

EPC PLUS REPORT

Gemini Court, 2 Thomas More Square, London, E1W 1YW

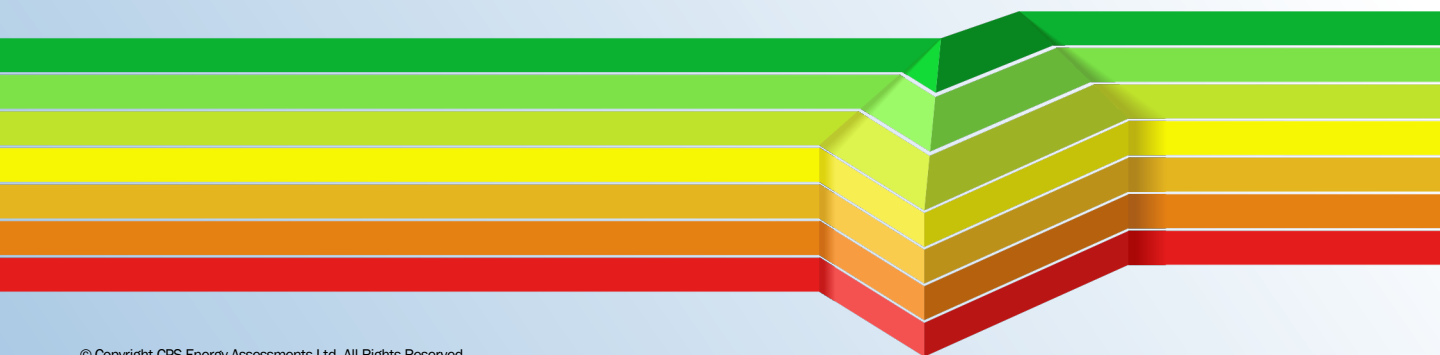


5 April 2023



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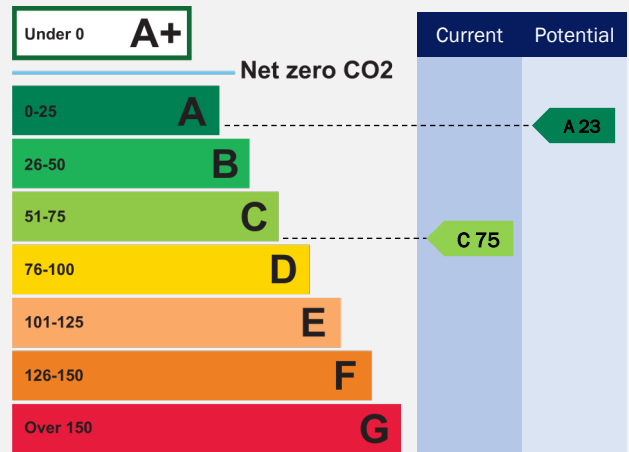
Executive Summary

1.0 Building Details



| | |
|-----------------------------|---|
| Building Address: | Gemini Court, 2 Thomas More Square, London, E1W 1YW |
| Floor Area: | 9,652m ² |
| Date of Survey: | 14 March 2023 |
| EPC Assessor: | Neil Bajaj |
| Report Author: | Oliver Penrose |
| Software: | Virtual Environment v7.0.19 |
| Baseline EPC Rating: | C 75 |

2.0 Current and Potential Ratings



3.0 Measures Each measure is based individually from the Baseline EPC rating

| Option | Recommended measures | Rating after improvement | EPC Score Improvement | CO ₂ Emissions Saving (kg/CO ₂ /yr) | Indicative Capital Cost | Financial Analysis | | |
|--------|---|--------------------------|-----------------------|---|-------------------------|--------------------|-----------------|----------------|
| | | | | | | Operational Cost | Savings | Payback Period |
| | Baseline Rating | C 75 | | | | £275,482 | | |
| 1 | Improve Specific Fan Performance (SFP) to 1.6W/l/s | C 61 | 14 | 29,535 | £35,000 | £220,988 | £54,494 | 0.6 years |
| 2 | Replace existing lighting with LED luminaires throughout and install photoelectric daylight dimming | C 62 | 13 | 28,377 | £650,000 | £221,932 | £53,550 | 12.2 years |
| 3 | Replace existing HVAC system with high efficiency VRF system | B 37 | 38 | 78,181 | £2.4m | £135,943 | £139,539 | 17.2 years |
| 4 | Make Air Permeability improvements | C 74 | 1 | 2,220 | £8,000 | £271,967 | £3,515 | 2.3 years |
| 5 | Combine option 1, 2 and 4 | B 45 | 30 | 62,641 | £693,000 | £161,361 | £114,121 | 6.1 years |
| 6 | Combine option 2, 3 and 4 | A 23 | 52 | 106,944 | £3.058m | £83,876 | £191,606 | 16.0 years |

