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Energy Statement

Proposed refurbishment of Reading Cold Store, Deacon Way, Reading

for

Craftsman Brothers



Final version

Revision record

Report	Revision	Date	Prepared	Reviewed
Energy Statement	Rev_A	28.03.23	DB	JB
Energy Statement (updated PV details)	Rev_B	17.11.23	DB	JB
Energy Statement – design update	Rev_C	20.09.24	DB	JB

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Quality Management

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1. Executive Summary

1.1 Overview

The proposal is for the refurbishment and remodeling of the building currently known as Reading Cold Store facility.

This report has been prepared by Melin Consultants to demonstrate that the proposed refurbishment works reduce overall regulated carbon emissions per m² compared to the existing building. It is also intended to demonstrate a contribution towards Reading Borough Council Climate Change Strategy and specifically the target of reaching carbon neutrality by 2030.

Specifically the **Energy Statement** broadly aligns with the submission requirements of Reading Borough Council Sustainable Design and Construction Supplementary Planning Document *Dec 2019* in terms of the total estimated reduction in the refurbishment carbon and energy emissions against the existing and a baseline building.

1.2 Key Findings

CO₂ reduction by kgCO₂/m²/yr through improved thermal performance, LED lighting, electric heating and on-site energy generation is **72.21%** over the existing building.

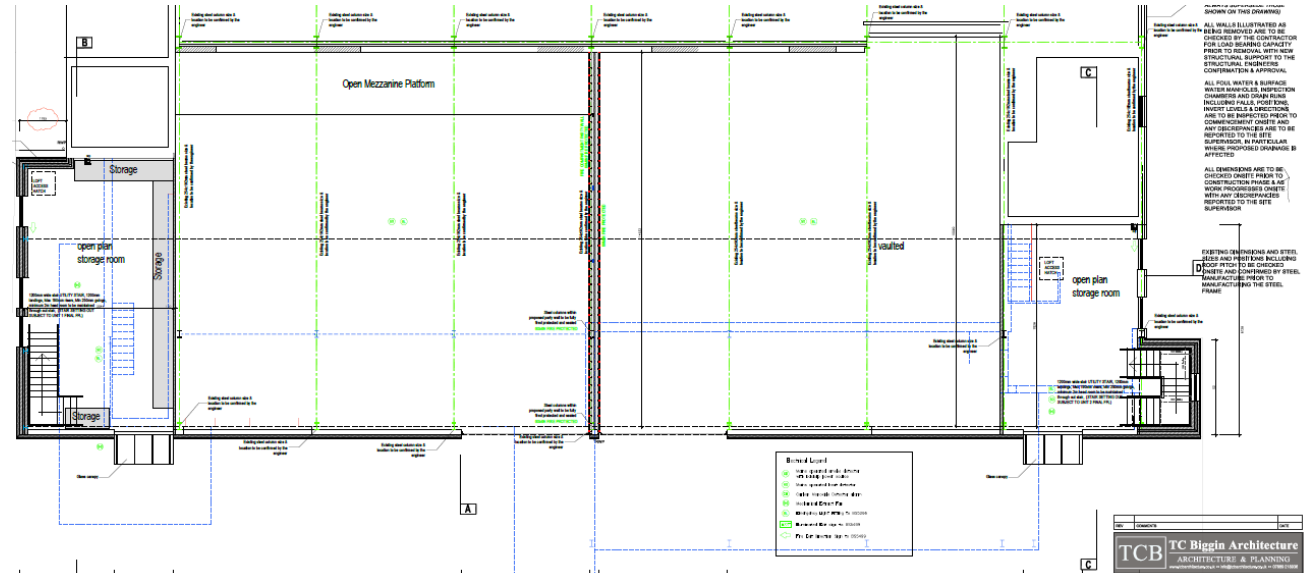
Primary energy reduction by kWh/m²/yr is **49.38%** over the existing building.

