

VITAL EPC PLUS REPORT



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Linea House, Harvest Crescent, Fleet GU51 2UZ

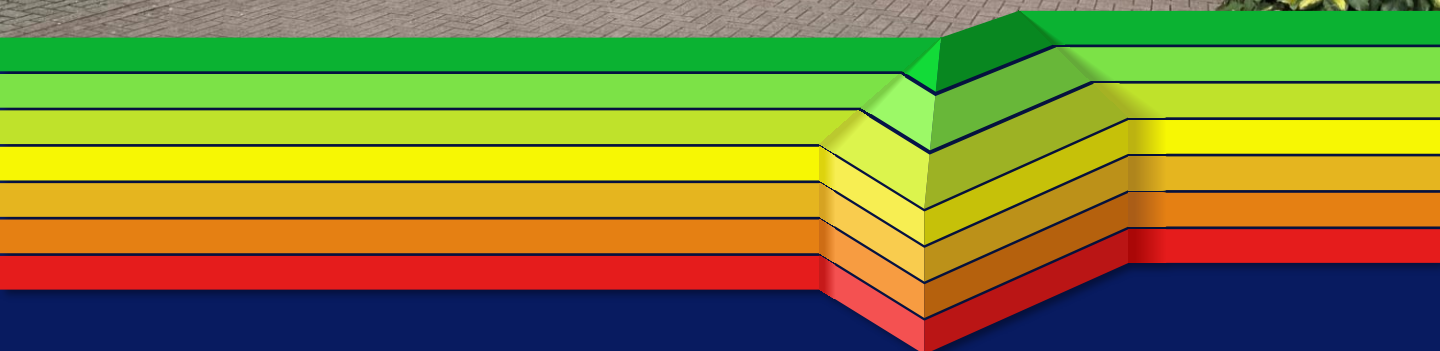




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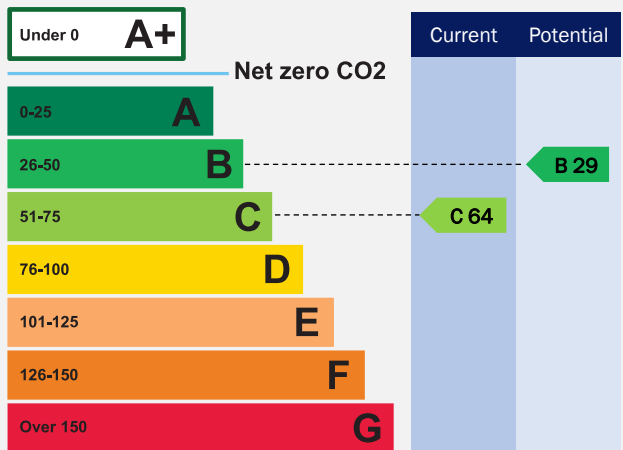
Executive Summary

1.0 Building Details



Building Address:	Linea House, Harvest Crescent, Fleet GU51 2UZ
Floor Area:	2,315 m ²
Date of Survey:	03 August 2021
EPC Assessor:	Ross Elphick
Report Author:	Ross Elphick
Software:	DesignBuilder SBEM v.7.1
Baseline EPC Rating:	C 64

2.0 Current and Potential Ratings



3.0 Individual 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 64				£45,619		
1	Air Pressure Test building and make permeability Improvements	C 62	2	1,644	£1,500	£45,324	£294	5.1 years
2	Install Photovoltaic (PV) Arrays	C 56	8	5,325	£82,368	£36,774	£8,845	9.3 years
3	LEDs throughout Office Areas	C 58	6	3,773	£207,840	£36,040	£9,579	21.7 years
4	Replace Gas Boiler with High Temperature Heat Pump	B 49	15	9,329	£100,000	£45,191	£428	233.7 years

4.0 Cumulative Measures Measures are cumulatively combined in chronological order

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 64				£45,619		
1	Air Pressure Test	C 62	2	1,644	£1,500	£45,324	£294	5.1 years
1+2	Above plus: Install PV Arrays	C 53	11	6,968	£83,868	£36,479	£9,140	9.2 years
1+2+3	Above plus: LEDs throughout Office Areas	B 46	18	11,043	£291,708	£26,728	£18,891	15.4 years
1+2+3+4	Above plus: Replace Gas Boiler with High Temperature Heat Pump	B 29	35	21,182	£391,708	£26,263	£19,356	20.2 years

5.0 Technical Description of Measures

Measure 1 - Make Air Permeability Improvements



5.1 The first measure is to carry out an air tightness test on the building and make air permeability improvements to achieve a value of 10m³/hr.m² at 50pa.

