An Triantán, Station Road Housing, Kildare

Part 8 – MEP & Sustainability Basis of Design Report

Kildare County Council

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Executive Summary

This report outlines the MEP and Sustainability basis of the design strategy for the 30-unit housing development at Station Road, Kildare and forms part of the section Part 8 works package.

The construction of 30 social housing units includes:

- 5no. 3 bedroom two storey duplex apartments;
- 1no. 3 bedroom three storey house;
- 2no. 2 bedroom two storey houses;
- 2no. 2 bedroom single storey apartments;
- 4no. 2 bedroom 3 person single storey apartments;
- 6no. 2 bedroom two storey duplex apartments;
- 10no. 1 bedroom single storey apartments;

The construction of ancillary structures to include:

- ESB substation;
- Switchroom;
- Secure cycle storage rooms;

Associated site works to include:

- Demolition of 2no. existing cottages and associated ancillary structures on Station Road;
- Erection of new boundary treatment to south, east and north boundaries;
- New vehicular and pedestrian entrance from Station Road;

Provision of:

- 26no. vehicle parking spaces
    - Of which 6no. provided with EV charging points
- 54 no. residents' bicycle parking spaces
    - Of which 4no. suitable for adapted cycles/cargo bikes
- 16no. visitor bicycle parking spaces
    - Of which 4no. suitable for adapted cycles/cargo bikes

New landscaping, internal vehicular and pedestrian shared surface route, public lighting, site drainage works, ancillary site services and development works above and below ground.

Contents

1.0

Proposed Mechanical and Electrical Services Design

1.0 Proposed Mechanical and Electrical Services Design

1.1 Introduction

This report outlines a brief description of the proposed Mechanical and Electrical services.

1.2 Proposed Water Services

We propose a closet-type cold water storage tanks located in utility cupboards in each unit. The storage tanks will have an integral cold water booster pump and will be fully insulated with covers. Incoming potable water connections to each home will be via a separate water meter outside.

MWS pipework will rise to provide drinking water in the kitchens and to fill cold water storage tanks.

Hot water will be generated in each house by an exhaust air heat pump and stored in a hot water cylinder integral to the heat pump unit. Hot and cold water will be distributed via a manifold and pipework in the ceiling void to the kitchen and bathrooms as required. The proposal includes a direct unvented hot water cylinder located in the utility cupboard for each dwelling.

1.3 Drainage

The above-ground soils & waste services pipework is to serve the kitchen, bathrooms, WCs, and utility areas. Installation of the above-ground elements of the foul drainage systems will be included in the mechanical contract. Soil vent stacks will be brought to the ground floor where they will connect to the underground drainage via pop-ups provided in the Civil works. The appropriate slopes will be used and pipe sizing in accordance with building regulations. Cleaning eyes will be indicated for ease of maintenance in appropriate locations.

1.4 Proposed Extract Ventilation

The proposal is for an exhaust air heat pump-based Continuous Mechanical Extract Ventilation (CMEV) system will be provided in each house to extract stale air and moisture from the kitchen, utility rooms, and bathrooms via ceiling-mounted extract valves. It shall comply with the Building Regulations and follow the guidance in Technical Guidance Document Part F 2019.

Replacement air (Makeup air) will be drawn in through permanent ventilators on the external walls of habitable rooms.

The exhaust air ducting will be flat channel type run in the ceiling void and will be thermally insulated to prevent condensation. The exhaust Louvre/grilles will be located at the agreed locations on the exterior of the houses.

Extract ductwork will be provided for connection to kitchen exhaust hoods. Hoods to be supplied and installed by others.

1.5 Space Heating

Space and water heating will be provided by standalone monoblock heat pumps or exhaust air heat pumps combined with the CMEV described above in each house.

The internal exhaust air heat pump will be installed to provide low-temperature hot water space heating in each house. Pre-insulated multi-layer distribution pipework will run in the ceiling void and partition walls to serve wall-mounted panel radiators. All radiators will be fitted with thermostatic control valves.