CO ₂ and primary energy reduction		
	Emissions kgCO ₂ /m ² /yr	Primary energy use kWh/m ² /yr
Existing building	75.14	444
Proposed refurbishment	15.10	161.28
Total reduction %	79.90%	63.67%

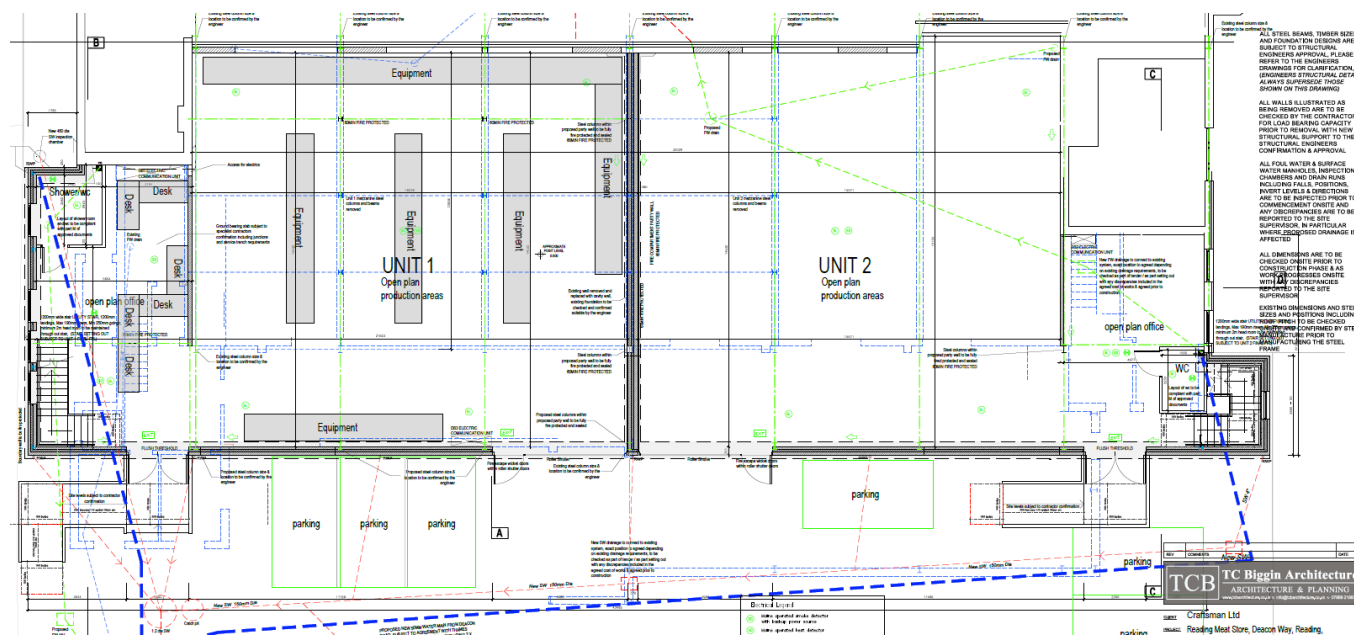


2. Introduction

The proposed development is for the refurbishment of an existing industrial unit



Proposed GF plan



Proposed 1st floor plan



Energy Assessment

The existing building EPC was issued on 29th April 2021 by UK Energy Surveys a qualified energy assessor accredited by Elmhurst Energy Systems Ltd. The assessor ID is EES/015691.

The proposed refurbishment modelling has been undertaken by a suitably qualified energy modeller who is accredited to Level 5 and a member of CIBSE Low Carbon Consultants scheme.

The modelling considers all regulated energy consumption (heating, hot water, fans & lighting).

The following drawings, prepared by TC Biggin Architecture, have been used for the basis of all modelling:

- 119-400-AD-GF PLAN
- 119-401-AE-AE PLAN
- 119-402-W-ROOF
- 119-403-AA-ELEVATIONS 1 OF 2
- 119-404-Y-ELEVATIONS 2 OF 2
- 408-S-SITE PLAN
- 119-405-N-SECTION A-A
- 119-406-L-SECTION B-B
- 119-407-L-SECTION C-C
- Construction Notes and Specification

IES Virtual Environment v7.0.26 is the interface to the calculation engine SBEM v6.1.e.1.

The software used to generate this model provides a direct comparison to that of the existing EPC.