4.0 Technical Description of Measures

Option 1 - Improve Specific Fan Performance (SFP) to 1.6W/l/s



5.1 The SFP is a parameter measured in W/l/s that quantifies the energy-efficiency of an air distribution system. It is a measurement of the electric power that is needed to drive a fan (or collection of fans), including all losses through switchgear and controls such as inverters, divided by the amount of supply and extract air that is circulated through the system. The lower the SFP is, the more energy-efficiency the air distribution system. The current SFP value is 3.0 W/l/s. This measure is to investigate options to improve the SFP to 1.6 W/l/s. Options for improving the SFP may include installing new technologies into the AHU such as direct driven motors, variable frequency drive, electronically commutated (EC) fan motors and backward curved centrifugal fans. It may be found that achieving this target SFP with the existing AHU may not be feasible and a new AHU may have to be installed to achieve this target.

Option 2 – Replace existing lighting with LED luminaires throughout and install photoelectric daylight dimming



5.2 The second option is to replace the existing lighting with LED Luminaires throughout. It is recommended that before this measure is implemented that a lighting design is undertaken to ensure that the correct level of illumination is used throughout. When entering this measure into SBEM, the option we selected for inputting the lighting details was 'Lighting chosen but calculation not carried out' - which uses the equation Luminaire Efficacy (lm/W) = Lamp Efficacy (lm/W) × Light Output Ratio. This measure is based on the lamps having no less than 100 'lamp lumens per circuit-watt' and the luminaires having no less than an 100% 'light output ratio'. It must be noted that whilst most new LEDs will achieve 100 'lamp lumens per circuit-watt', the target of an 100% 'light output ratio' is dependent on the efficiency of the luminaire (i.e. the amount of useful light that makes it out of the luminaire), therefore this may mean that the whole of the luminaire may need to be changed and not just the lamp to achieve this target. These parameters for the 'lamp lumens per circuit-watt' and 'light output ratio' must be supported by documentary evidence such as manufactures' data sheets or from a lighting design in order for an assessor to enter them into SBEM in the above manner. Please note that an integrated LED luminaire can be assumed by the assessor as having a 'light output ratio' of 100%.

This option also includes installing photoelectric daylight switching/ dimming (standalone). This is often known as Daylight Harvesting and takes advantage of naturally available light and can be a key energy saving strategy for commercial spaces. The principle is simple, the electrical lights in a space can automatically be dimmed down or turned off when enough natural light is entering the space. A correctly designed daylight sensor system for a building can typically deliver energy savings of between 20-60% in electricity costs for lighting. It helps maintain the proper light level for a space, so it is never too dark or too bright and because it continuously adjusts lights automatically, occupants don't have to manually adjust them as daylight levels change.

Option 3 – Replace existing HVAC system with high efficiency VRF system

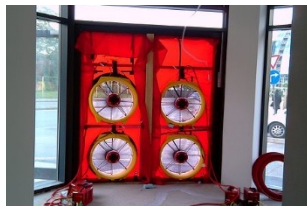


5.3 The third option is to replace the existing HVAC System (VAV System) supplying the building with a highly efficient & modern VRF system. SBEM works on the basis of calculating a rating based on energy used within the building; therefore, energy hungry systems such as VAV systems will always produce a poorer EPC rating due to high amount of Auxiliary energy the system uses. This measure is based on the VRF system having a minimum Seasonal Coefficient of Performance (SCOP) of 4.0 and a minimum Seasonal Energy Efficiency Rating (SEER) of 4.0. It is proposed that the external VRF condensers could go where the current chillers are positioned, and new internal cassette diffusers would be installed to the buildings ceilings to deliver the heating/ cooling to the building. Based on when floors come available for renovation, a modular design approach can be implemented, allowing for stand-alone installations on various floors to match the renovation schedule. Upon project completion, the central control enables scheduling, monitoring and troubleshooting of all individual floors and zones as a unified building system. This can contribute to completing a varying renovation schedule and allowing occupancy of the spaces much faster than could be achieved with any traditional HVAC solution.

