

CAPITAL INVESTMENT BUSINESS CASE

Central Management System (Lighting) – 2023



EXECUTIVE SUMMARY

The Executive Summary is a short summary of the Business Case and should be the last section you complete, this will enable you to 'cut and paste' key details from relevant sections. The summary is a 'snapshot' of the business case which will need to tell the story and sell the proposal.

Proposal: Introduction of a Street Lighting Profiling Regime

Creating a Variable Profiling lighting strategy offers Plymouth City Council an opportunity to save a significant amount of energy and carbon emissions, BMJ have carried out detailed survey across the UK to study the effects of adoption on strategy, comparing Traffic Collision and Crime Data sourced from police data across 62 local authorities.

The data indicates an overall reduction on traffic collisions, interestingly, a reduction of Burglary, Robbery, Vehicle and Violence is evidenced when such profiling is adopted.

The argument is so pressing, especially if reduction of energy usage, CO² emission and Light Pollution is augmented into the reasoning, that many Local Authorities have already adopted or are moving towards such an arrangement, this includes our immediate neighbours (Cornwall, Devon and Exeter) as well as scalable city comparisons – (Bristol & Milton Keynes) it is reported that 85% of all local authorities now dim their street lighting installations.

This strategy must however be based upon consideration of many variables which detailed below, these considerations are laid out in BS5489, ILP:TR27, as well as DFT Transport Analysis Guidance (TAG)

There are four types of lighting requirements for street lighting within this consideration:- residential, commercial, retail and Main Road Networks.

The purpose of carrying out an assessment is to support the proposed dimming profiles that are to be applied and endorse the regime that is then selected for the variable lighting levels. It is recommended in TR25 that the profile regime is reflected across all classifications of roads, to this end, a review of ADT has been averaged across all road types to generate a picture of traffic movement without turning our street lighting installation 'off'

This approach has been benchmarked against industry standards and has been reviewed by an industry expert, Matthew Lugg OBE- Head of Profession at WSP (President of the Chartered Institute of Highways and Transportation CIHT (2018-2019)). And supported by Devon & Cornwall Police

The system is based on 'Open Protocol' communication arrangement which enables other applications to the CMS system, including Emergency Services adaptation during emergencies, Monitoring of Air Quality, Road Temperature Sensors for Gritting optimisation, Traffic Data Capture, V2X communication for semi-autonomous future proofing to be added at a future date and this is linked to our TCF2 initiative

SECTION I: PROJECT DETAIL

Project Value (indicate capital or revenue)	£2.500M Challenge Fund = £1.5M Service Borrowing = £1M	Contingency (show as £ and % of project value)	£100k
---	---	--	--------------

Programme	Highways Maintenance	Directorate	Place
Portfolio Holder	Cllr Jonathan Drean	Service Director	Phillip Robinson (Street Services)
Senior Responsible Officer (client)	Philip Robinson	Project Manager	Phil Bellamy
Address and Post Code	Plymouth City	Ward	Citywide

I. INTRODUCTION AND OVERVIEW

LED (Light Emitting Diodes) and CMS (Central Management System) technologies are the most effective way of reducing the ongoing costs of a lighting service, meeting the challenge of rising energy prices whilst improving the quality of light and implementing a sustainable and flexible control to this asset. In addition to a significant reduction in energy consumption and carbon emissions, LED's and CMS when utilised in tandem, can also reduce the requirement for regular planned and reactive maintenance, therefore potentially providing further revenue savings.

Installing a CMS at either the point of LED installation, or retrospectively, will future proof the asset and ensure that it can be adapted at little cost to meet future challenges and changes in standards. It is also consistent with many of the principals of the 'Smart Cities' agenda - energy efficient, connected, integrated and intelligent.

This report provides estimated headline savings for adopting CMS and variable lighting regimes in the Plymouth City area, detailed in Section 2.

In order to illustrate the savings presented below, the inventory held within Mayrise asset management system has been filtered to focus upon the Urbis Ampera LED street lighting element only. Lamp types that are generally associated with Subways and Sign Lights were removed, and any discrepancies from standard wattages were re-categorised to ensure consistency.

A realistic approach has been taken on the lighting levels required to appropriately light the Plymouth City network to the relevant standards, however, it is anticipated that additional savings could be introduced with dynamic dimming, weekend traffic profiling, reassessment of lighting level classification and new LED canopies. Further details of the assumptions made to produce the savings and payback options in this report can be found in Section 5.

2. SAVINGS AND PAYBACK OPTIONS

The following potential savings have been calculated based upon the variable lighting strategy found in Section 3, along with the assumptions detailed in Section 5.

Potential Co2 Savings
Per Annum - min

538 Tonnes

Potential Energy cost
saving over 1st full year

Variable

Potential Energy saving
per annum - min

**1,758,753
kWh**

Potential Lighting asset
Energy reduction

Variable

These saving illustrations are based on standard dimming profiles and can be increased should local policy decide

The impact of the areas of special consideration (Section 3.3) have not been taken into account for this projection, however, savings could be further enhanced through Dynamic Dimming as detailed in section 3.2 below

The tables below detail the assessed energy consumption from the existing Urbis Ampera inventory and the implementation of a three-stage dimming profile.