1.6 Electrical Installations

Electrical services to meet the requirements stated in tender documents, including all relevant standards, and in accordance with Safe Electric Requirements, i.e., IS EN 10101:2020 All wiring throughout the house is to be contained in heavy-duty PVC conduit. The Electrical Consumer Panel is normally to be located in the hallway, at an appropriate height above the finished floor level, with all circuits clearly marked and identified, and supplied with integral latched cover in accordance with IS EN 10101.

1.7 Site Utilities

A new ESB substation will be required on the site following design reviews and consultation with the ESB representative.

See below the proposed location of the ESB Substation.

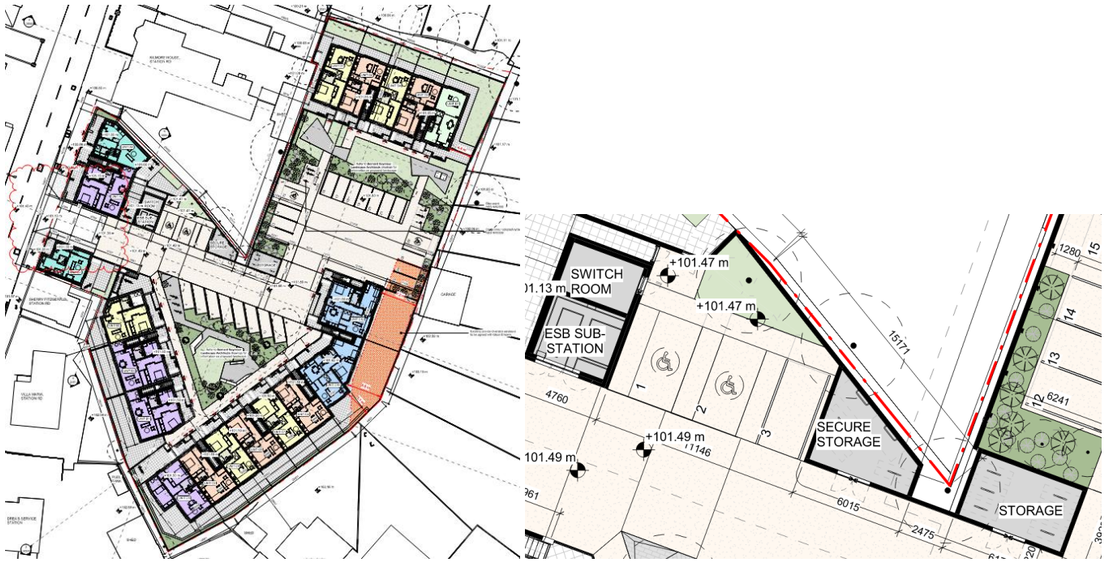

Figure 1: New wall ESB Substation Location

Within the site, new mini pillars will be required for the incoming ESB supply to the Housing Units and provision for future Public EV charging will be installed on site.

Ducting will be provided for communication services connection to all the housing units.

1.8 General Services

The electrical services installation shall be designed and installed in accordance with I.S. 10101:2020 - National Rules for Electrical Installations – NSAI standard to suit the floor layout.

All wiring shall be LSZH Twin and Earth multi-core cabling. Socket outlets shall be 230V, 13A, 3-pin rectangular, single pole, single or twin, switched or unswitched outlets. All sockets and switches shall be designed and installed in accordance with Building Regulations - Technical Guidance Document M - 2022 - Access and Use.

1.9 Telecommunications / Structured Wiring Systems

Each Unit will be provided with Cat5e network points and coaxial TV points in dedicated rooms and living spaces. All points will be wired for connection to a TV/Telecom utility provider.

1.10 Fire Detection

A new fire alarm system is to be provided to comply fully with IS 3218 (+A1 2019) Code of Practice for Fire Detection and Alarm Systems in buildings.

