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LIFE CYCLE ASSESSMENT

In respect of Cloonmore Regeneration LRD, Cloon More, Boherbee, Tralee for Tulfarris CG Ltd

1.0 LIFECYCLE ASSESSMENT:

This **LIFECYCLE ASSESSMENT** is intended to report on the measures adopted to ensure the development will have a low carbon footprint, be of durable and low maintenance materials and construction and last for some considerable time. All the buildings are designed for longevity, energy efficiency and low life cycle costs with an anticipated design life of over 100-year+. They will be an important addition to our housing stock, well located in a central urban location close to services and amenities.

2.0 CLOONMORE REGENERATION LRD PROJECT

The proposed new **Cloonmore Regeneration LRD new Housing & Apartments** will be constructed predominantly of durable naturally robust masonry construction with inherently high-quality fire resistance and naturally sound proofed dense concrete construction with:

a) Concrete ground floor slabs.
b) Concrete block party walls and cavity walls with 200mm Full fill bead insulation.
c) External & internal cement render and plaster.
d) Traditional slate or powder-coated metal roofing.

3.0 NEW APARTMENT BUILDINGS "A": 15 Apartments

The New **Cloonmore Regeneration LRD Apartment Block "A'** is designed as centralized highly compact energy efficient NZEB low energy design with PV Solar Roof to make it highly self-sufficient.

The **15 Apartments** are accessed off a central stair & lift core for maximum design efficiency and to optimize natural light and energy conscious design.
In respect of a lifecycle study for the proposed Apartment Building we note that the building is designed for low lifecycle and low annual running costs to give a sustainable low-cost building as follows:

Robust Masonry Construction:
The Apartment Building is constructed predominantly of natural robust masonry construction with 200-year life span, and with inherently high-quality fire resistance, and naturally sound proofed dense concrete construction with:

a) Concrete Floor Slabs throughout.
b) Masonry cavity walls with brick external leaf and concrete blockwork on all inner leaves throughout finished with cement plaster for a highly vandal proof.
c) The exterior brick, cement plaster and glass facade has been selected to be self cleaning and ultra low maintenance for maximum longevity and low maintenance cost.
d) Durable low maintenance concrete and ceramic tile external paving throughout.

4.0 NEW APARTMENT BUILDINGS "B": 66 Apartments

The New **Cloonmore Regeneration LRD Apartment Block "B"** is designed as Sheltered Apartment Block with a highly compact energy efficient passive solar south facing NZEB low energy design with PV Solar Roof to make it highly self-sufficient. The **66 Apartments** are accessed via 3 stair cores and a central twin lift core for optimized access & egress and energy conscious design.

This Apartment design is inherently low-energy with internal apartments giving a exceptionally low energy footprint. End Apartments will have extra insulation to compensate for exposure.

In respect of a lifecycle study for the proposed Apartment Building we note that the building is designed for low lifecycle and low annual running costs to give a sustainable low-cost building as follows:

Robust Masonry Construction:
The Apartment Building is constructed predominantly of natural robust masonry construction with 200-year life span, and with inherently high-quality fire resistance, and naturally sound proofed dense concrete construction with:

a) Concrete Floor Slabs throughout.
b) Masonry cavity walls with brick external leaf and concrete blockwork on all inner leaves throughout finished with cement plaster for a highly vandal proof.
c) The exterior brick, cement plaster and glass facade has been selected to be self cleaning and ultra low maintenance for maximum longevity and low cost.
d) Durable low maintenance concrete and ceramic tile external paving throughout.
e) Air – to Water heat pumps provide low energy hot water and heating, augmented by solar panels and battery storage for minimizing peak electricity usage, significantly reducing green house gas emissions.

5.0 NEW TRIPLEX APARTMENT BUILDINGS: 48 Apartments (8 No. Blocks x 6 Apartments each)

The New **Cloonmore Regeneration LRD Triplex Apartment Blocks** are designed as small centralized highly compact energy efficient NZEB corner buildings abutting the terraced housing. They will have a low energy design with PV Solar Roof to make them highly self-sufficient.

These **Corner Triplex Apartments** are accessed off a roof-lit central stair (with provision for a future Part M compliant lift core) for maximum design efficiency and to optimize natural light and energy conscious design.

In respect of a lifecycle study for the proposed Apartment Building we note that the building is designed for low lifecycle and low annual running costs to give a sustainable low-cost building as follows:

Robust Masonry Construction:
The Apartment Building is constructed predominantly of natural robust masonry construction with 200-year life span, and with inherently high-quality fire resistance, and naturally sound proofed dense concrete construction with:

a) Concrete Floor Slabs throughout.
b) Masonry cavity walls with brick external leaf and concrete blockwork on all inner leaves throughout finished with cement plaster for a highly vandal proof.
c) The exterior brick, cement plaster and glass facade has been selected to be self cleaning and ultra low maintenance for maximum longevity and low cost.
d) Durable low maintenance concrete and ceramic tile external paving throughout.
e) Air – to Water heat pumps provide low energy hot water and heating, augmented by solar panels and battery storage for minimizing peak electricity usage, significantly reducing green house gas emissions.

