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GOATSTOWN STUDENT ACCOMMODATION
ENERGY & SUSTAINABILITY STATEMENT

REVISION 7

Project Number 19K113

September 2024

TABLE OF CONTENTS

1. INTRODUCTION

This document outlines Energy Impact of the new student accommodation development. The design of the building takes into account Technical Guidance Document L - Conservation of Fuel and Energy - Buildings other than Dwellings. The building shall be NZEB compliant. The energy performance of the building is such as to limit the calculated primary energy consumption and related Carbon Dioxide (CO2) emissions to a Nearly Zero Energy Building level. Both energy consumption and Carbon Dioxide emissions for the development have been calculated using the Non-domestic Energy Assessment Procedure (NEAP) published by Sustainable Energy Authority of Ireland.

We have used Industry standard modelling tools to show us the detailed requirements for this scheme; IES, DEAP, CIBSE standards.

Our in depth analysis and design modelling of the development shows that the most suitable renewable technology which will assist in meeting these targets is an Air to Air heat pump for heating and hot water use in the building.

This form of heating combined with the building envelope performance outlined in the attached Part L Appendix will offer Compliance & meet NZEB.

2. ENERGY CONSERVATION & RENEWABLE ENERGY

The development will be constructed with high a standard of insulation & air tightness which aims to exceed the requirements of Part L Building Regulations.

Energy demand minimization will be achieved by best practise in high efficiency renewable energy heating systems and energy efficient building design. All windows will come with high performance glazing.

The appended Part L compliance summary (Appendix A) document which should be read in conjunction with this document outlines the specification of individual building elements, building services and items linked to energy efficiency in detail for the typical apartment types occurring throughout the development.

Key Sustainable Design Elements:
- High performance glazing in the windows.
- U values to match or exceed current minimum Part L requirements.
- Low energy lighting throughout the development.
- High levels of air-tightness of the apartments.
- Low temperature air source heat pump system.

2.1 Ventilation

Ventilation will be primarily by natural means in all areas by means of permanent wall vents and windows trickle vents.

Supplemental intermittent mechanical extract ventilation will be provided in bathrooms and kitchen areas in accordance with TGD Part F 2019 of the Building Regulations.

2.2 Heating & Hot water

Heating will be provided using electric panel radiators in student apartments. These panels will be time and temperature controlled.

Hot Water is to be provided by standalone an Air to Water (A2W) High Efficiency Heat Pump system.

2.3 Controls and Zoning

Each room will be independently controlled with electric panel radiators. The radiators in the common circulation spaces will be controlled using time clocks.

2.4 Lighting & controls

All lighting within the student accommodation and associated spaces shall be LED with manual on-off controls in the majority of spaces, using absence detection to switch off the lights when unoccupied, to prevent unnecessary lighting of communal spaces.

2.5 Construction

The following U-Values have been applied on SBEMie for purposes of the Part L Assessment;

- External Walls – 0.21
- Exposed Floors – 0.21
- Flat Roof – 0.16
- Personnel Doors – 1.6
- External Glazing/Curtain Walls – 1.6

2.6 Thermal Bridging

Building Regulations 2017 TGD Part L Appendix D is defining thermal bridges that occur at junctions between building elements and are included in the calculation of transmission heat losses. All buildings shall have thermal bridges in accordance with "Limiting Thermal Bridging and Air Infiltration – Acceptable Construction Details" as referenced in Building Regulations 2017 TGD Part L.

	Junctions involving metal cladding	QA accredited	Junctions NOT involving metal cladding	QA accredited
Type of junction	Psi (W/(m·K))		Psi (W/(m·K))	
Roof-wall	0.420	☐	0.180000	☐
Wall-ground floor	1.730	☐	0.240000	☐
Wall-wall (corner)	0.380	☐	0.140000	☐
Wall-floor (not ground)	0.040	☐	0.110000	☐
Lintel above window/door	1.910	☐	0.450000	☐
Sill below window	1.910	☐	0.080000	☐
Jamb at window/door	1.910	☐	0.090000	☐

2.7 External Lighting

All external lighting fittings shall be of energy efficient LED type. External lighting will be completed on a phased basis in conjunction with completion of the street areas. Separate Lighting Mini pillars are to be located within each street zone so as to allow for connection & powering up of lighting as the development is ongoing.

