Client: FESP

Project: JOHNSTOWN ESTATE – HOTEL EXTENSION

Title: DESCRIPTION OF THE PROPOSED UTILITIES & ENERGY SUSTAINABILITY REPORT

Date: 18th NOVEMBER 2024

Revision: P3

TABLE OF CONTENTS

Revision	Purpose	Originated	Checked	Reviewed	Authorised	Date
P3	Issued For Planning	SG	AC	ST	NP	18/11/2024
P2	Fig. 1 Updated	SG	AC	ST	NP	14/11/2024
P1	Preliminary Issue	SG	AC	ST	NP	06/11/2024

1 EXECUTIVE SUMMARY

This document provides an overview of how the project intends to integrate sustainability as a key strategy into the developments' design. The report focuses on the performance targets required by the Building Regulations Part L – Conservation of Fuel and Energy and what energy measures are needed to ensure compliance.

The following document sets out the energy design approach that requires the design to initially focus on an energy demand reduction. The initial approach in reducing the energy demand significantly aids the project in obtaining the desired energy goals while reducing running costs.

The energy systems design must also focus on specifying energy efficient equipment to ensure the day to day running of the energy systems are optimised to further enhance energy savings and related energy cost. Specifications relating to efficient heating, cooling, lighting and auxiliary equipment are also set out within this document.

2 INTRODUCTION

PMEP Consulting were commissioned by FESP, to assist with the planning submission for the hotel extension at the Johnstown Estate, Enfield, Co Meath. See figure 1 below for existing development location.

Figure 1- Site Location Map

The project consists of:

- Construction of 3 storey extension to the rear of the existing hotel comprising 90 no. guest bedrooms with an area of plant at roof level of the extension;
- Creation of ope in rear façade of the existing hotel at ground floor level with the omission of one existing guest bedroom to allow for a new single-storey connection to the extension;
- The development also includes all other associated engineering works, landscaping, and ancillary works necessary to facilitate the development.

Although limited, the project extension plans to utilise as many sustainable design options as possible and energy efficient systems that are technically, environmentally and economically feasible.

There are several standards and regulations applicable to this project in relation to energy efficiency. These cover energy efficiency, energy performance in buildings and renewable energy technologies.

3 GAS

There is an existing GNI (Gas Network Ireland) connection to the hotel and with no plan to upgrade or apply for a new gas supply.

4 ELECTRICITY (ESB)

ESB Networks have been contacted and an existing ESB network map for the area that surrounds proposed development has been obtained.

There are existing ESB Networks infrastructure in the vicinity of the site development. There is dedicated ESB substation located at the service entrance of the hotel and fed via an underground medium voltage line. All new and proposed services for this development have been co-ordinated to ensure that the minimum clearances are met to the utility's underground guidelines.

The development incorporates the use of an upgrade to the existing ESB LV connection from the existing ESB substation. It is envisaged that the existing ESB substation has sufficient capacity for the MIC upgrade to services the existing LV distribution of the hotel.

All sub LV distribution will be in the form of XLPE (cross-linked polyethylene) cabling compared to the use of PVC (polyvinyl chloride). XLPE has a higher current capacity, longer service life, flexible, withstand higher operating temperatures and more environment friendly compared to PVC.

