

PLANNING STAGE

SUSTAINABILITY REPORT (FINAL)

FOR

CITYWEST RESIDENTIAL DEVELOPMENT

FOR

OBSF(I) LIMITED

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Document History

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1. Project Description

The development will consist of a mixed-use residential scheme (total GFA 26,929 sqm) comprising 6 no. blocks to provide 290 no. apartment units and associated residential amenity facilities, a childcare facility and 6 no. retail / commercial units on a site of c. 2.9 ha.

The proposed development will consist of:

6 no. blocks (A – F) ranging in height from 4 – 7 storeys to provide 290 no. apartment units, with balconies / terraces to be provided on all elevations at all levels for each residential block, consisting of 106 no. 1 bedroom units, 144 no. 2 bedroom units and 40 no. 3 bedroom units.

The provision of c.246 sqm of residential amenity facilities (to include a gym, lounge, meeting room and cinema room) located within the ground floor of Block A, and c. 93 sqm of residential amenity facilities (to include a gym and lounge) located within the ground floor of Block E;

A childcare facility (c. 265 sq m) located at the ground floor of Block D providing 71 no. childcare places, and an outdoor play area of c.385 sq m;

3 no. retail units located at the ground floor of Block E (c.207 sq m);

1 no. retail unit and 2 no. café / restaurant units located at the ground floor of Block F (c.283 sq m);

A total of 153 no. car parking spaces, at surface level and existing basement level, to serve the development to include, the reallocation of 37 no. existing surface level spaces; 67 no. new surface level spaces and the reallocation of 49 no. spaces from commercial to residential use at existing basement level;

A further 29 no. existing car parking spaces to be relocated within the site to serve their existing uses; Provision of a new ramp to the Citywest Shopping Centre basement car park at the existing southern / rear elevation;

Elevational upgrades to the southern / rear elevation of the Citywest Shopping Centre;

298 no. bicycle parking spaces within integrated cycle stores within each residential block, and at surface level;

Landscaped open spaces to comprise c. 2,310 sq m of residential communal courtyards, outdoor spaces, children's play areas, roof terrace to Block F and outdoor gym.

Single storey ESB substation and plant room of c. 27 sq m;

Alterations to existing road alignments within the site and omission of 1 no. parking space within the public car park to the front of Citywest Shopping Centre.

The proposed development will also include hard and soft landscaping, pedestrian and cycle links, boundary treatments, public lighting, green roofs, commercial and residential waste facilities, piped site wide services, and all ancillary works and services necessary to facilitate construction and operation.

2. Introduction

With consideration to the EU energy performance of Buildings Directive (EPBD), the Building Regulations Technical Guidance Document, Part L (NZEB), for sustainable design and reductions in energy and carbon emissions, the building services design strategy for the proposed residential development is to utilise sustainable design options and energy efficient systems that are technically, environmentally and economically feasible for a project of this kind.

The strategy targets a low energy and environmentally friendly development. This report will demonstrate that the design philosophy for the proposed development will employ a holistic approach to the construction and integration of the buildings, the proposed systems and the end users. This philosophy is supported by the use of sustainable engineering solutions and energy efficient systems.

The design team recognises the need for the buildings to be designed and operated in a manner that reduces the energy consumption and carbon emissions. This objective will be achieved in an economical manner whilst maintaining a comfortable internal environment.

3. Energy & CO² emission

It is proposed to reduce the building energy demand and carbon emission by implementing passive and active measures, which reduce energy, carbon emission, and cost through buildings lifecycle. A compliance assessment against Building Regulation Part L requirements will be carried out on the proposed development using IES software.

The CO² emission rate from the proposed buildings will be less than that of the reference building used in the Part L assessment. The calculated primary energy consumption rate of the proposed buildings will also be less than that of the reference building.

The calculated result of energy performance coefficient and carbon performance coefficient of the proposed buildings will not exceed the maximum permitted under the Part L. The energy and carbon emission performance of the proposed buildings will be less than that of the reference building when assessed against Part L 2017 of the building regulations.

In order to achieve the overall Nearly Zero Energy Performance criteria, the renewable energy target will be provided from onsite or nearby renewables.