This measure would also include upgrading and modifying the existing mechanical ventilation system to become a fresh air supply and extract system to work in tandem with the VRF system with SFP of 1.6W/l/s. It is also recommended to install a heat recovery system such as a Thermal Wheel or a Run Around Coil or equivalent into the AHU with a minimum efficiency of 75%. Run Around Coils recover heat from exhausted air and heats incoming fresh air, without the airflows mixing i.e. with no cross contamination. Heat recovery efficiencies depend on the temperatures etc, but are typically 55-75%. For this measure we have set the heat recovery efficiency at 75% in the software to illustrate how much the EPC rating would improve. The feasibility of this HVAC system is dependent on a more in-depth study by a mechanical engineer or other suitably qualified person.

4.0 Technical Description of Measures

Option 4 – Make Air Permeability improvements



4.4 The fourth option is to make air permeability improvements to achieve a value of $10\text{m}^3/\text{h}/\text{m}^2$. Where no air pressure test has been carried out a default air permeability rating of $25\text{m}^3/\text{h}/\text{m}^2$ is to be entered into the software for buildings of this age. By undertaking an air pressure test, identifying leaks and making air tightness improvements and then re-testing, the building has the opportunity to achieve a value of $10\text{m}^3/\text{h}/\text{m}^2$ and thereby improving the EPC rating.

Option 5 – Combine option 1, 2 and 4

4.5 This option is a combined option based on option 1, 2 and 4, with all required to provide the results described.

Option 6 – Combine option 2, 3 and 4

4.6 This option is a combined option based on option 2, 3 and 4, with all required to provide the results described.



5.0 Fuel Costs

5.1 Fuel prices were obtained from Quarterly Energy Prices published by the Department of Energy and Climate Change in March 2023. These prices were as follows:

Electricity: 24.07p per kWh **Gas:** 5.44p per kWh

6.0 Software

6.1 The Baseline EPC certificate was originally prepared using the accredited software Virtual Environment v7.0.19 using the Building Energy Model calculation engine ApacheSim v7.0.19.

7.0 Methodology

7.1 In order to establish a baseline energy performance for your building, an EPC assessment has been carried out. This recent draft EPC is referred to in this report as the 'Baseline EPC', and all analysis in this report has been conducted from this starting point.

7.2 The 'Individual Measures' table outlines the individual measures being recommended to improve the Baseline EPC rating, with indicative budget figures(excluding VAT). This table is not cumulative and each measure is based individually from the Baseline EPC rating. The carbon factors used to calculate the CO₂ emission savings are taken from the latest version of Part L of the Building Regulations. The table also gives the indicative Financial Analysis of the individual effect of adopting each measure. This is based on the energy requirements taken from SBEM for Space Heating, Hot Water, Cooling, Ventilation and Lighting and calculated against the current average commercial rates for Electricity and Gas.

7.3 In many cases, the implementation of one measure alone is inadequate to achieve the ultimate objective of the exercise: an EPC rating of E to comply with the Energy Efficiency Regulations requirements. Therefore, it is customary for a number of improvement measures to be cumulatively combined in order to achieve compliance. Determining the optimum combination strategy requires modelling scenarios in such a way that reflects the most appropriate prioritisation of decision-making criteria such as cost and EPC point improvement.

8.0 Non-Domestic Energy Performance Certificates

8.1 Since October 2008 a Non-Domestic EPC is required for a commercial building when it is constructed, sold or let. A certificate must be made available to the prospective purchaser tenant or building control officer at the point of marketing the sale or lease or the completion of building works. An EPC can only be issued by an accredited assessor and it must be registered on the national database. Once lodged, the certificate is valid for 10 years. Some buildings are exempt from the EPC requirements, examples of which are 'listed buildings' and buildings which are not intended to be occupied.

8.2 The EPC looks broadly similar to the energy labels now provided with vehicles and many household appliances. Its purpose is to indicate how energy efficient a building is. The certificate will provide an energy performance asset rating of the building.

8.3 The rating is made up of two parts, firstly an alphabetical **A** to **G** banding, where an **A** band is very efficient and a **G** band is the least efficient. The better the banding, the more energy-efficient the building is and the lower the energy costs are likely to be.