The Lighting scheme design & Layout will be in accordance with the ILP Design procedures & the following Codes of practice.

- BS5489-1:2013 Part 1 Class P4
- CIBSE CoL code for lighting 2002
- FF7 Environmental consideration for exterior lighting.

The Lighting Design for this Development will be in accordance with the requirements of ILP (Institute of Lighting Professionals) Guidance design Document.

The Environmental impact of lighting is taken into consideration & Table 2. 'Obtrusive Light limitations for exterior lighting Installations' of the Environmental Guidance Document are the basis for reference.

Where E3 Lighting is installed, the Design will conform to;

1. Upward Light ratio (sky Glow ULR) max 5%
2. Light Intrusion into windows (LUX) post curfew 2 Lumens
3. Max Luminaire Intensity 1000 Candelas

Where E2 Lighting is installed, the Design will conform to;

1. Upward Light ratio (sky Glow ULR) max 2.5%
2. Light Intrusion into windows (LUX) post curfew 1 Lumens
3. Max Luminaire Intensity 500 Candelas

Calculations are based on using Light fittings which are mounted flat (no tilt) & therefore there is 0% up light. The max luminous intensities are designed to be within the requirements as set out in E3 & E2 noted above.

2.7.1 External Lighting and Bat Conservation

External lighting shall be designed to help mitigate impact on bats.

Low UV content sources with narrow wavebands, such as LEDs, have least impact on bats and shall be used.

Lighting will be directed to where it is needed and light spill shall be avoided. This will be achieved by use of suitably designed luminaires which use accessories such as hoods, cowls, louvres and shields to direct the light to the intended area only.

Lighting columns will be as short as is possible, since light at a low height reduces the ecological impact. However, where there are cases where a taller column will enable light to be directed downwards at a more acute angle and thereby reduce horizontal spill. The acceptable level of lighting will vary, dependent on the surroundings and on the species of bat affected.

External lighting will be installed with lighting controls to allow movement detection to ensure lighting is off when not required. Light scheduling to also allow light output to be dimmed from 100% to 0% based upon available daylight.

Movement sensing will be incorporated to ensure energizing of lights is limited only lights necessary for lighting in the vicinity of detected movement.

Lighting controls will include time scheduling to ensure that lighting can be turned off at suitable time schedules.

Lighting control sensors will have motion detection field limited to movement areas only and shall not extend to detect movement beyond the site boundary.

2.8 Availability of Utility Services

This section addresses the availability, location and adequacy of the primary services serving proposed development.

2.8.1 Water Supply

A new mains water supply shall be extended to facilitate the proposed development. An application for water and drainage connection shall be submitted to Irish Water by the Civil Engineer.

2.8.2 Gas

An existing gas services to the current building on site shall be disconnected and removed.