Existing Urbis Ampera Inventory calculation

Lamp type	Energy rating	Consumption PA / Per Unit	Total Units	Total Consumption PA	Total Energy Cost (Year 1)	CRC Tonnes
Ampera Midi 16x 26W	26 W	107 kWh	18143	1,937,818 kWh	£293,579	544.53
Ampera Midi 16x 21W	21 W	86 kWh	32	2,761 kWh	£418	0.78
Ampera Midi 24x 30W	30 W	123 kWh	725	89,349 kWh	£13,536	25.11
Ampera Midi 24x 40W	40 W	164 kWh	1000	164,320 kWh	£24,894	46.17
Ampera Midi 24x 29W	29 W	119 kWh	649	77,317 kWh	£11,713	21.73
Ampera Midi 32x 49W	49 W	201 kWh	45	9,058 kWh	£1,372	2.55
Ampera Midi 32x 65W	65 W	267 kWh	3923	1,047,519 kWh	£158,699	294.35
Ampera Midi 48x 73W	73 W	300 kWh	37	11,096 kWh	£1,681	3.12
Ampera Midi 48x 97W	97 W	398 kWh	2751	1,096,207 kWh	£166,075	308.03
Ampera Midi 64x 96W	96 W	394 kWh	46	18,141 kWh	£2,748	5.10
Ampera Midi 64x 102W	102 W	419 kWh	196	82,127 kWh	£12,442	23.08
Ampera Maxi 96x 106W	106 W	435 kWh	10	4,354 kWh	£660	1.22
Ampera Maxi 96x 158W	158 W	649 kWh	21	13,630 kWh	£2,065	3.83
Totals:		3,664 kWh	27578	4,553,697 kWh	£689,885	1279.59

Variable Lighting Strategy Calculation

Lamp type	Light at 100%		Light at 70%		Light at 50%		Consumption / Unit	Total Units	Total Consumption PA	CRC Tonnes
	Energy rating	Burnin g Hours	Energy rating	Burnin g Hours	Energy rating	Burnin g Hours				
LED - 16	26 kWh	458	18 kWh	1,095	13 kWh	2,555	65 kWh	18175	1,182,320 kWh	332.23
LED - 24	40 kWh	458	28 kWh	1,095	20 kWh	2,555	100 kWh	2374	237,590 kWh	66.76
LED - 32	65 kWh	458	46 kWh	1,095	33 kWh	2,555	163 kWh	3968	645,316 kWh	181.33
LED - 48	94 kWh	458	66 kWh	1,095	47 kWh	2,555	235 kWh	2788	655,704 kWh	184.25
LED - 99W	102 kWh	458	71 kWh	1,095	51 kWh	2,555	255 kWh	242	61,759 kWh	17.35
LED - 132W	158 kWh	458	111 kWh	1,095	79 kWh	2,555	395 kWh	31	12,255 kWh	3.44
Total								27578	2,794,944 kWh	785.38

3. VARIABLE LIGHTING STRATEGY

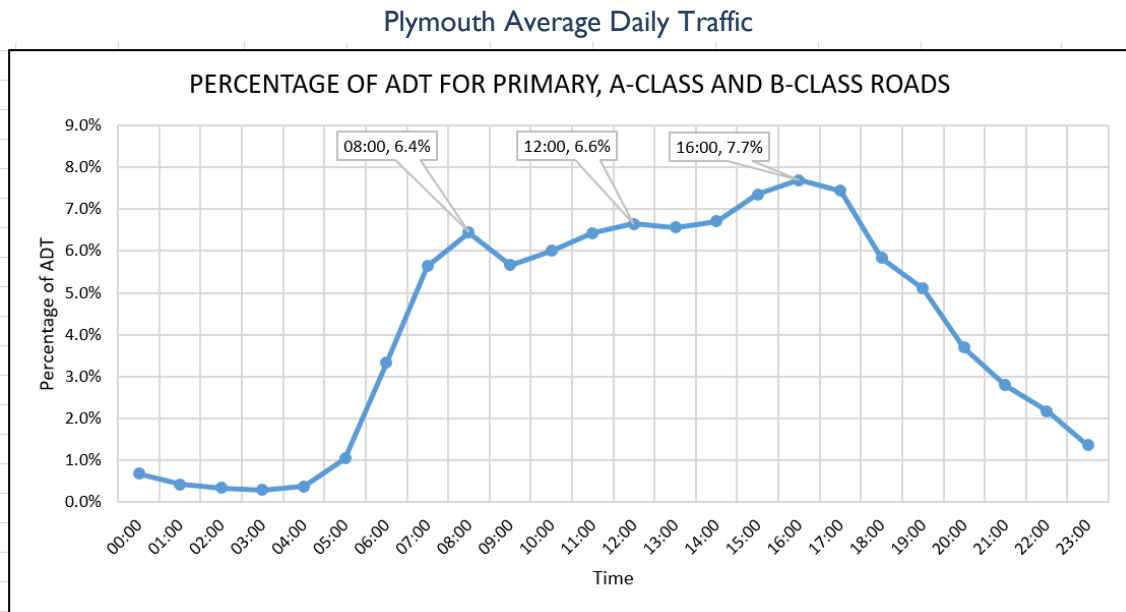
3.1. DIMMING PROFILES

Creating a variable lighting strategy (profiling) offers Plymouth City Council an opportunity to save a significant amount of energy and carbon, however, this strategy must be based upon considerations of variables which include:

- Hourly traffic flow of vehicles per day with a consideration of Average Daily Traffic count (ADT)
- Traffic Calming / Conflict areas that require higher lighting levels
- Crime data
- Accident data

Two types of lighting street lighting are considered, residential areas and traffic routes.