The preliminary estimation indicates a BER A2 being achieved for the proposed buildings.

4. Sustainability Overview

The sustainability design of proposed development presents an opportunity to achieve that each block performs energy efficiently and meets the NZEB challenges. The following design elements are taken through passive and active measures, which has been designed to reduce energy and carbon emission through the proposed development building lifecycle.

4.1 Passive Measures

The approach to sustainable solutions and energy efficiency has considered the advantages of passive solar design and the improvement of building construction elements to reduce the requirements for energy.

These include the following design elements:

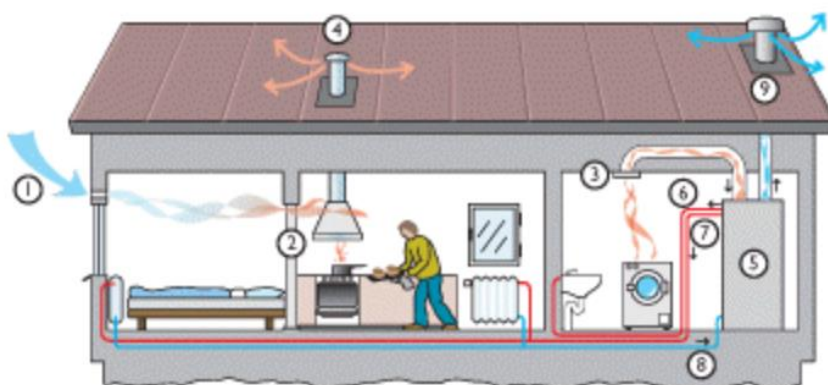
- The strategic placement of glazing on façades maximise the use of natural daylight to enhance visual comfort, without compromising thermal performance. Maximising solar heat gains during winter to reduce the artificial lighting and space heating load whilst minimising summer gains.
- The reduction of fabric losses from the new building will be achieved by using materials with U-values which are lower than those required by the 2017 Building Regulations, demonstrating the energy efficient approach being adopted for this development.
- The building must comply with the Building Regulations in the provision of air tightness.

It is proposed to reduce the building energy demand by implementing these passive measures.

4.2 Active Measures

Active measures have been considered to ensure minimal energy requirements, robust design, optimal operation and minimal life cycle costs are achieved. The active energy measures considered include the following technologies:

- Exhaust air source heat pump for heating and hot water generation within each dwelling. This system uses recycled heat from the ventilation system to heat the space. In heat pump mode the system uses air drawn through ducts to the heat pump from the bathrooms, utility and kitchen areas. The colder 'waste' air is then discharged to the atmosphere through a separate duct. This system also provides the ventilation required within the dwelling resulting in a very energy efficient heating and ventilation system.



Principles of Exhaust Air Heat Pump

Item	Advantages
1	Meets the requirements of NZEB
2	No external plant space required
3	Single device with single point of maintenance
4	Single ESB meter only per dwelling
6	If dwellings are sold as separate units each owner will have their own internal system
7	No building centralised system for the heating and hot water generation
8	System is available from a number of suppliers in the Irish market
9	No building centralised system for the heating and hot water generation

- Automatic lighting control complete with combined PIR detection. Intelligent lighting controls in landlord areas allow electrical energy savings as well as increasing the occupant exposure to natural daylight.
- Pressurised water services using variable-speed drive multi-stage booster pump sets. VSD technology can realise energy savings of up to 50% compared to standard fixed-speed pumps, as the pump motors ramp up & down to accurately match the load requirements.
- Water services will incorporate low-flow fittings.

5. Renewables

Renewable technologies have been employed to offset and exceed the requirements of building regulations Part L. Heat pump technology is the primary technology utilised in the generation of hot water as well as domestic hot water.

6. Conclusions

The sustainable design elements of the proposed development contribute to a building design that will exceed the Building Regulations in terms of primary energy consumption and carbon dioxide emissions.

The passive measures included in the design significantly contribute towards reducing the loads on the active systems within the building.

The active measures have been designed to reduce the primary energy consumption through intelligent control and highly efficient plant and equipment.

The sustainable design of the proposed development offers a development that will consume significantly less primary energy than the reference building used to assess Part L compliance.]