Air tightness testing (or air permeability) refers to the infiltration of cold air into a building and the escape of heated out of the building. Air leakage can occur through gaps and cracks in the fabric of the building envelope, allowing heat to escape, thus driving up heating bills and CO₂ production. A lack of attention to air leakage can result in:

- Dampness and/ or rising damp
- Excessive heat loss
- Increased heating and energy bills
- Drafts
- Reduced comfort for the occupants

Where a poor air test is achieved, a number of survey techniques (e.g. smoke testing) can be used to locate the cause of the problem and advise on the most practical remedial action.

Where no air pressure test has been carried out a default air permeability rating of 25m³/hr.m² is assumed for buildings of this age.

Measure 2 - Install PV Arrays



5.2 The second measure is to install approximately 58 kWp of PV solar panels on roof. This is approximately 375 m² of panels. For the purposes of this report, it was assumed that 173m² will be East facing, 130m² will be South facing and 72 m² will be West facing due to the shape of the existing roof.

Electricity generated by the PV system can be used with the building and instead of having to buy electricity from the grid. Any electricity not used within the building may be exported to the grid which can generate an income to the bill payer.

The exact amounts of solar panels that can be installed and the power generated from them will need to be assessed by a qualified solar panel engineer. The roof must also be checked by a structural engineer, to ensure the additional load can be supported.

An MCS certificate should also be obtained for the installation. The certificate will ensure quality and safety standards are met, it will provide an estimation of the amount of power that will be achieved and will generally be required if applying for any financial incentive schemes.

Measure 3 - Replace all existing non-LEDs with LED Luminaires in the Office Areas



5.3 The third measure is to upgrade the lighting to LEDs throughout the office areas of the property with a minimum efficiency of 121 lm/w. It has been assumed for this report that the same light fittings as being installed in Suite 1 on the ground floor will be used. (Ansell APACLED1/60/CW). It is assumed the lighting in the reception areas and toilets will remain the same.

It is recommended that before this measure is implemented that full lighting design calculations are undertaken. This will ensure that the correct level of illumination is used for the type of activity in the space and the light fittings are positioned in the correct location to provide an even distribution of light. The calculations will also maximise the impact the updated lighting will have on the EPC rating.

When entering lighting into the EPC Software SBEM, assessors must use one of three options:

1. Full Lighting Design Calculation Carried Out
 - Using this option provides the best results as it is an accurate representation of the lighting power and light output installed. Using this option must be backed up with the relevant calculation documentation.
2. Lighting Chosen but Calculation Not Carried Out
 - This option uses manufacture data sheets to indicate what the full design calculations would provide but is not as accurate as it makes assumptions about lighting levels.
3. Lighting Parameters Not Available
 - This is the default option assessors must use when no lighting information is available. It uses a worst case scenario for the type of light fitting installed for both power and light outputs. For LEDs, this is 50 lm/w, which is about half as efficient as current fittings available on the market.

5.0 Technical Description of Measures

Measure 3 – LEDs Cont...



Cont..

For the EPC impacts, we have selected the 'Lighting chosen but calculation not carried out' - which uses the equation $\text{Luminaire Efficacy (lm/W)} = \text{Lamp Efficacy (lm/W)} \times \text{Light Output Ratio}$. This measure is based on the lamps having no less than 121 '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 121 'lamp lumens per circuit-watt', the target of 100% 'light output ratio' is dependent on the design of the luminaire (i.e. the amount of useful light that makes it out of the fixture onto the working plane), therefore this may mean that the whole of the luminaire fitting 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 manufacture's data sheets or from a lighting design 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% as this is sometimes not provided on the datasheet for this type of light fixture.

Measure 4 - Replace LPHW Boiler with High Temperature Heat Pump



5.4 The fourth measure is to replace the natural gas fired LPHW Boilers with electric powered High Temperature LPHW Air Source Heat Pumps (ASHP). These heat pumps work by absorbing heat from the external air using a reverse refrigeration cycle rather than burning gas to heat the water flowing around the building.

The water coming from the ASHP would be the same temperature as that provided by the gas boilers, making them a direct replacement. This option allows for the continued use of currently installed HVAC systems in the building and would allow the LPWH radiators to remain untouched.