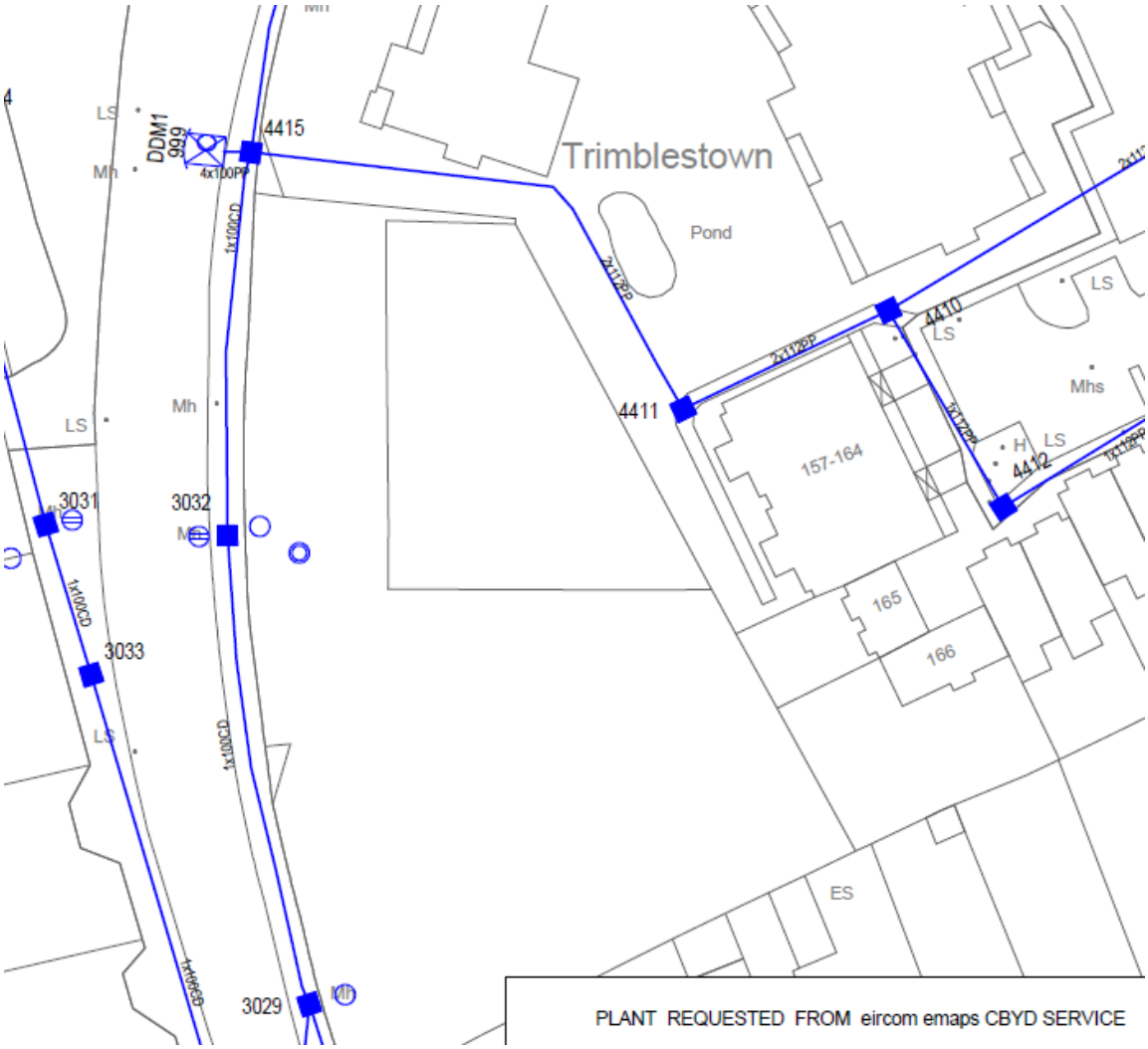
2.8.3 Electricity

The existing ESB supply to the building will be disconnected prior to demolition of the existing building.

An application for a new electricity supply to the building will be made to ESBN. The MIC for the new building will be 230kVA. This building load requires and an integrated ESB substation which is included in the architectural plans and the ground floor with 3m right of way access by ESBN.