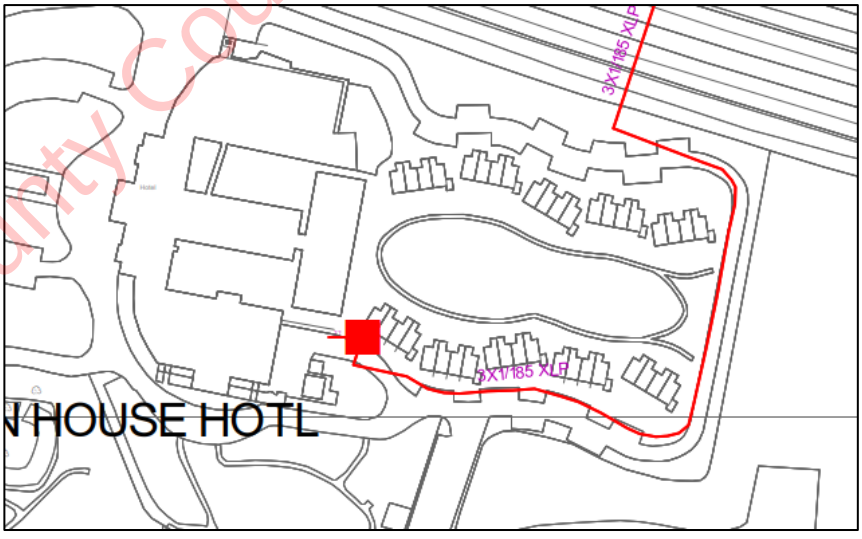

Figure 2: ESB Map

5 EIR

No provision is planned for a new EIR application for the hotel extension. Existing service provider to be used and extended to the new hotel.

6 VIRGIN MEDIA

No provision is planned for a new Virgin Media application for the hotel extension. Existing service provider to be used and extended to the new hotel.

7 SITE LIGHTING

Minimal external lighting will be installed and will form part of the external section only to the hotel extension.

We are also evaluating a number of lighting control methods such as:

- Time Control System: These controls can be set up to switch on and off the lighting based on the expected occupancy levels within areas and have an override available using a light switch.
- Daylight harvesting control: This type of control is based on photocell control, which detects the amount of light available. They can be used in corridors, reception areas and other open areas to turn lights on, off and/or dim as required.
- Dimming function: Similarly, to Daylight Linked Controls and using photocell control, the photocell is connected to the luminaires to maintain a pre-set lux level at the working plane areas throughout the day. This is especially useful in the hanger area where there is the opportunity of natural light contribution from translucent sheeting/ panels.

No provision is planned for any other areas pertaining to the external lighting for hotel extension.

8 ENERGY & SUSTAINABILITY

This section outlines the proposed energy efficiency and sustainability objectives under consideration for the proposed hotel extension.

The options set out are all potentially viable options and it is envisaged that there is sufficient flexibility in the planning assessment to allow for one or more of these options to be implemented.
The sustainable options being investigated assist in achieving reduced overall energy consumption and usage within the new developed restaurant.

The development will also comply with Part L of the Building Regulations.

8.1 PV Solar Panels

PV solar panels offer the benefit of reducing fossil fuel consumption and carbon emissions to the environment and converts the electricity produced by the PV system (which is DC) into AC electricity.

The inverter converts the electricity generated from the PV Panels from DC to AC. Electricity is then brought from the inverted to the main circuit breaker or fuse board, which supplements the electrical demand within the dwelling. This can result in cost saving in regard to the overall energy consumption within the dwelling.

The panels are typically placed on the South facing side of the building for maximum heat gain. Planning allowances have been made for PV panel system that is to be located on the roof of the hotel extension, which will contribute to the existing PV array installed on the existing part of the hotel.

8.2 Smart Metering

Smart metering will be allowed for all LV distribution boards (DBs) with the function of interfacing and communicating to the site's building energy management system (BEMS).

8.3 Ventilation

The ventilation requirements within the hotel extension will be satisfied via an air handling unit. Aall mechanical plant will be located at roof level.

The respective ductwork will penetrate the roof slab and drop through the proposed risers to the ceiling void of each floor. The ducts will terminate in each room at the back of a fan coil unit located in the bulkhead.

The fan coil unit will then distribute heated or cooled fresh air into the room depending on occupancy preference.

The air handling unit will also provide extraction from the bathroom of each room/wet rooms on each floor via ceiling mounted disc valves to remove stale, moist air from the space.

