% Carbon Rate Growth	1.02	

YEAR	ASSUMPTIONS	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	ES AND EVIDENCE
YEAR		**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**2028/29**	**2029/30**	**2030/31**	**2031/32**	**2032/33**	**2033/34**	**2034/35**	**2035/36**	**2036/37**	**2037/38**	**2038/39**	**2039/40**	**2040/41**	**2041/42**	
Current position																							
Energy Consumption																							
Consumption kWh	88%	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	13,521,259	
Price per kWh	0.14	0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.17	0.18	0.18	0.19	0.19	0.20	0.20	0.21	0.22	0.22	0.23	0.24	0.24	0.25	
Cost		1,886,810	1,943,414	2,001,717	2,061,768	2,123,621	2,187,330	2,252,950	2,320,538	2,390,154	2,461,859	2,535,715	2,611,786	2,690,140	2,770,844	2,853,969	2,939,589	3,027,776	3,118,609	3,212,168	3,308,533	3,407,789	
Carbon Consumption (yr)																							
Price per kWh	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Cost		109,657	111,872	114,132	116,438	118,790	121,189	123,637	126,135	128,683	131,282	133,934	136,640	139,400	142,216	145,088	148,019	151,009	154,059	157,171	160,346	163,585	
CURRENT ANNUAL COST (lights to be converted)		**1,996,467**	**2,055,287**	**2,115,849**	**2,178,206**	**2,242,411**	**2,308,519**	**2,376,587**	**2,446,673**	**2,518,837**	**2,593,141**	**2,669,649**	**2,748,426**	**2,829,540**	**2,913,060**	**2,999,058**	**3,087,608**	**3,178,785**	**3,272,669**	**3,369,339**	**3,468,879**	**3,571,374**	
LEDs + new PECU																							
Energy efficiency	35.677%																						
Energy Consumption																							
Consumption kWh		4,823,979	4,823,979	4,823,979	4,823,979	4,823,979	4,823,979	4,823,979	4,823,979	4,823,979	4,823,979	4,823,979	4,823,979	4,823,979	4,823,979	4,823,979	4,823,979	4,823,979	4,823,979	4,823,979	4,823,979	4,823,979	-64.32% Savings calculation check
Price per kWh		0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.17	0.18	0.18	0.19	0.19	0.20	0.20	0.21	0.22	0.22	0.23	0.24	0.24	0.25	
Cost		673,157	693,352	714,152	735,577	757,644	780,374	803,785	827,898	852,735	878,317	904,667	931,807	959,761	988,554	1,018,211	1,048,757	1,080,220	1,112,626	1,146,005	1,180,385	1,215,797	
Carbon Consumption (yr)																							
Price per tonne		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Cost		39,122	39,913	40,719	41,542	42,381	43,237	44,110	45,001	45,910	46,838	47,784	48,749	49,734	50,738	51,763	52,809	53,876	54,964	56,074	57,207	58,362	
Affected Maintenance (year)																							
Saving per Legal variation		- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	- 76,681	
SPV on the energy consumption over the baseline		64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	
Total cost - new LED bulbs		699,599	720,584	742,190	764,438	787,344	810,929	835,214	860,219	885,965	912,474	939,770	967,875	996,814	1,026,611	1,057,293	1,088,885	1,121,414	1,154,909	1,189,398	1,224,911	1,261,478	
Percentage LEDs installed (cumulative)		**0%**	**31%**	**94%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	Tab D
Annual Phased cost		**1,996,467.43**	**1,637,467**	**825,804**	**764,438**	**787,344**	**810,929**	**835,214**	**860,219**	**885,964.58**	**912,474**	**939,770**	**967,875**	**996,814**	**1,026,611**	**1,057,293**	**1,088,885**	**1,121,414**	**1,154,909**	**1,189,398**	**1,224,911**	**1,261,478**	
Walsall Loan required	12,514,945																						
Loan Repayment																						12,514,945.03	Loan receipt and payments to Amey assumed to offset, MRP dealt with separately in budgets tab (as MRP not cashflow)
Interest	2.14%		267,819.82	267,819.82	267,819.82	267,819.82	267,819.82	267,819.82	267,819.82	267,819.82	267,819.82	267,819.82	267,819.82	267,819.82	267,819.82	267,819.82	267,819.82	267,819.82	267,819.82	267,819.82	267,819.82	267,819.82	
NEW ANNUAL COST (lights to be converted)		**1,996,467**	**1,905,287**	**1,093,624**	**1,032,257**	**1,055,164**	**1,078,749**	**1,103,034**	**1,128,038**	**1,153,784**	**1,180,294**	**1,207,589**	**1,235,695**	**1,264,634**	**1,294,431**	**1,325,113**	**1,356,705**	**1,389,234**	**1,422,729**	**1,457,218**	**1,492,731**	**14,044,243**	
COST saving /(increase)	**16,723,345**	**0**	**150,000**	**1,022,225**	**1,145,949**	**1,187,247**	**1,229,770**	**1,273,553**	**1,318,635**	**1,365,053**	**1,412,847**	**1,462,060**	**1,512,731**	**1,564,906**	**1,618,629**	**1,673,945**	**1,730,903**	**1,789,551**	**1,849,940**	**1,912,121**	**1,976,148**	**-10,472,869**	
Discount factor	**3%**	**1**	**0.971**	**0.943**	**0.915**	**0.888**	**0.863**	**0.837**	**0.813**	**0.789**	**0.766**	**0.744**	**0.722**	**0.701**	**0.681**	**0.661**	**0.642**	**0.623**	**0.605**	**0.587**	**0.570**	**0.554**	Note: Used same discount factor as recent financial modelling i.e. WTS/HWRC
Net realisable value (cos	**13,856,927**	**0**	**145,631**	**963,545**	**1,048,705**	**1,054,854**	**1,060,810**	**1,066,581**	**1,072,171**	**1,077,585**	**1,082,830**	**1,087,910**	**1,092,829**	**1,097,594**	**1,102,207**	**1,106,675**	**1,111,001**	**1,115,189**	**1,119,244**	**1,123,170**	**1,126,970**	**-5,798,574**	