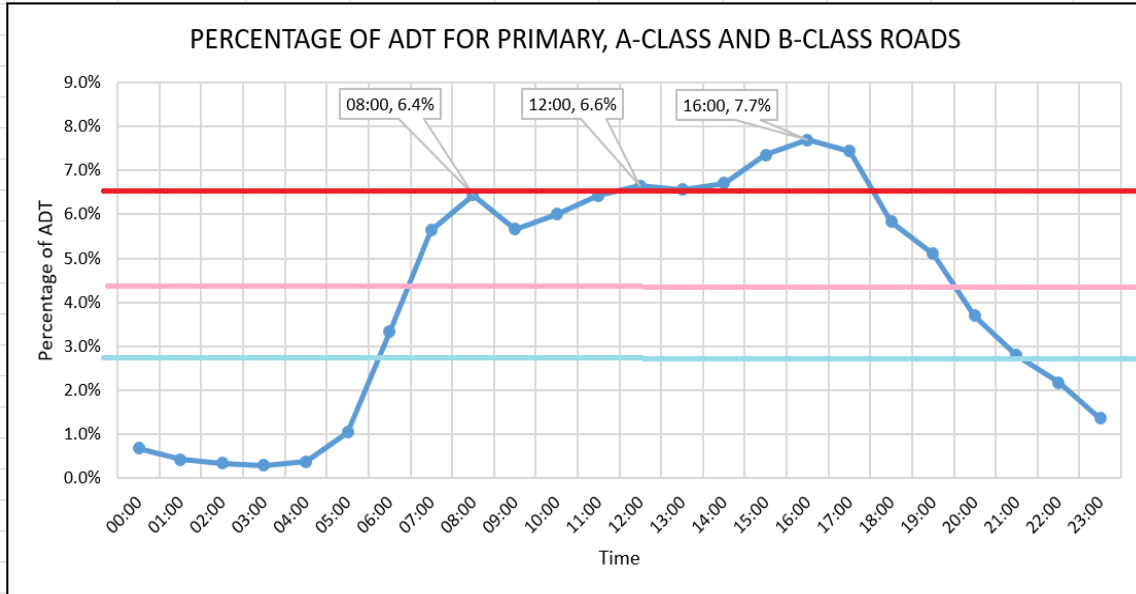
The purpose of carrying out an assessment is to support the proposed profiles that are to be applied and would endorse the regime that is then selected for the variable lighting levels. It is recommended in TR25 that the regime is reflected across all classifications of roads, to this end, a review of ADT has been averaged across all road types to generate a picture of traffic movement:



Based upon Plymouth City’s average road of an ADT of 23323, peak at 08.00 is 1505 ADT, light reduction threshold is 1,000 ADT and a further reduction level at 652 ADT (this would need to be assessed and stated in our LA policy).

A baseline of peak traffic flow is set at the lowest peak flow level 6.4%, using this the first and second thresholds can be created (as can be seen in the graph below), allowing for dimming point selection.

Plymouth base lines of traffic flow



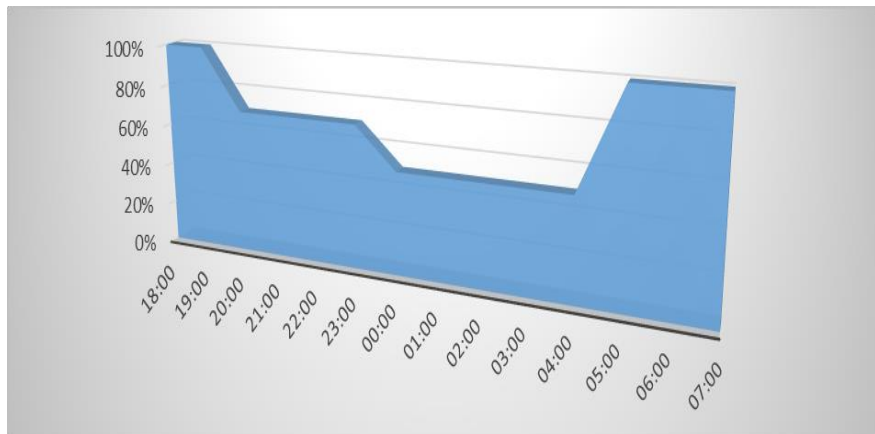
For the savings calculation found in Section 2 above, a three-step dimming profile was created. This profile broadly follows Plymouth’s primary ADT data and allows for slight movement in the predicted traffic peaks. This regime has been adopted on similar networks and comparable roads throughout the country.

The profile consists of the following stages:

- **Stage one** - 100% light output between 05:00 – 20:00 during the hours of darkness
- **Stage two** - Dim to 70% light output between 20:00 – 22:00
- **Stage three** - Dim to 50% light output between 22:00 – 05:00

Stage one: lights the road to the desired lighting class through times of peak traffic and pedestrian movement.

Stages two & three: drops the lighting level by one lighting class as the traffic flows recede, this is determined by traffic volumes and risk assessed to ensure compliance to the lighting standards found in BS5489.



Traffic Route Lighting Classes

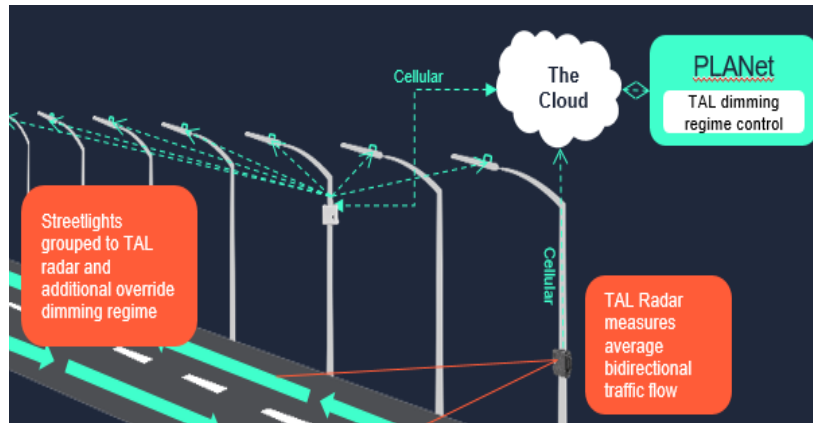
Traffic Lighting Class	cd - m2	U _o	U _l	TI	SR
M3 – Stage 1	1	0.4	0.6	15	0.5
M4 – Stage 2	0.75	0.4	0.6	15	0.5
M5 – Stage 3	5	0.4	0.4	15	0.5