8.4 Space Heating & Cooling Services Installation

A Variable Refrigerant Flow (VRF) system will be utilised to satisfy the heating and cooling demand within each room. An external condenser will provide the heating and cooling through refrigerant gas. The 3-pipe setup allows for the benefit of heat recovery along with variable space temperature control depending on occupancy requirements.

The SCOP levels being investigated will be within than those required in Table C1: Reference Values extracted from the current regulatory requirements of the Technical Guidance Documents Part L, titled "Conservation of Fuel and Energy Buildings other than Dwellings". This will be verified with the respective equipment manufacturers prior to procurement.

Heating and cooling shall be provided to the hotel rooms via fan coil units. An external condenser shall provide the heating and cooling capabilities through refrigerant gas as above. Each fan coil unit will also have a condensate drain piping system which is also routed through the false ceiling/bulkhead. Each fan coil unit will be located in the ceiling void bulkhead and supply heated/cooled fresh air into the room via a grille.

8.5 Water Services

The existing mains water supply to the property will be utilised to provide potable water to the proposed cold water storage tank and necessary water points in the hotel extension. These services will be metered separately to monitor water consumption.

The cold-water supply for the hotel extension will be taken from a cold-water storage tank located on the roof of the proposed extension. The services brought to/from this tank will be metered to monitor water consumption.

The domestic hot water requirements for the hotel extension will be satisfied by 4 no. new calorifiers located on the roof of the extension. These will be heated by an air source heat pump. The consumption of DHW within the hotel extension will be metered to monitor water consumption.

An air source heat pump is a system which transfers heat from outside to inside a building. The air to water heat pump absorbs heat from outside air and releases it inside the building, via radiators, underfloor heating and/or domestic hot water supply. Air Source heat pumps have an efficiency of around 300%, making them highly energy efficient heating source.

8.6 Elemental U-Values and Air Infiltration

Lower U-values and improved air tightness will minimise heat losses through the building fabric, reducing energy consumption and thus minimise carbon emissions to the environment. The U-values being evaluated will, at minimum, be in line with those required by the current regulatory requirements of the Technical Guidance Documents Part L, titled *"Conservation of Fuel and Energy Buildings other than Dwellings".*

Thermal bridging at junctions between construction elements and at other locations will be minimised in accordance with Paragraphs 1.2.4.2 and 1.2.4.3 outlined in the Technical Guidance Documents Part L.

8.7 Building Energy Management Systems

A Building Energy Management Systems (BEMS), is being considered for the automatic monitoring and control of a range of building services including heating, ventilation, fire and general alarms, energy metering electric and lighting. A BEMS can provide potential energy and cost savings of:

- Optimising the efficient operation of plant
- Monitoring and data logging energy usage of the building
- Increasing energy awareness by the building's users
- Prioritizing low / green energy systems over fossil fuel energy sources

8.8 Supplemental Energy Saving Measures

Other measures to reduce energy usage are also under consideration such as low water use sanitaryware fittings, and electrical equipment that is Energy Star rated to reduce vampire loads.

8.9 ECAR Charging Points

Existing ECar chargers stations to be re-used and no provision has been considered for the hotel extension.

9 CONCLUSION

Section 1: UTILITY INFRASTRUCTURE:

Based on the initial review, there is adequate utility infrastructure in the area for the new Development.

Section 2: ENERGY & SUSTAINABILITY:

The potential energy efficient options detailed above are all being evaluated at present. The options listed above will be assessed and confirmed at detail design stage.

Ensuring compliance with the requirements of Part L 2021, the proposed energy strategy as detailed in this report is intended to achieve a provisional BER certification of "A" rating. Demonstrating Part L compliance, in accordance with NEAP, the proposed development BER rating has been assessed using the *IES VE 2021 - VE Compliance: 7.0.013.0.*

Bearing in mind that the BERs could change/ be revised, in the future, due to software updates and improvements to design methodology and revised electricity energy inputs.