This will be an independent main powered linked system with integral battery backup in each housing unit.

A separate conventional landlord fire alarm system will be designed to provide coverage in the landlord switch room and secure store.

1.11 Lighting

Lighting installed shall be low energy LED lights. Location of pendent should be such as to allow for easy replacement (i.e., not over stair voids). All stair/landings to be fitted with a two-way switch, as should all rooms with two access doors. Kitchens to be fitted with a proprietary ceiling mounted fitting to receive three low energy spotlights, and under cupboard lighting. Unless to meet specific artificial lighting standards, all rooms and corridors/hall/landings to have a single ceiling mounted pendant fitting, to accept a low wattage or LED bulb with a single rocker type switch appropriately located between 900 and 1200 mm above finished floor level at just inside the entrance to the room (or outside in the case of a bathroom/wc).

External IP rated light fittings will be provided on terraces and front a rear entrance door. External lights with built in PIR sensors shall be provided on external stairs and terraces to provide safe access to upper units during hours of darkness.

Emergency lighting shall be designed and installed within the landlord switch room and secure store in accordance with Emergency Lighting Standard I.S. 3217:2023.

External street lighting will be provided in line with Kildare County Council requirements and will consist of LED street lighting standard poles.

1.12 Security Systems

Each unit will be wired only for a future intruder alarm installation. The wiring will be run back to a central panel located in a utility/storeroom.

The system will include wiring for panic buttons at the main entrance and master bedroom, keypad, contacts or inertia sensors on windows and doors, PIRs in hallways & landings, internal sounder and an external sounder/strobe.

2.0

Sustainability and Energy

2.0 Sustainability and Energy

2.1 Introduction

This section of the report outlines a brief description of the proposed Sustainability strategy for the project and includes the building regulation Part L and BER requirements for the project.

2.2 Part L and BER

The proposed development will comply with and exceed the backstop U-value requirements of the Technical Guidance Document L - Conservation of Fuel and Energy – Dwellings (2022). The performance proposed will be designed to meet the minimum BER target of A2 for all Dwellings.

2.3 Proposed Building Fabric U-Values & Air Tightness Performance

The proposed building fabric specification for the development is summarised in Table 2-1 - Building Fabric and Air Infiltration Details below:

Table 2-1 - Building Fabric and Air Infiltration Details

Elements	Backstop U-Values (W/m².K)	Proposed U-Values to meet A2 BER (W/m².K)
Wall	0.18	0.15
Floor	0.18	0.15
Roof	0.2	0.15
Window	1.4	1.2
Door	1.4	1.2
Window G-Value	N/A	0.72
Air Permeability (m³/h/m²@50Pa)	N/A	≤3
Thermal Bridging Factor (W/m².K)	N/A	≤0.15

2.4 Renewable Energy

Renewables will be provided to each dwelling to conform with Part L compliance. The primary source will from the exhaust air heat pumps.

2.5 Daylight and Sunlight Assessments

The quality and quantity of daylight provision to an occupied space are both important. The BRE 209 Site Layout Planning for Daylight and Sunlight (2022 Edition) gives recommendations on site layout planning to achieve good sunlight and daylighting, both within buildings and in the open spaces between them. It is intended to be used in conjunction with the interior daylight recommendations for new buildings in the British Standard Daylight buildings, BS EN 17037 (2021 Edition).

2.6 Illuminance Levels – Indoor spaces

To show compliance All Living spaces will be designed to meet the BRE 209 Guidance. The guidance suggests the use of the UK National Annex illuminance recommendations of 100 lux in bedrooms, 150 lux in living rooms, and 200 lux in kitchens. These are the median illuminances, to be met in at least 50% of the assessment points in the room for at least half of daylight hours per the target illuminance below.

Table 2-2: Illuminance Levels

Room Type	Target Illuminance (lux)
Bedroom	100
Living Room	150
Kitchen	200

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