2.1 Model details

The proposed refurbishment has been modelled with the following characteristics:

- Unheated warehouse, there the separating walls and ceiling will be insulated to meet current Building Regulations minimum U values (0.26 wall & 0.18 ceiling)
- Electric panel heaters for all other areas
- 300l DHW cylinder
- Rooflights at 2.2
- Windows at 1.2
- External walls 0.21
- Floor 0.17
- Roof 0.15 - 0.18
- Lighting at 100 Lumens per circuit Watt with PIRs for the office, kitchenette, shower & WC areas
- Assumed no air test
- Fans in zones with an SFP of 0.3
- 10no. PV panels at 405W each. 4.05 kWp overall



2.2 Baseline

The existing EPC certificate was undertaken in April 2021 and provides a rating of D and CO₂ score of 86.

BERKSHIRE MEAT TRADERS READING COLD STORE DEACON WAY TILEHURST READING RG30 6AZ		Energy rating D
Valid until 28 April 2031	Certificate number 6892-4657-9436-1110-1245	

Building emission rate (kgCO₂/m² per year) 75.14

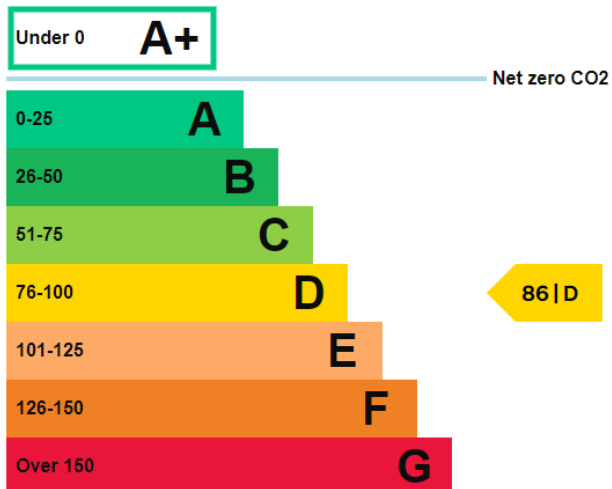
Primary energy use (kWh/m² per year) 444

The energy performance and carbon emissions of the existing building is:

Baseline	Emissions kgCO ₂ /m ² /yr	Primary energy use kWh/m ² /yr
Total	75.14	444

Energy efficiency rating for this property

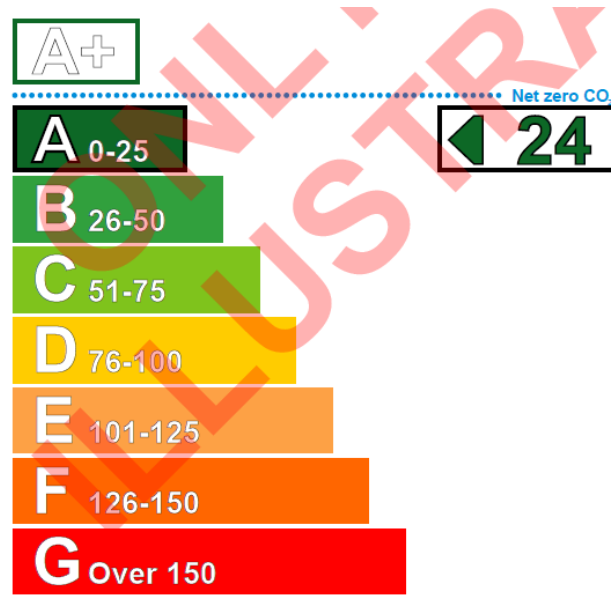
This property's current energy rating is D.





2.3 Proposed refurbishment

The proposed draft EPC certificate provides a rating of A and CO₂ score of 22.



Less energy efficient

Technical information

Main heating fuel: Grid Supplied Electricity
Building environment: Heating and Natural Ventilation
Total useful floor area (m²): 757.3
Building complexity: Level 4
Building emission rate (kgCO₂/m² per year): 15.1
Primary energy use (kWh_{pe}/m² per year): 161.28

The energy performance and carbon emissions of the proposed building is:

Proposed refurbishment	Emissions kgCO ₂ /m ² /yr	Primary energy use kWh/m ² /yr
Total	15.10	161.28



2.4 Total CO₂ and primary energy reduction

The following CO₂ and primary energy reduction or the proposed refurbishment compared to the existing building are summarised below.

CO ₂ and primary energy reduction		
	Emissions kgCO ₂ /m ² /yr	Primary energy use kWh/m ² /yr
Existing building	75.14	444
Proposed refurbishment	15.10	161.28
Total reduction %	79.90%	63.67%



BRUKL outputs & draft EPC