Subsidiary Road Lighting Classes

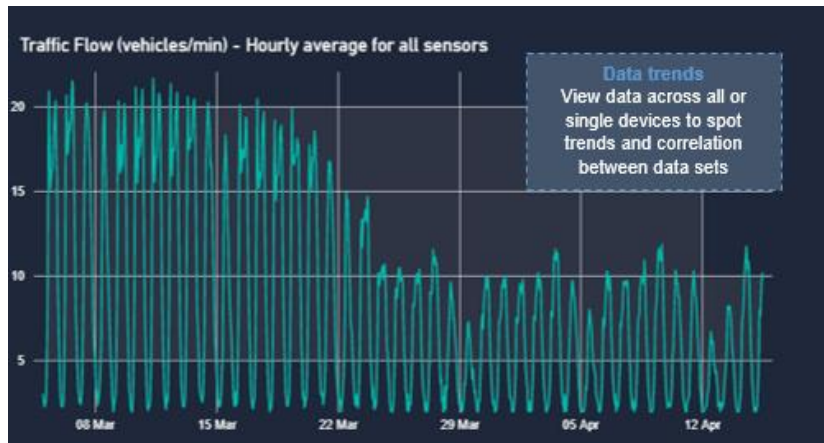
Subsidiary Lighting Class	EAV (Lux)	EMIN (Lux)
P3 – Stage 1	7.5	1.5
P4 – Stage 2	5	1
P5 – Stage 3	3	0.6

3.2. DYNAMIC DIMMING

Real time dynamic dimming could be used to further enhance the saving produced by the standard staged dimming. As demonstrated above, traffic flow is a key element of determining a lighting class and therefore the amount of light required. Traffic Counters monitoring live traffic flows allows the CMS to autonomously dim lighting on the road being monitored to the appropriate level to suit, meaning that energy savings are maximised, and the right amount of light is in the right place at the right time.



As can be seen in the traffic flow graphic, a dynamic system is able to react to changes as soon as they occur. This allows the system to react to real time situations. It also adds flexibility to creating a static regime as it can take advantage of real traffic patterns that can be dramatically different over weekend and holiday periods.



3.3. AREAS OF SPECIAL CONSIDERATION

Traffic calming / Conflict Areas

Where there are areas of traffic calming ‘build outs’ or traffic calming arrangements there is a requirement not to reduce the lighting levels below P4. In respect to Zebra Crossings, PCC follow a policy to offer ‘Positive Lighting’ at these positions and have their own lighting source at point (Limitation 1)

Accident data

A review of traffic accident data is being carried out and an accident cluster report has been generated by the Authorities Road Traffic Safety team. The report shows all the A, B and C classified roads plotted accidents during the hours of darkness where street lighting is present, this analysis may limit the opportunity to offer profiles at locations where high accident rates are identified (Limitation 2)

The report looks at statistics over a 5-year period. Roads with 1 or more fatal accidents are shown and we have now received a written report detailing reasons that the accidents occurred.

Crime data

Plymouth City Centre and Shopping Centres show the highest crime rates, and profiling regimes set in these areas will take into account this data, CCTV coverage and the pedestrian routes to car parks and main public transport terminals will also be reviewed. Consideration should also be given

to the lighting in areas that are open late at night such as pubs, clubs and restaurants etc. this is another limiting factor on chosen dimming regimes. Data will be further analysed with the assistance of the Community Connections Strategic Manager (David Ryland (Limitation 3))

4. BENEFITS

4.1. FUTURE PROOFED WITH CMS

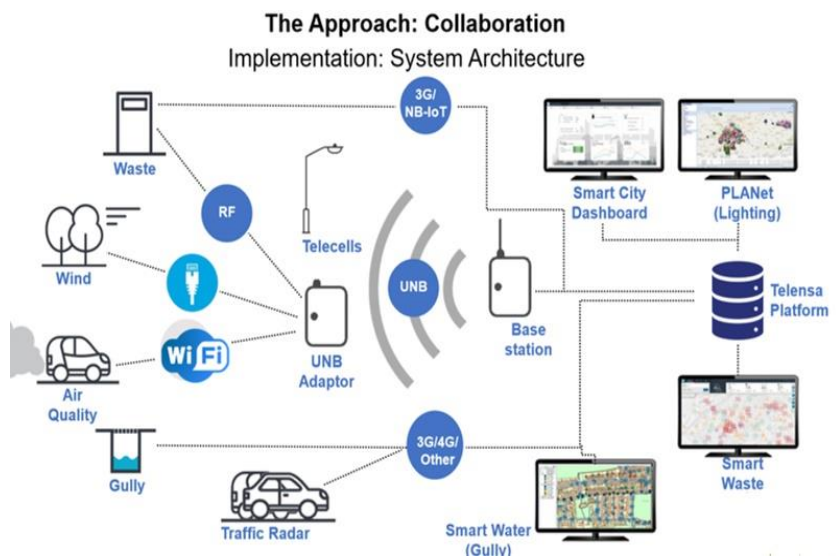
The standard benefits of CMS (such as variable dimming, variable switching of burning hours, fault reporting and monitoring) are widely publicised, however it is the flexibility and, in our experience, reliability of the systems that has made CMS a key tool in managing the lighting asset.

When installed ongoing changes and adaptations to the lighting policy can be implemented at no further cost. For example, dimming and switching regimes can be implemented or altered post the initial installation of the system. This allows the user to adapt to ongoing challenges such as budgetary constraints and rising energy prices by remotely reprogramming the dimming and switching regimes of the lighting points, from a web-based portal.

Whilst the dimming and switching changes should be undertaken via a documented, risk based process, and in line with the standards and industry guidance, the flexibility of the system provides protection from the unknown in that it can allow for emergencies, as the lights can remotely be turned back up to full output. Dimming trials can be implemented in an area, and if the results are not favourable, then the system can revert to normal operation with zero costs incurred from the trial.

4.2. CMS SENSOR INTERGRATION

Increasingly, Central Management Systems are being adapted to provide platforms for Smart City sensors and systems. In some cases, the existing CMS communications networks can be utilised to transmit small amounts of data, however with large amounts, CMS providers are supplying hubs that act as the infrastructure that will support applications benefiting the wider Highways service. Projects across the country are trialling various technologies including gully, wind speed and waste bin monitoring.