5.0 NEW TOWNHOUSES: 14 Terrace Townhouses + 4 Courtyard Townhouses:

The New **Cloonmore Regeneration LRD Townhouses:** are designed as small highly compact energy efficient NZEB terrace houses set between the corner Triplex Apartments. They will have a low energy design with PV Solar Roof to make them highly self-sufficient.

These **Townhouses** are 2-Storey, own door access, residential units with good solar access for maximum design efficiency and to optimize natural light and energy conscious design.

In respect of a lifecycle study for the proposed **Townhouses** we note that the houses are designed for low lifecycle and low annual running costs to give a sustainable low-cost building as follows:

Robust Masonry Construction:
The **Townhouse** are constructed predominantly of natural robust masonry construction with 200-year life span, and with inherently high-quality fire resistance, and naturally sound proofed dense concrete construction with:

a) Concrete Ground Floor Slabs throughout.
b) Masonry cavity walls with brick external leaf and concrete blockwork on all inner leaves throughout finished with cement plaster for a highly vandal proof.
c) The exterior brick, cement plaster and glass facade has been selected to be self cleaning and ultra low maintenance for maximum longevity and low cost.
d) Durable low maintenance concrete and ceramic tile external paving throughout.
e) Air – to Water heat pumps provide low energy hot water and heating, augmented by solar panels and battery storage for minimizing peak electricity usage, significantly reducing green house gas emissions.

6.0 NEARLY ZERO ENERGY BUILDING CONSTRUCTION: (NZEB)

All the new Houses and Apartment building will have an A1 Ber Rating (the highest standard) and is designed to meet latest NZEB (Nearly Zero Energy Building) standards complete with Solar PV Roof to reduce energy consumption to less that 40 Watts per sq.m. Annual average energy costs of less than €500 per year per unit are anticipated.

This will ensure that the development will have some of the lowest energy costs in Tralee, enhancing its Lifecycle efficiency over time. This is being achieved with:

a) 200mm High Density underfloor insulation.
b) 200mm full fill cavity wall insulation permanently encased in cavity masonry.
c) 400mm non-flammable mineral wool roof insulation.
d) Low Energy Glazing.
e) Heat Recovery Ventilation
f) State of the art low energy temperature controlled ceramic radiators.
g) Natural lighting and Low energy LED internal & external lighting throughout shall meet and exceed the standards for a NZEB building design. Sensor operated LED lighting is provided to all internal common areas.
h) Household appliances shall where practicable be “A-Rated” energy Standard.
i) Solar PV Roof with optional dedicated energy storage for each individual apartment to extend use of renewable energy and maximize off peak demand.
j) Air – to Water heat pumps provide low energy hot water and heating, augmented by solar panels and battery storage for minimizing peak electricity usage, significantly reducing green-house gas emissions.
k) Low energy hydraulic lift common to all Apartments means running and maintenance costs highly cost effective and economic to maintain and run.

6.0 CENTRAL MANAGEMENT COMPANY:

A unified management company will be set up to manage & insure the whole property, structure and common areas including building insurance and a sinking fund, all with the aim to keep management and long-term running costs per unit to a minimum. A full report identifying ongoing maintenance costs will be compiled in accordance with the Multi Unit Development Act 2011, which will then form the basis of calculating the Annual Maintenance Charge for individual property owners.

At time of the Application the annual management costs are estimated to be less than €1000 per year with €500/year for a sinking fund for ongoing maintenance and future upgrade costs. Coupled with the low NZEB energy costs this will make this a highly cost-effective apartment low energy and low maintenance Apartment development.

7.0 WASTE MANAGEMENT:

A central Waste & Bin Storage facility is provided with provision for waste and recycling and an annual waste management contract with Higgins Waste & Recycling will be included in the annual management charge.

8.0 CONCLUSION:

The conclusion is that we will be able to deliver a state-of-the-art NZEB low lifecycle cost Apartment building and Houses that are sustainable and durable. The traditional durable masonry structure & exterior finishes have an estimated 200-year life span for building longevity and maximum life cycle value. External doors and windows have a 50-year design life. While interiors have a 200-year structural integrity with a 30-year interior fit-out lifecycle. They are designed to Nearly Zero Energy Building (NZEB) standards to be highly energy efficient and have a low Carbon Footprint and combat climate change. This is the future of building which will allow us to eliminate our dependency on fossil fuels and carbon emitting energy.

Each House and Apartment is fully independent with individual control over all internal services and equipment. An owner managed central management company will operate and maintain the public facilities and provide a sinking fund for ongoing maintenance of the building. In short this will deliver a highly cost-effective low energy and low maintenance building to the benefit of all the Apartment Owners.

We strongly recommend this high-quality design and building to Kerry County Council and respectfully request that you see the significant merit in the proposed design and construction, which will be a major advancement in Housing and Apartment Design for Tralee.

Yours sincerely,

John Phelan, B.Arch., FRIAI, Chartered Architect