MAYFAIR BUILDING

SUSTAINABILITY STATEMENT

FOR KILKENNY COUNTY COUNCIL

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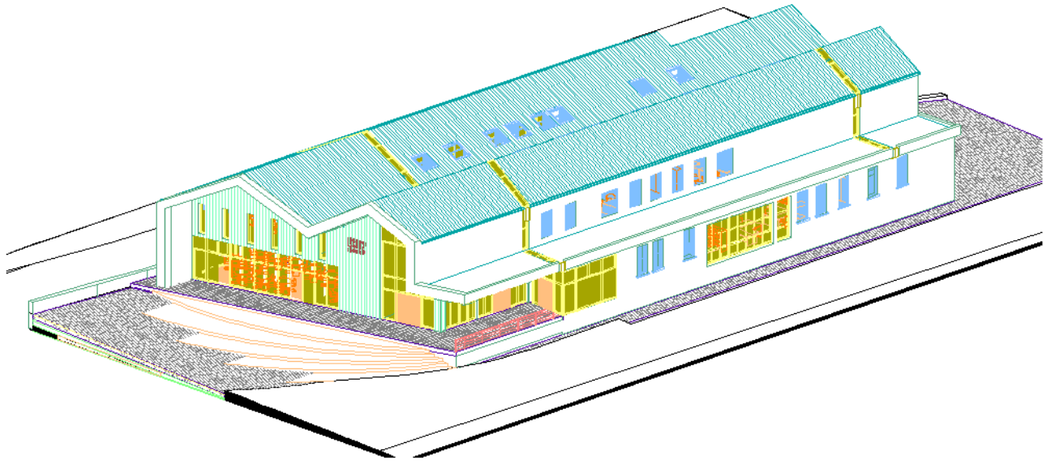
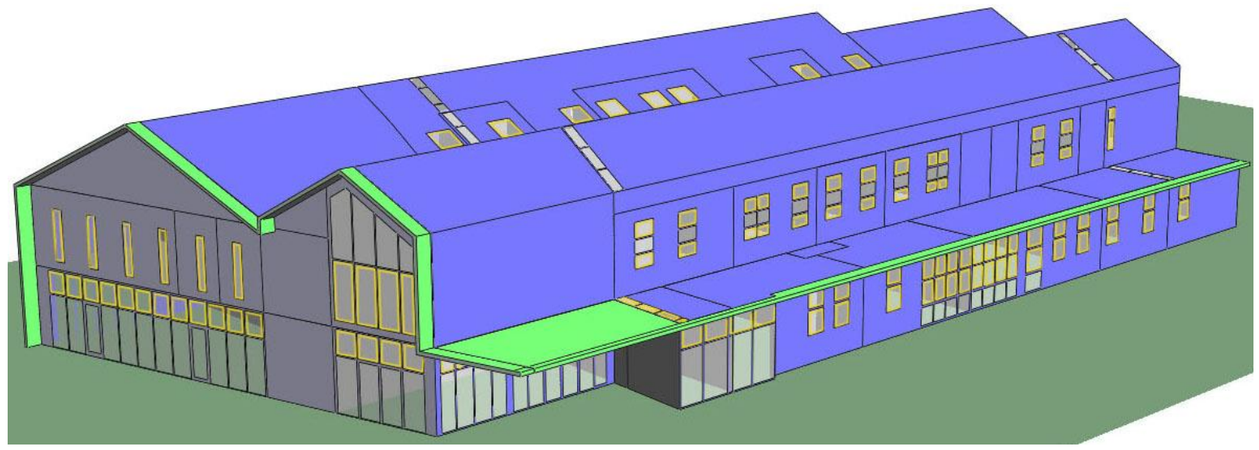