2.8.4 Telecoms

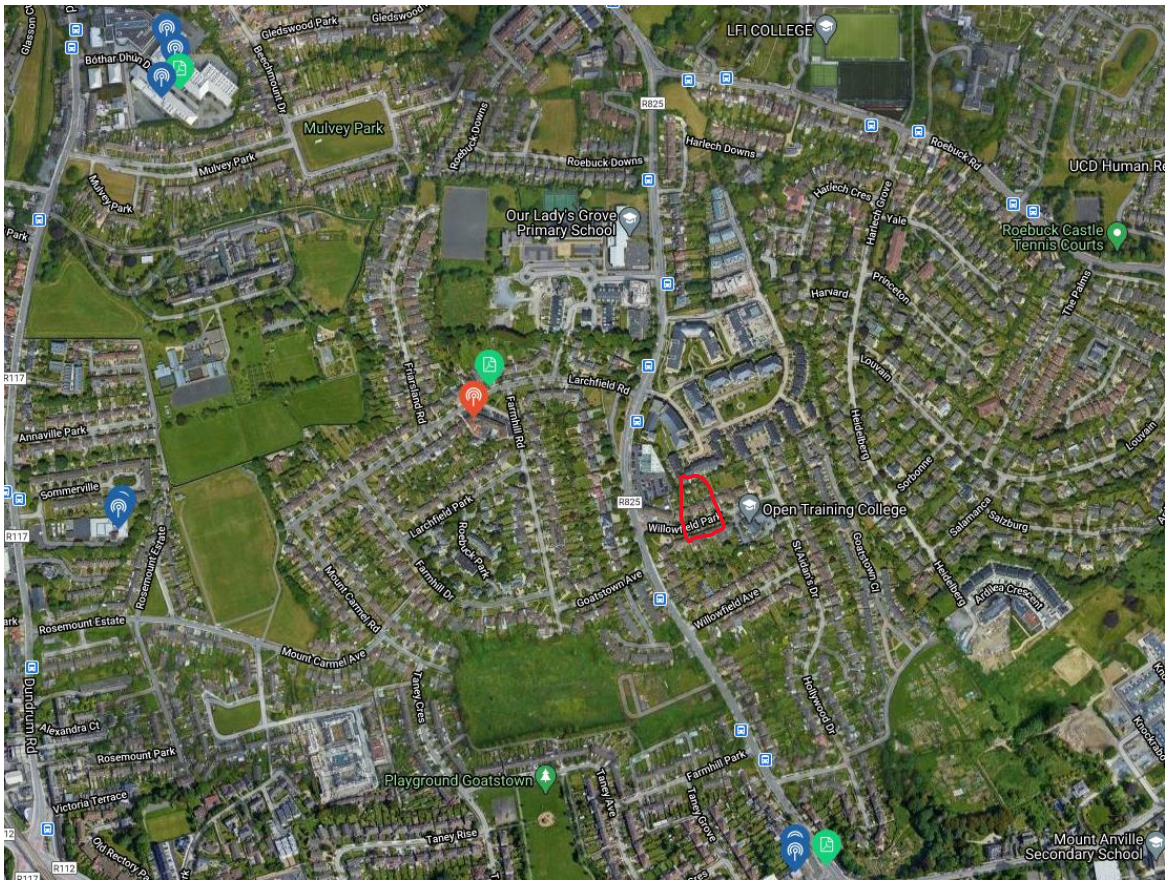
The development will be serviced with new fibre optic cabling extended from the existing Eir services in Goatstown Road.



2.9 Telecommunications

We have reviewed the location of existing registered and documented telecommunication sites surrounding the proposed development.

The height and scale of the proposed development should have no impact on any current microwave telecommunications channels within 2km of the proposed development.



Comreg Site Viewer

Three/Vodafone Masts | Locations of Radiation Surveys | Closest Mast

In the unlikely event that the development has any impact this will be realised during the construction period. At this stage we will engage with telecommunication companies to re-align their microwave links to new hop* sites to mitigate any issues.

* hop site: wireless telecommunications link where cabling is not appropriate.

APPENDIX A

Part L Compliance Summary

Below is the summary page from the NEAP SBEMie Part L Analysis completed on the project showing compliance with all aspects of the Part L Requirements, including MPEPC, MPCPC, RER and U-Values.
The full report is available as an accompaniment to this Energy & Sustainability Statement.