The street lighting asset is well placed to install robust air quality sensors, allowing Plymouth City to not only monitor air quality gaining valuable information, but also study the effects of traffic calming and mitigation measures, ensuring that any preventative actions can demonstrate tangible results. With the CMS backhaul capabilities in place, this would allow sensors to be easily deployed and moved to areas of most interest, some of the benefits of air quality sensors are:

- Enables cities to gather and share hyper-local air quality for the first time
- Cities can target areas where air quality matters: e.g. outside universities, schools, hospitals and at busy junctions
- Detailed enough to correlate with traffic data and health outcomes

- Highly valuable data for monetisation

Smart highways deployment



Street lighting



Traffic adaptive lighting



Waste



Air quality



Drainage

4.3. ENERGY AND ENVIRONMENT

The significant energy savings from a full CMS installation are listed above in Section 2 of this report, and it should be noted that energy consumption from lighting is a substantial part of an organisation's total energy liability. The energy used is obviously proportionate to Co2 emissions; a key target for reduction for us all.

The trimming of burning hours and dimming can provide significant savings in energy if adopted. When applied correctly and using a Central Management System, this will not have a detrimental impact on the safety of road users and pedestrians. The adoption of dimming regimes across the industry is now commonplace, and industry guidance (such as the ILP 'Guidance on the application of adaptive lighting within the public realm' (PLG 08)), underpins the acceptance that it forms an integral part of today's lighting strategy and promotes application of the correct criteria to ensure safety. The CMS can also adjust light levels as and when required to address the requirements of incidents, accidents and events.

A reduction in the light level of around 25% is not markedly visible to the eye as the uniformity of the lighting design is not affected, meaning that the identification of objects, shapes and characteristics of the highway are unimpeded. Additionally, the second phase of dimming would not drop the lighting levels below the permissible limits of BS 5489 (as highlighted in Section 3 above), providing the appropriate levels on the highway for traffic or pedestrian activity.

4.4. MAINTENANCE & NETWORK

The improved reliability of LED lanterns promotes a number of improvements and efficiencies for budgets, maintenance teams and road users alike. These include:

- **Reduced Maintenance costs:** With no lamps to cyclically change, the routine lamp change will not exist, and in addition to this direct savings, other routine maintenance activities (such as clean and electrical test) can be combined in one visit to introduce further efficiencies. Scouting at night for outages can also be replaced by the CMS identifying faults.
- **Traffic Management savings:** For the reduction in both routine and reactive maintenance activities, the subsequent requirement for Traffic Management will be proportionately reduced.
- **Less Network disruption:** The less activities taking place, and less TM on the network, means less disruption for road users.
- **Safety implications:** The reliability and clarity of the light reduces a number of risks associated with this area of the service. A reduction in visits means that we are sending people into the highway less, less exposure to working with electricity and at height, and less interaction with road users and pedestrians. Keeping light levels to the BS5489 will ensure that lighting is suitable for the volume of road users and pedestrians.
- **Perception of service:** Frustrations from interrupted journeys, and dark patches in the road, can have a negative impact on the user experience of the service. Less outages and disruption on the network, will assist in this respect and also enhance Key Performance Indicators.

4.5. SOCIAL

A well designed, modern lighting installation can do much to enhance the confidence in people when transiting the network at night. The colour rendering ability and clarity provided by LED's increase the ability of CCTV to record facial recognition and assist in reducing the fear of crime. The improved reliability of the assets can give surety to users when using public transport and contributing to the night-time economy, that there will not be dark spots and the overall feel would be one of security.

5. ASSUMPTIONS

There are a number of assumptions that have been made in order to produce the figures detailed in Section 2, these include but are not limited to:

- The projection does not include lamp types that are indicative of sign lights or subway fittings
- Standard burning hours for the South Western area have been used
- The existing Switching Regime has been taken as 35/18 Lux
- The starting energy price used for the models was 16p per kilowatt hour now running at 31p per kilowatt hour
- The energy projection is based upon 3% increase per annum
- Inflation has been based at 3% per annum
- All savings would start once the installation is completed; part year savings are dependent upon timely submissions of changes to the energy supplier.

The Request

This business case requests to add £2.500M to the Capital Highways Programme over the next five years, utilising existing Challenge Funding of £1.500M and £1.000M Service Borrowing

Summary

Overall this business case outlines the advantages for the council to invest in its local infrastructure and ensure that the council's objective of being a welcoming city is realised. There are several benefits that this capital bid would bring to the city of Plymouth which include:

- Providing a safer and sustainable highway network
- Reducing the rate of failure for critical assets and improve its resilience
- Improve public perception and satisfaction with the highway network
- Reduce the burden on the revenue budget
- Get better value for money
- Better collaboration with supply chain
- Supporting Climate Agenda

If the council were to decide not to proceed with this proposal there would be several risks that would need to be closely managed and maintained. These include:

- Revenue allocation insufficient to cover energy costs
- Opportunity to substantially reduce CO² emissions missed
- Links to 'SMART CITY' advantage not maximised (Clean Air, Road Sensors, Traffic Counts etc.)
- Traffic & Crime reduction opportunity

Why is this your preferred option: (Provide a brief explanation why this option is preferred) and (Explain why this is a good capital investment and how this would be an advantage for the Council) and (explain how the preferred option is the right balance between the risks and benefits identified below).

Preferred Option

This preferred option looks to install a city wide CMS arrangement, offering a cost effective, proven system to control, limit and maximise efficiency of the street lighting installation

Benefit

The benefits of this business case have been developed using the PESTLE Analysis which is summarised below:

Political Benefits:

The proposed business also supports the following council objectives:

An efficient transport networks

A green, sustainable city that cares about the environment

People feel safe in Plymouth

A welcoming city

Economic Benefits:

The capital investment put forward in this business case utilises asset management principles which seeks to optimise the process of measurement and control of the street lighting installation over their whole design life. This ensures capital investment can be targeted on value for money long-term planned activities that prevent expensive unnecessary levels of light on empty and light traffic counted highways, alleviating the pressure on revenue budgets. This approach not only maximises value for money but also manages risks maintaining a safe, secure and accessible highway network for our all customers.