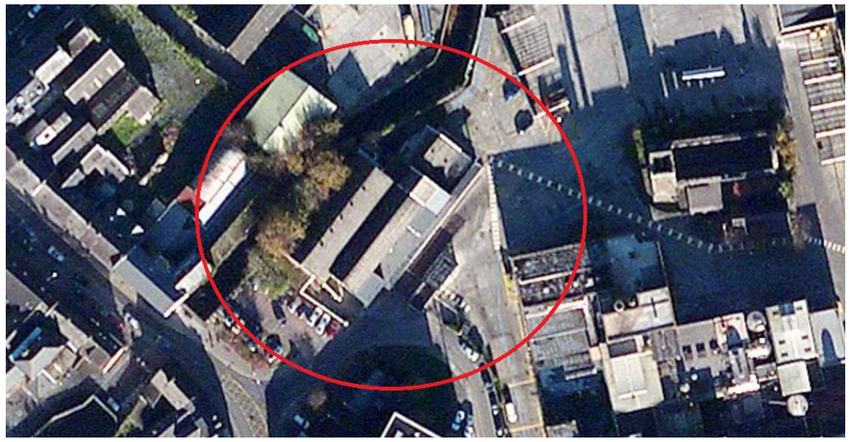


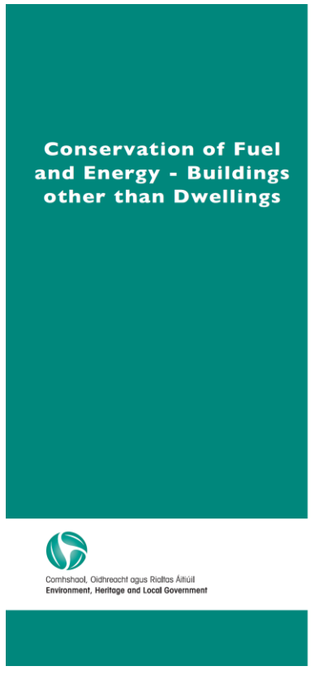
Executive Summary

It is the project's intent to provide a sustainable, low energy design for this building through passive and active measures. This will minimise the overall running costs of the facility to ensure its long term commercial viability.

We have identified the main items that will be investigated in terms of sustainability as the design progresses and investigate their potential savings. It is aimed to achieve an A3 BER rating for the building.

Key technologies proposed for the site are building fabric and energy efficiency measures including natural daylighting, high efficiency mechanical ventilation with heat recovery and efficient lighting.





1.0 Introduction

The "Mayfair" building is located on the brewery site in Kilkenny City. Formerly known as the "Mayfair" ballroom this site comprises areas of approximately 1,200m² over two floors. It is proposed that refurbishment works will be undertaken to accommodate up to fifty members of staff.

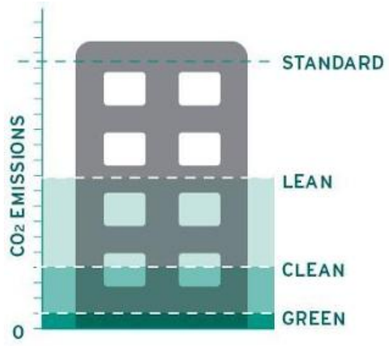
2.0 Key Sustainability Goals

The following key sustainability metrics will be utilized as part of our sustainability strategy:

- Achieve (as a minimum) Building Regulations Part L compliance,
- Achieve a Building Energy Rating as listed in Statutory Instrument (S.I.) No 666 of 2006
- Target A3 Building Energy Rating (BER).
- Further reduce, as far as is feasible and reasonable, the building energy consumption and CO2 emissions of the proposed development through design measures
- BREEAM assessment targeting 'Excellent' is under consideration.
- Consider the potential to make use of renewable energy resources.

In order to achieve these objectives, the following energy hierarchy will be used to identify and prioritise the most effective means of reducing carbon emissions:

Lean - Energy efficiency through design and use



- Clean - Applying low carbon technologies
- Green - Utilise renewable energy resources where appropriate.

3.0 Methodology

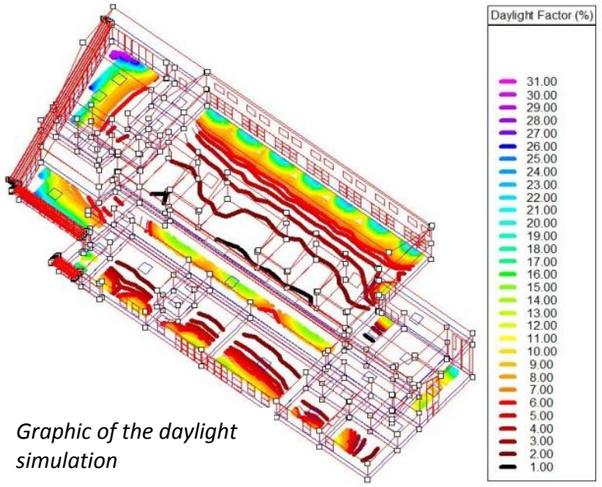
The delivery of high sustainability credentials will be achieved through a combination of passive sustainability measures, active sustainability technology and existing site infrastructure. Such examples are as follows:

3.1 Building Measures

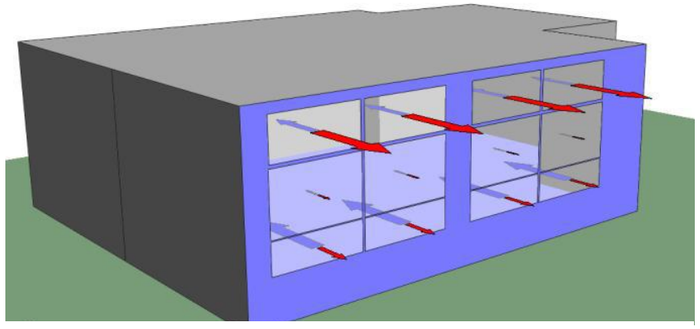
Passive:

- Insulation levels
- Daylighting
- Natural Ventilation
- Glare control

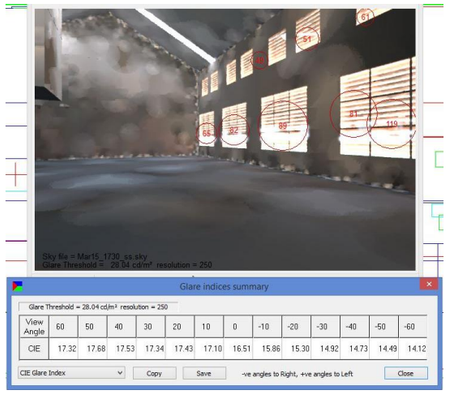
IES <Virtual Environment> building performance analysis software will be used to assess and enhance these passive measures for this site as follows:



Graphic of the daylight simulation



Graphic of the window analysis to achieve natural ventilation



Glare analysis using building simulation software

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Insulation

High levels of insulation will be installed to help achieve the optimum fabric performance that could be practically achieved. This will reduce energy consumption, potentially reduce capital expenditure by reducing plant sizes and will contribute to a more comfortable building for its occupants.

IES Virtual Environment Simulation software 2014 is used on this project which analyses the thermal performance of different insulation levels and construction types at the early stage of the design. This also has allows us to identify and resolve potential issues prior to construction on site.

Daylighting

Daylighting is an essential requirement in any building and gives a building a unique variety and interest. An interior which looks gloomy, or which does not have a view to outside when this could be reasonably be expected, will be considered unsatisfactory by its users. Levels of daylighting in a building can also impact on the health and well being of its users, can reduce energy consumption and can influence a person's circadian rhythm.

Computer simulation modelling is used on this building to analyse the natural daylight requirements using methodologies from the Technical Guidance Documents, CIBSE Guides and BRE Guides.

Meetings and discussions with the design team of the Mayfair Building have allowed us to strategically locate glazed facades and roof lights to promote daylight. Collaboration with the design team will ensure minimum daylight levels will be achieved and improved upon where possible.

Natural Ventilation

By making use of external openings (e.g. windows or louvres) natural ventilation provides full fresh air (outdoor air), creating a comfortable internal environment for the occupants. Natural ventilation also has reduced energy consumption compared to mechanical or air conditioned systems by utilizing free cooling.

Simulation modelling for natural ventilation on the Mayfair Building allows us to determine:

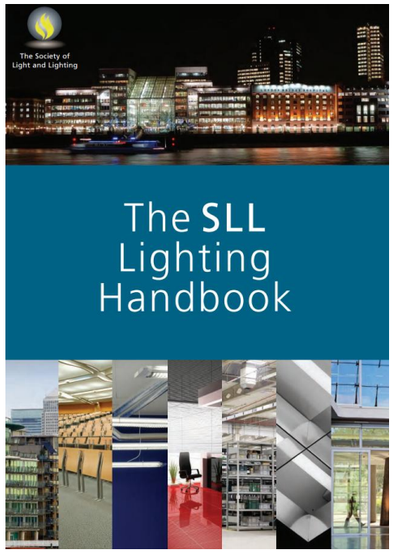
- The optimum design for natural ventilation
- Determine the risk of overheating in the non air conditioned rooms