8.4 Secondly, within the alphabetical banding there is a scoring system consisting of 25 points per band, i.e. Band **A**'s scoring goes from 0 to 25, Band **B**'s scoring goes from 26 to 50, and so on until **G**. The numerical scoring of the **G** band has no limit. There is also an additional banding of with a numerical scoring starting at -1. As the numerical value of 0 (zero) is equal to a carbon foot print of 0 we can conclude that some buildings are now able to produce more energy that they use. This is possible through the installation of 'green technologies' such as photo voltaic, wind turbine etc.

9.0 The Energy Efficiency Regulations 2015

Energy Act

9.1 In 2011 the coalition government released the Energy Act 2011. The Act has three principal objectives: tackling barriers to investment in energy efficiency; enhancing energy security; and enabling investment in low carbon energy supplies. Section 49 of The Act placed an obligation on the Secretary of State for Energy and Climate Change to bring into force by 1st April 2018 regulations which will make it unlawful for a landlord to lease a property in England and Wales which does not meet a prescribed minimum energy efficiency standard. The Act requires the property's energy efficiency standard is to be demonstrated by an EPC.

Energy Efficiency (Private Rented Property) (England and Wales) Regulations 2015

9.2 The Energy Efficiency (Private Rented Property) (England and Wales) Regulations 2015 were passed into law on the 26th March 2015. Property's with an EPC rating of 'F' or 'G' are defined in the Regulations as a sub-standard property. The Regulations makes it unlawful from 1st April 2018 for landlords to grant a tenancy to new or existing tenants for a sub-standard non-domestic property, without implementing cost-effective energy efficiency improvements or fulfilling an exemption criterion. From 1st April 2023, landlords must not continue letting a sub-standard non-domestic property which is already let.

The Non-Domestic Private Rented Property Minimum Standard 2017

9.3 In February 2017, the Government released the 'Guidance for landlords and enforcement authorities on the minimum level of energy efficiency required to let non-domestic property under the Energy Efficiency (Private Rented Property) (England and Wales) Regulations 2015'. This document provides guidance and advice on the scope of the regulations, the relevant improvements works that can be carried out on a sub-standard non-domestic property, the cost effectiveness of improvements, the exemptions and exclusions, the enforcement framework and the appeals process.

Some of the key points of the Regulations are as follows:

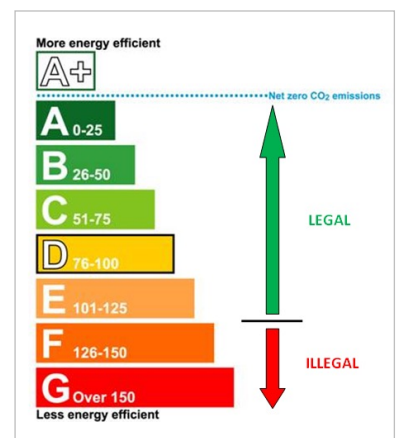
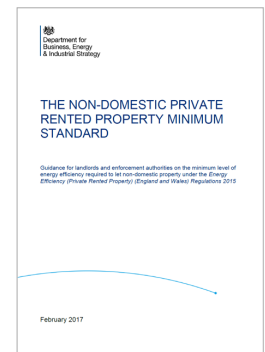
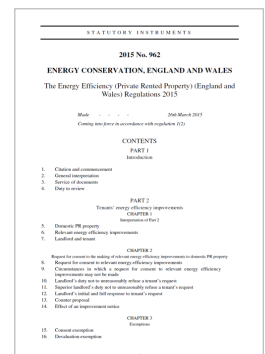
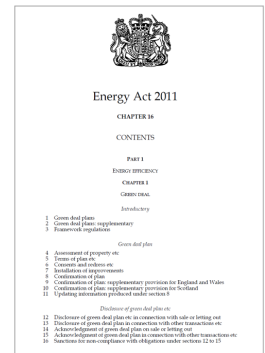
9.4 Exemptions

There are a number of exemptions to the Regulations. Landlords will be eligible to register an exemption on the PRS Exemptions Register in the following circumstances:

- Where no EPC is required for the building.
- Where the capital cost of improvements are not cost effective, i.e. with a payback of seven years or less.
- The cost improvements do not meet the Green Deal's Golden Rule (should a Green Deal report have been commissioned).
- Improvements would diminish the capital value by more than 5%.
- Despite reasonable efforts, the landlord cannot obtain consent from third parties.
- All the relevant energy efficiency improvements that can be made to the building and it's energy performance remains below an EPC rating of 'E'.
- If a person has only just become a landlord.