Social Benefits:

This business case considers the social need of the city, by focusing on maintaining the lighting installation (those most critical for social needs) in a steady state condition and managing the MRN, Resilient Network and Residential Areas.

Technological Benefits:

The modelling used for the business case has utilised the councils Highways Asset Management system so that the information used is data-driven and can be robustly defended. Links to Smart City, 5G, Open Protocol, Data Capture and resilience are embedded in the forward planning and adoption of such technology

Legal Benefits:

By undertaking the capital work highlighted within this business case Plymouth City Council are continuing their statutory duty to maintain the highway whilst making use of proven technology to ensure the engineered solution is correctly offered. This business case also considers the Highways Code of Practice which advises a risk-based approach.

Environmental Benefits:

Plymouth City Council have currently declared a Climate Emergency and have made a pledge to become carbon neutral by 2030. Investing capital funding into the highway networks using a long-term programme will support this agenda by:

Ensuring future proofing activities are co-ordinated, resulting in less disruption on the network with associated extra journey times and emissions, is minimised

The opportunity of major CO² reduction activities are taken

The asset management approach will actively consider those highways that are susceptible to climate change; this will be reflected in the maintenance regimes adopted for such highways.

Option Analysis: (Provide an analysis of 'other' options which were considered and discounted, the options considered must be a 'do Nothing' and 'do minimum' and 'viable alternative' options. A SWOT – Strength, Benefit, Opportunity, Threat analysis could be attached as an appendix). Copy and paste table if you need options 4,5 and 6.			
Criteria	Option 1	Option 2	
Proposed Solution:	No further capital investment to secure CMS	City Wide CMS Installation	
List Benefits:	None	<p>Significant benefits arise including a decrease in carbon emissions and lower electricity consumption. These have been quantified above.</p> <p>Light pollution and central overhead savings are detailed</p> <p>Other qualitative benefits are broadly positive. Vehicle and pedestrian safety are assessed as having a positive impact, Dark Sky Association (IDA) – reduction of light pollution</p> <p>Provides higher protection to the Council against future energy cost rises</p>	
List Risk / Issues:	<p>Public Service 'buy in' political resistance to change of lighting policy</p> <p>Attempted litigation – seek secure review of PCC Lighting Policy</p> <p>Energy supplier changes charging mechanism</p> <p>Revenue allocation not sufficient to cover energy commitments</p>		
Cost:	£0	£2.500M	
Why did you discount this option	No future proof strategy, Long term impact on revenue, CO ² emissions unacceptable		

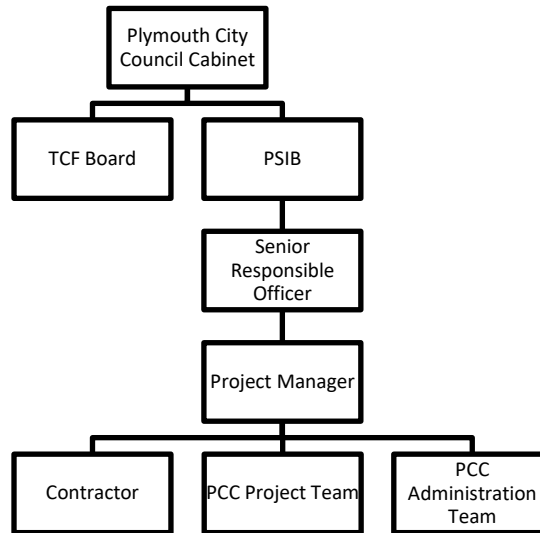
Strategic Case:	
Which Corporate Plan priorities does this project deliver?	an efficient transport network
	focus on prevention and early intervention
	a welcoming city
Explain how the project delivers or supports delivery of Joint Local Plan/Plymouth Plan Policies (include policy references)	<p>An Efficient Transport Network: By investing capital funding into the highway network, we are adding value to the network and improving its condition overall. In doing this we will be providing a safer, more robust and resilient highway network to support efficient travel across the city.</p> <p>Focus on Prevention and Early Intervention: The asset management approach that has been used to build this business case utilises the components of prevention and early intervention to apply best value for money treatments to the models.</p> <p>A Welcoming City: The highway network is used on a daily basis by all residents and those visiting the city. By adding value into the network through capital schemes the aesthetic of the city is improved and offers a more welcoming atmosphere.</p> <p>This project also supports the following policies in the Joint local Plan:</p> <p>SO12 - Delivering infrastructure and investment by allowing for a longer term data led programme of infrastructure investment</p> <p>SPT9 - Strategic principles for transport planning and strategy by supporting the existing transport network to support the move to genuine alternative ways to travel.</p>

Project Scope: *(To avoid scope creep and cost escalation it is important to have an agreed scope of what the project will and will not deliver. List below what is included and not included in the project 'budget'. Projects should be delivered within scope and budget, but should project change happen then the business case requires revisiting, updating and re-approval)*

In Scope	Out of Scope
Maintenance of Highway Assets	Creation of New Highway Assets

Project Governance: *How the project delivery is structured (amend inserted chart as appropriate)*
High Risk Projects will require a Project Board Chaired by Portfolio Holder

Low Risk Projects will require a structured Project Team reporting to Portfolio Holder



Milestones and Date:

Contract Award Date	Start On Site Date	Completion Date
1/2023	3/2023	1/12/2024

Who are the key customers and Stakeholders	Electorate Council	Which Partners are you working with	TBC
---	---------------------------	--	------------

SECTION 2: PROJECT RISK, OUTCOMES AND BENEFITS

Risk Register: *The Risk Register/Risk Log is a master document created during the early stages of a project. It includes information about each identified risk, level of risk, who owns it and what measures are in place to mitigate the risk).* **The Risk Register/Log must accompany the business case.**

Have you completed a Risk Register / Risk Log If so, include as Appendix I	No Not Included
---	--------------------