A hot water cylinder/buffer tank may need to be installed to act as a heat battery to allow the system to work at its optimum efficiency. The EPC impact of this measure is based on the ASHPs having a minimum Seasonal Coefficient of Performance (SCOP) of 3.0.

Measure 5 - Making Improvements to The Building



5.4 With the scale of the improvement measures suggested in this report to improve the EPC rating, it is highly advisable that the works are designed correctly by qualified engineers before they are implemented.

We recommend working with our independent CIBSE Chartered Building Services Engineers, to help you with this process.

Our qualified engineers have the necessary skills and experience in both Mechanical and Electrical Services in commercial building refurbishment projects of all sizes. They can ensure that the improvement works provide a cost-effective solution, minimising on-going energy costs, whilst ensuring the most suitable equipment is used for the properties occupational and business needs.

Please call us on 0345 111 7700 if you would like to discuss this in greater detail.

6.0 Fuel Costs

6.1 Fuel prices were obtained from Quarterly Energy Prices published by the Department of Energy and Climate Change in June 2022. These prices were as follows:

Electricity: 21.04p per kWh **Gas:** 7.60p per kWh

7.0 Software

7.1 The Baseline EPC certificate was originally prepared using the accredited software DesignBuilder SBEM v.7.1.2 using the Simplified Building Energy Model (SBEM) calculation engine SBEM_v6.1.c.0. The Simplified Building Energy Model is the national calculation methodology and, as the name suggests, it models using a simplified methodology to calculate a building's energy consumption and to produce an EPC asset rating.

8.0 Methodology

8.1 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.

8.2 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.

8.3 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.

8.4 The 'Cumulative Measures' table outlines how this can be achieved. The order of the measures listed in the following table follow the above described methodology to determine the pathway of measures that enables an EPC level to be reached that meets minimum requirements.

9.0 Non-Domestic Energy Performance Certificates

9.1 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 administered by Landmark plc. 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.

9.2 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.

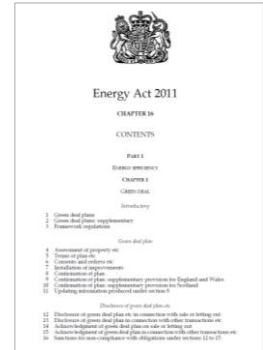
9.3 The rating is made up of two parts, firstly an alphabetical **A** to **G** banding, where an **A** band is very efficient and a **G** band is the least efficient. The better the banding, the more energy-efficient the building is and the lower the energy costs are likely to be.

9.4 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.

10.0 The Energy Efficiency Regulations 2015

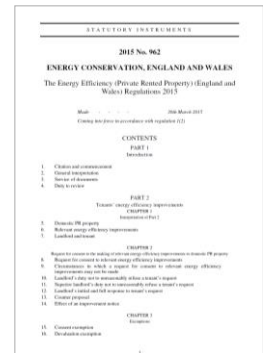
Energy Act

10.1 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.



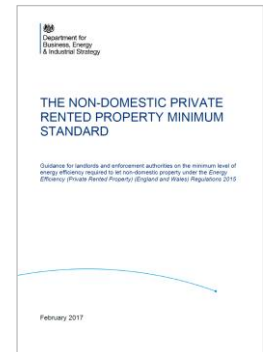
Energy Efficiency (Private Rented Property) (England and Wales) Regulations 2015

10.2 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

10.3 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:

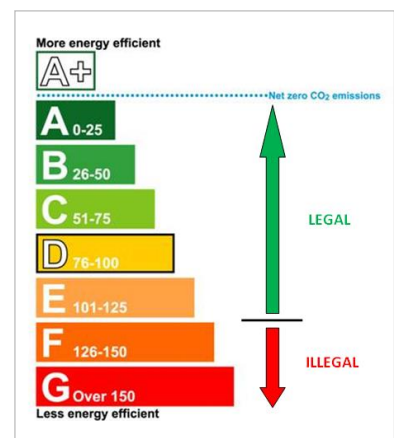
10.4 Exemptions

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.

10.5 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.





11.0 Implications for Owners, Investors and Funders

11.1 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".

11.2 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.

11.4 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.

11.5 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.

11.6 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.

12.0 Limitations

12.1 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.

12.2 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.

12.3 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.

12.4 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.

12.5 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.

12.6 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.

12.7 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.

12.8 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.

12.9 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.

12.10 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