Proposed Student Apartmen

Date: Tue Sep 03 16:20:02 2024

Administrative information

Building Details

Address: Goatstown Road, Dublin 14, Address 3, Address 4, Dublin 14, Eircode

NEAP

Calculation engine: SBEMIE

Calculation engine version: v5.6.a.0

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: 7.0.26

BRIRL compliance check version: v5.6.a.0

Client Details

Name: Orchid Residential Ltd.

Telephone number: Phone

Address: 9 Clare Street, Dublin 2, Eircode

Energy Assessor Details

Name: Aaron Doherty

Telephone number: 0567795428

Email: info@rmce.ie

Address: 1 City Wall, James St, Co. Kilkenny, R95XF97

Primary Energy Consumption, CO2 Emissions, and Renewable Energy Ratio

The compliance criteria in the TGD-L have been met.

Calculated CO2 emission rate from Reference building	16 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	10.1 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	**0.63**
Maximum Permitted Carbon Performance Coefficient (MPCPC)	**1.15**
Calculated primary energy consumption rate from Reference building	87.5 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	78.6 kWh/m2.annum
Energy Performance Coefficient (EPC)	**0.9**
Maximum Permitted Energy Performance Coefficient (MPEPC)	**1**
Renewable Energy Ratio (RER)	**0.26**
Minimum Renewable Energy Ratio	**0.1**

Heat Transmission through Building Fabric

Element	$U_{a\text{-Limit}}$	$U_{a\text{-Calc}}$	$U_{i\text{-Limit}}$	$U_{i\text{-Calc}}$	Surface with maximum U-value*
Walls**	0.21	0.21	0.6	0.21	SP000066_W3
Floors (ground and exposed)	0.21	0.21	0.6	0.21	SP000066_F
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.2	0.3	0.2	1F00000B_C
Windows, roof windows, and rooflights	1.6	1.6	3	1.6	GF000003_W-1_O0
Personnel doors	1.6	1.6	3	1.6	GF000001_W2_O0
Vehicle access & similar large doors	1.5	-	3	-	"No ext. vehicle access doors"
High usage entrance doors	3	-	3	-	"No ext. high usage entrance doors"

$U_{a\text{-Limit}}$ = Limiting area-weighted average U-values [W/(m2K)]
$U_{a\text{-Calc}}$ = Calculated area-weighted average U-values [W/(m2K)]
$U_{i\text{-Limit}}$ = Limiting individual element U-values [W/(m2K)]
$U_{i\text{-Calc}}$ = Calculated individual element U-values [W/(m2K)]

* There might be more than one surface with the maximum U-value. ** Automatic U-value check by the tool does not apply to curtain walls whose area-weighted average and individual limiting standards are 1.8 and 3 W/m2K, respectively.

Air Permeability	Upper Limit	This Building's Value
m3/(h.m2) at 50 Pa	5	5

Primary Energy Contributions to RER

Technology	kWh/annum
Photovoltaic systems	0
Wind turbines	0
Solar thermal for water heating	0
Biomass for space and/or water heating	0
Biogas for space and/or water heating	0
Heat pumps for space and/or water heating	189782
CHP generators for space and/or water heating	0
District heating for space and/or water heating	0
Process energy	0
Total for renewables	**189782.0**
Total for renewables & non-renewables	**725576.4**

ISSUE REGISTRATION:

Project Title: Goatstown Student ACC **Project No:** 19K113

Rev	Date	Purpose of Issue/Nature of Revision	Prepared by	Issue Authorised by
Rev 1	27/07/20	Information	JG	RM
Rev 2	17/08/20	Clarifications	JG	RM
Rev 3	24/08/20	Clarifications	JG	RM
Rev 4	01/09/20	Correcting Blurred Final Page	CA	RM
Rev 5	21/03/24	Information	AD	RM
Rev 6	03/04/24	Information	RM	RM
Rev 7	16/09/24	Information	AD	RM

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