Outcomes and Benefits: List the outcomes and benefits expected from this project.
*(An **outcome** is the result of the change derived from using the project's deliverables. This section should describe the anticipated outcome)*
*(A **benefit** is the measurable improvement resulting from an outcome that is perceived as an advantage. Benefits are the expected value to be delivered by the project, measurable whenever possible)*

Financial outcomes and benefits:	Non-financial outcomes and benefits:
Reduced risk from insurance cases due to targeted approach on critical assets. Reduced impact on long term financial requirement due to timely investment. Avoidance of costly critical asset failure and associated economic disruption	Enhanced public safety Improved critical transport infrastructure Greater resilience in highways assets Supporting sustainable transport Supporting Environmental aims such as assisting with the climate emergency

--	--

SECTION 3: CONSULTATION

Does this business case need to go to CMT	Yes	Date business case approved by CMT <i>(if required)</i>	
--	-----	---	--

Have you engaged with Planning Department.		No
If so, summarise the planning requirements. <i>(If PP is required ensure you engage with planning prior to seeking approval of this Business Case)</i>		
Is the budget cost reflective of planning requirements		
Who is the Planning Officer you consulted with.		
Planning Consent Date	N/A	

Have you engaged with Building Control. <i>(If no, please state the reason)</i>		No Not Applicable
Is the Building Control pre-application registered		
What is the pre-application number		
Is this classed as a HRRB building	No	
Is this building classed as 'high risk'	No	
Who is the Building Control Case Officer	Select Case Officer Name	

Low Carbon

What is the anticipated impact of the proposal on carbon emission	This project will support the transition and uptake of more sustainable forms of transport such as public transport, walking and cycling by maximising lit environment. Also resultant Carbon Emission reduction is mapped in excess of 538 Tonnes per annum
How does it contribute to the Council Carbon neutral by 2030.	Opportunity to reengineer existing asset layout to reduce energy consumption and CO2 emissions.

Have you engaged with Procurement Service.		Yes
Procurement route options considered for goods, services or works.	Sign Off Code – HG/PS/662/ED/122 In line with the Council's Contracts Standing Orders and Public Contracts Regulations 2015 the following procurement route to the market options will be considered:	

	<p>1. Run an independent procurement process subject to the Public Contract Regulations</p> <p>A Goods and Services contract of this category and value would require full compliance with the Regulations. Given the standard nature of the requirement an Open (single stage) or Restricted (two stage) procedure would be undertaken as below:</p> <ul style="list-style-type: none"> • Open procedure- single stage procurement combining suitability assessment and award criteria into one evaluation. Nationally advertised and open to any supplier who wishes to submit a tender. Used for procurements where the requirement can be clearly defined and the market is limited. No negotiation permitted. • Restricted procedure- two stage procurement where suppliers are initially assessed on their suitability and only shortlisted suppliers are subsequently invited to submit tenders. First stage is nationally advertised and open to any supplier who wishes to submit a selection questionnaire. Used for procurements where the requirement can be clearly defined but the market is saturated. No negotiation permitted <p>Whether running an independent process represents best value for money for the Council will be assessed as part of the pre-publication gateway stage.</p> <p>2. Run a procurement process through a framework</p> <p>Frameworks are pre-established agreements which enable contracting authorities to procure from lists of pre-approved suppliers, with agreed terms and conditions. Every framework is different and the rules of each must be followed in order to compliantly award a contract. Frameworks suitable for this requirement will need to be identified and the extent to which they represent best value for money for the Council will be assessed as part of the pre-publication gateway stage.</p> <p>3. Utilise an existing agreement</p> <p>There may be agreements which the Council already has in place that can be used to procure the requirement. For example the Council has a Highways Term Maintenance Contract with South West Highways which was extended to include the installation and maintenance of street lighting in 2018. Whether utilising an existing agreement such as the Highways Term Maintenance Contract is legal and the extent to which it represent best value for money for the Council will be assessed as part of the pre-publication gateway stage.</p>
<p>Procurements Recommended route.</p>	<p>Following approval of the business case the department in collaboration with the relevant Procurement team(s) will assess which legally compliant route to market represents best value for money for the Council.</p> <p>This recommendation including evidence of the aforementioned options assessment will be captured in the pre-publication gateway document and approved in accordance with the authority as set out in section 4 of the executive decision</p>
<p>Who is your Procurement Lead.</p>	<p>Holly Golden</p>

Which Members have you engaged with and how have they been consulted <i>(including the Leader, Portfolio Holders and Ward Members)</i>	CLLR JONATHAN DREAN (PH) CLLR MARK COKER (SHADOW PH)
--	---

Confirm you have taken necessary Legal advice, is this proposal State Aid compliant, if yes please explain why.	YES – SIGN OFF CODE EJ/38851/6..12.22(2)
Who is your Legal advisor you have consulted with.	EMMA JACKMAN

Equalities Impact Assessment completed <i>(This is a working document which should inform the project throughout its development. The final version will need to be submitted with your Executive Decision)</i>	Yes
--	-----

SECTION 4: FINANCIAL ASSESSMENT

FINANCIAL ASSESSMENT

In this section the robustness of the proposals should be set out in financial terms.

Sign Off Code PL22.23.326 – Ruth Didymus

The Project Manager will need to work closely with the capital and revenue finance teams to ensure that these sections demonstrate the affordability of the proposals to the Council as a whole.