9.5 Enforcement and penalties

- The Regulations will be enforced by Local Weights and Measures Authorities (LWMAs), who may serve compliance notices if they believe a landlord is in breach of the regulations.
- If it is proven that a landlord has been in breach. Depending on how far the breach goes, the LWMAs may impose a financial penalty up to £10,000 or 20% of the rateable value of the property (whichever is greater), up to a maximum penalty of £150,000.
- Other fines of £5,000 can be applied if a landlord is found to have published false or misleading information on the PRS Exemptions Register or if the landlord has failed to comply with a compliance notice.



10.0 Implications for Owners, Investors and Funders

10.1 Impacting already

As the April 2023 deadline date now looms ever closer the requirement of achieving compliance with The Energy Efficiency Regulations are being felt even more than when the Regulations initially commenced in 2018. Most lenders will now not approve loans on sub-standard properties, and some will only lend if an energy efficiency upgrade plan is agreed to. Many RICS Valuers will not sign-off a valuation unless they have seen and had regard to a building's EPC rating. Prospective tenants will seek buildings well clear of the EPC Grade F and G "danger zone".

10.2 Get information

The first step is to obtain EPCs on all your assets to find the problem buildings. Over the past number of years we have undertaken hundreds of complete portfolio EPC surveys. This gives a full data-set from which landlords and asset managers can make informed decisions. Noting the date of any existing EPCs is critical.

10.4 Our solution

We provide a comprehensive service to property owners and their professional advisors. We calculate the EPC for the building "as is" and model different refurbishment scenarios in our software to calculate the effects on the EPC grade. Many of our clients are now developing strategies to upgrade their existing assets to just achieve an EPC Grade B by one point. We strongly recommend that no building refurbishment is undertaken until the impact on the EPC is calculated before the works are carried out.

10.5 Benefits

An important consideration that well informed Landlords and Asset Managers try to achieve when upgrading buildings is to improve the thermal environment and lighting levels (lux) of a building so that it makes a more comfortable working environment for the occupiers/ workers. Satisfaction with the thermal environment is important because it influences productivity and health. Workers who are satisfied with their thermal environment are more productive. Thermal discomfort has also been known to lead to sick building syndrome symptoms. The combination of high temperature and high relative humidity serves to reduce thermal comfort and indoor air quality. Appropriate placing of lighting and selecting the right level of illumination can enhance workers productivity and job satisfaction. For example, if lighting is excessive or causes glare on a computer monitor screen, workers may develop eyestrain, fatigue, headaches and be forced to continually adjust position.

10.6 Upcoming Changes

The government recently completed an energy performance consultation the purpose of which was to create a proposed framework for tighter minimum energy efficiency standards for privately rented non-domestic buildings in England and Wales. The results of that consultation are awaited, but the government confirmed that the long-term goal is for all non-domestic buildings to have an Energy Performance Certificate (EPC) rating of B by 2030. This change will affect around one million buildings.

To ease the transition to the government's objective of minimum EPC ratings of B by April 2030, the consultation proposed a series of deadlines for non-domestic buildings between 2023 and 2030. These phased implementation deadlines will likely be made up of two "compliance windows" each lasting two years.

First Compliance Window: EPC C (2025-2027)

- 1 April 2025: Landlords of all commercial rented buildings in scope of the Regulations must present a valid EPC.
- 1 April 2027: All commercial rented buildings must have improved the building to an EPC \geq C, or register a valid exemption.

Second Compliance Window: EPC B (2028 – 2030)

- 1 April 2028: Landlords of all commercial rented buildings in scope of Regulations must present a valid EPC.
- 1 April 2030: All commercial rented buildings must have improved the building to an EPC \geq B, or register a valid exemption.

This may be an incremental pathway but landlords be aware because at each enforcement in 2027 and 2030, landlords will need to demonstrate that the building has reached the highest EPC band that a cost-effective package of measures can deliver.

In addition, the Government intend to introduce the necessity for landlords to present a valid EPC two years before the relevant enforcement date for each EPC target. In essence, this will involve submitting the current EPC to an online PRS compliance and exemptions database. This will trigger a clear time period within which landlords will be expected to undertake improvements if they have not done so already.

It is estimated that only 12% of commercial premises have an EPC rating of B or above so there will need to be some significant upgrades to existing buildings.