The following factors are considered:

- Room geometry
- Opening sections
- Openable free area
- Occupancy
- Internal heat gains
- Glazed area and glazing solar performance
- Orientation
- Air Tightness Standard

Wind scoops will be considered to aid the natural ventilation strategy in deep plan areas where single sides or cross floor ventilation is ineffective and wind dependent. Wind scoops are based on passive stack ventilation whereby warm buoyant air leaving the space at high level induces air flow movement at lower levels.

The natural ventilation strategy will provide sufficient outside air and suitable air change rates to achieve appropriate standards of air quality and temperature.



Glare Control

Glare occurs whenever one part of an interior is much brighter than the general brightness in the interior.

Methodologies and requirements from CIBSE and The Society of Light and Lighting guidance documents are implemented into the simulation modelling to assess and minimise glare.

3.2 Engineering

Having minimised the energy and carbon footprint of the building through passive sustainable design methodology we next look to meet the building energy demands through efficient and well controlled engineering solutions. These measures will typically include but not be limited to:

Mechanical systems

- High efficiency condensing boiler plant
- Heat recovery ventilation systems
- Waterless urinals
- Variable Speed Drives (VSD's)

Electrical Systems

- LED Lighting
- Lighting controls to incorporate presence detection and daylight harvesting
- Building Energy Management System (BEMS)

3.3 Renewable Measures

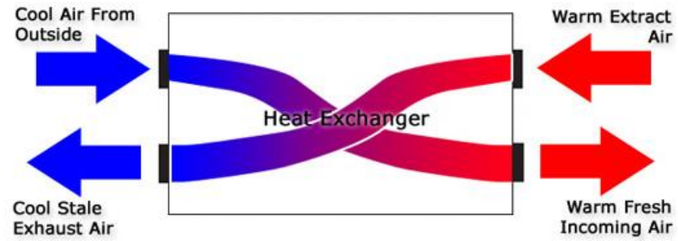
Additionally, as part of our detailed design process consideration will be given to incorporating renewable technologies into the scheme.

Active:

- Rain water harvesting
- Heat recovery
- Solar hot water heating
- Photovoltaics (PV)

Rain Water Harvesting

This will involve the collection of rain water from the roof of the building into underground collection tanks. It will be pumped up to a rain water storage tank in the plant room where it will gravity feed toilets and urinals. The makeup water for this system, if required, will be from the mains water system.



Heat Recovery

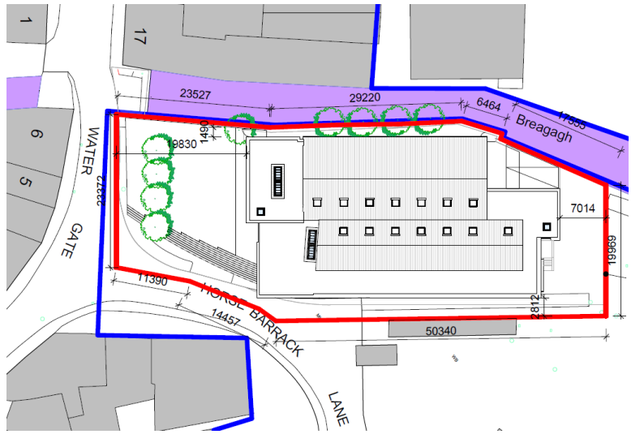
Heat recovery is the most efficient method of improving the performance of ventilation systems. Waste heat is recycled back into the lowering the running cost of heating the air. It is especially important in spaces that require a continuous supply of fresh air.

Solar Hot Water Heating

By using a roof mounted collector the solar hot water system would be capable of delivering hot water to the taps throughout the building.

Photovoltaics (PV)

The suns energy can be converted into electricity by using Photovoltaic panels located on the roof. This electricity can be used to supply electricity to the building.



4.0 Site

4.1 Bus, Rail & Cycleways

Situated in the city centre, the Mayfair Building has many bus and rail route stops nearby.

The site also boasts secure, sheltered bicycle storage areas. The nearest of which is located within 100m from the building.