CAPITAL COSTS AND FINANCING

Breakdown of project costs including fees surveys and contingency	Prev. Yr.	19/20	20/21	21/22	22/23	23/24	Future Yrs.	Total
	£m	£m	£m	£m	£m	£m	£m	£m
Procurement of system	-	-	-	-	0.500	1.000	-	1.500
Roll out of SMART Platform	-	-	-	-	0.225	0.675	-	0.900
Officer Design Time	-	-	-	-	0.025	0.075	-	0.100
Total capital spend	-	-	-	-	0.750	1.750	-	2.500

Provide details of proposed funding: *Funding to match with Project Value*

Breakdown of proposed funding	Prev. Yr.	19/20	20/21	21/22	22/23	23/24	Future Yrs.	Total
	£m	£m	£m	£m	£m	£m	£m	£m
DfT Challenge Fund (already in the approved Capital Programme)	-	-	-	-	0.750	0.750	-	1.500

Service Borrowing	-	-	-	-	-	1.000	-	1.000
Total funding	-	-	-	-	0.750	1.750		2.500

S106 or CIL (Provide Planning App or site numbers)			
Which alternative external funding sources been explored (Provide evidence)	Dft Incentive fund (already received uncommitted in the Capital Programme) (£1.5M) Delivery interdependent of the deteriorated column project (8559/1900) as this could supports installation costs, this however would defer saving realisation		
Are there any bidding constraints and/or any restrictions or conditions attached to your funding	N/A		
Tax and VAT implications	The provision of street lighting is a statutory, non-business activity of the Council. The VAT incurred on costs relating to this project will be fully recoverable, therefore, and there will be no adverse impact on the Council's partial exemption position.		
Tax and VAT reviewed by	Sarah Scott		
Will this project deliver capital receipts? (If so please provide details)	N/A		
Schemes in excess of £0.5m should be supported by a Cost Benefit Analysis. Calculations undertaken should be attached as an appendix to support financial implications shown below. Please contact your revenue accountant for assistance with this section.			
Is the capital ask greater than £0.5m	Y	If the answer is yes, have you attached the Cost Benefit Analysis	N

REVENUE COSTS AND IMPLICATIONS

Cost of Developing the Capital Project (To be incurred at risk to Service area)

Total Cost of developing the project	£0
Revenue cost code for the development costs	-
Revenue costs incurred for developing the project are to be included in the capital total, some of the expenditure could be capitalised if it meets the criteria	N
Budget Managers Name	Philip Bellamy

Ongoing Revenue Implications for Service Area							
	Prev. Yr.	22/23 £m	23/24 £m	24/25 £m	25/26 £m	26/27 £m	Future yearly
Service area revenue cost							
Loan repayment (<i>terms agreed with Treasury Management</i>)	-	-	-	0.130	0.130	0.130	0.910
Maintenance Costs	-	-	-	0.020	0.020	0.020	0.140
Total Revenue Cost (A)	-	-	-	0.150	0.150	0.150	1.050
Service area revenue benefits/savings							
Energy Consumption	-	-	(0.229)	(0.563)	(0.563)	(0.563)	(3.941)
Maintenance	-	-	-	(0.010)	(0.010)	(0.010)	(0.070)
Total Revenue Savings (B)	-	-	(0.229)	(0.573)	(0.573)	(0.573)	(4.011)
Service area net (benefit) cost (B-A)	-	-	(0.229)	(0.423)	(0.423)	(0.423)	(2.961)
Has the revenue cost been budgeted for or would this make a revenue pressure	This has been reported to cabinet 10/11/22 as reduced street lighting costs by investing in a new computer management system that helps reduce energy costs						
Which cost centre would the revenue pressure be shown	6123		Has this been reviewed by the budget manager			Yes	
Name of budget manager	Philip Bellamy						
Loan value	£1.000M	Interest Rate	5.00%	Term Years	10	Annual Repayment	£129,505
Revenue code for annual repayments	6123						
Service area or corporate borrowing	Service borrowing						
Revenue implications reviewed by							

SECTION 5: Monitoring Performance and Post Project Review

To conclude, the purpose of a business case is to outline the business rationale for undertaking a project and to provide a means to continually assess and evaluate project progress throughout delivery. It is the responsibility of the project manager to ensure the project remains on time and within budget during delivery and to monitor the project throughout and provide a Post Project Review on completion.

Investment Team Monitoring:

The Investment Team are required to report on completed projects and what they have achieved. To do this information will need to be captured during delivery and on completion of the project from your Post Project Review including:

- Did the project deliver the intended outcomes and benefits as stated in the business case.
- Which company was the contract awarded, is this a local company.
- How many jobs did this project provide.
- How much income from Council Tax and NHB will be collected.
- How has the carbon omissions been mitigated and how much did this cost
- Was the project delivered on time and on budget (including contingency)

Finance Monitoring :

It is essential for Capital Finance Team to monitor the financial element of projects during delivery for reporting purposes. Monthly spend profiles against budget, matching with finance profiles will be collected monthly during delivery and on completion of the project.

Version Control: *(The version control table must be updated and signed off each time a change is made to the document to provide an audit trail for the revision and update of draft and final versions)*

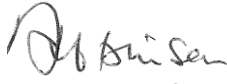
Author of Business Case	Date	Document Version	Reviewed By	Date
Philip Bellamy	16/02/2020	v 1.0		
Philip Bellamy	22/12/2020	v 2.0		
Philip Bellamy	29/9/2021	v 3.0		
Philip Bellamy	01/11/2022	v 4.0	Ruth Didymus	23/11/2022

**SECTION 6
: RECOMMENDATION AND ENDORSEMENT**

Recommended Decision

It is recommended that the Leader of the Council:

- To approve the Business Case, for the procurement and installation of a Central Management System to enable the Council to deliver a variable profiling lighting strategy across the city.
- Allocate £1.000m for the project into the Capital Programme funded by Service Borrowing
- Approve the commencement of a procurement process for a Central Management System.
- Delegate to the Service Director for Street Services the authority to:
 - i. approve the final procurement route where it is not already delegated in the scheme of delegation; and
 - ii. award the resulting contract where they would not already have authority to award it within the scheme of delegation.

Councillor Richard Bingley		[Name, department]	
Either email dated:	<i>date</i>	Either email dated:	<i>date</i>
Or signed: 		Signed:	
Date: 08/02/2023		Date:	
		Service Director	
		<i>Philip Robinson, Service Director – Street Services</i>	
		Either email dated:	<i>date</i>
			
		Signed:	
		Date: 3.2.23	