11.0 Limitations

11.1 As the name suggests SBEM is a simplified building energy model and the inputs into the software is open to interpretation to the assessor and their skills and knowledge in regards to the SBEM software, buildings M&E and construction. The information and inputs used to produce the EPC is based on a visual non intrusive survey of the building.

11.2 Only through a site inspection by a qualified building surveyor would it be possible to confirm that the measures can be practically carried out to give such an improvement. The next stage would be a feasibility and option appraisal. Only once the changes have been made would a new EPC certificate rating be calculated and a further certificate could then be issued in place of the existing one. With improvements being made to the SBEM software through periodic updates to Building Regulations the actual EPC rating at the time of the completion of any site work could only be determined using the most up to date SBEM version at the time of re-assessment.

11.3 The cumulative measures generate an overall figure when this is done in the order shown in the table 4. If the measures were to be carried out in a different order then each cumulative figure would be different.

11.4 The measures given are a guide to what could be done for the costs given. Prices quoted in this report are purely indicative and only covers the equipment costs and installation costs of the measure and not to be utilised as part of any wider project costs i.e. redecoration, ancillary works, project management, consultancy work, etc. No responsibility for pricing can be taken by the individual assessor for any indicative capital cost quoted in this report. For full and accurate costing, a specialist surveyor from an organisation looking to implement any of the measures must conduct an independent site survey and quote production.

11.5 The actual technical feasibility of measures given in this report would need to be assessed by specialist consultants in that particular discipline i.e. Building Services Engineer, M&E Engineer, Structural Engineer, etc. Sometimes it may be found that measures are not technical feasibility. Furthermore, the measures given in this report are put forward purely for improving the EPC Rating of the building. The installation of some of these measures may be subject to comply with certain national standards i.e. Part B or Part F of the Building Regulations. Such matters fall outside of our expertise and remit and we advise seeking advice from specialist consultants in these disciplines.

11.6 The National Calculation Methodology (NCM) used within the SBEM model only covers regulated energy loads and does not include unregulated energy should as Lifts, Office and IT Equipment, Small Appliances, etc. The NCM uses standard occupancy hours, occupancy profiles, thermostat set points etc. for the different types of activities in a building and are non-editable by the energy assessor. In reality these may differ greatly in the actual building and along with the above-mentioned omitted unregulated energy there may be a large discrepancy between the Simulated and the Actual Energy Consumption of the building.

11.7 Revisions to the SBEM software are constant and some NCM (National Calculation Method) changes can result in an inferior rating even with no changes to the building. If any significant amount of time elapses then we would recommend refreshing this desktop exercise if any works are to be undertaken to improve the EPC rating.

11.8 All EPCs at the time of production are modelled in accordance with the latest version of the Non Domestic EPC conventions which are approved by MHCLG. These Conventions standardise the assessment process to ensure uniformity of approach in a way that will assist Accreditation Schemes and Non-Domestic Energy Assessors (NDEAs) and at the same time provide assurance to consumers that a consistent approach is being taken to carrying out energy assessments. Included within these conventions is a requirement that where an energy assessor comes across certain zones that are without any form of fixed buildings services i.e. office, retail etc, the assessor must assume a default HVAC system of fanned electric room heaters in these areas.

11.9 This report is intended as a guide for improving the buildings EPC rating. If based on this report the Landlord wishes to pursue an exemption in accordance with the Energy Efficiency Regulations 2015 this report alone would not be sufficient. A more detailed 'Exemptions' report would need to be carried out for the building in line with the methodology set out in Table two of the guideline document of the Regulations depending on which exemption is being pursued. For example if registering an exemption under the regulation 28(3) exception (where a measure in a valid recommendations report is not a "relevant energy efficiency improvement" because it does not meet the seven year payback rule) then the evidence to support this would require more in depths calculations on the seven years payback rule. The calculations would need to incorporate actual energy prices for the building based on previous 12 month billing, capital cost of installation of measures based on three quotations and calculating the interest rate factor for the repayment cost.

11.10 Prior to making improvements to your property, we strongly urge you to consider Enhanced Capital Allowances. Many of our clients obtain good tax relief when undertaking improvements via the Enhanced Capital Allowances scheme. We are not tax experts and we do not know your personal / corporate tax arrangements but we strongly recommend that you seek professional advice from a Capital Allowances Accountant BEFORE you start the process of upgrading your building. If you wish to look at more information on this, CIBSE (The Chartered Institution of Building Services Engineers), have a free guide online called Briefing 4. www.cibse.org