



Consulting Engineers

Engineering Consultants
Camden Business Centre
12 Camden Row
Dublin 8
Ireland

Phone: +353 1 4790594

Web: www.jak.ie

Email: info@jak.ie

CLIMATE CHANGE ADAPTATION & ENERGY EFFICIENCY STATEMENT

FOR

STEELWORKS PROPERTY DEVELOPMENT LTD.

AT

**COOKSTOWN CROSS
UNITS 66 & 67, FOURTH AVENUE
COOKSTOWN INDUSTRIAL ESTATE,
TALLAGHT,
DUBLIN 24**

Project Reference:	J521
Revision Ref:	A
Date Prepared:	15th February 2019
Date Issued:	7th October 2020
Prepared By:	Jonathan Kirwan & Martin Obst

CONTENT

1. Introduction.....	3
2. Climate Change Adaptation Statement	4
3. Energy Conservation & Renewable Energy.....	7
4. References.....	8

1. INTRODUCTION

Climate change presents a unique challenge for Ireland economy, environment and society. This document is intended to provide a statement for plan and adaptation for projected climate change and impacts. The overall design was developed based on Adaptation Wizard from Climate Ireland and ensures that the development is equipped for challenges anticipated from a changing climate.

The document outlines Climate Change Adaptation Design for the Development along with detailed energy efficiency design of the Development. The energy efficiency design considers the upcoming revisions in the Part L Building regulations document and is guided by I.S 399 (Energy Efficient Design Management).

The development shall be constructed to achieve a high level of thermal efficiency with highly insulated building fabric and optimising passive solar gains. Our design will also address ways of influence the behaviour of the occupants which can help to reduce the energy consumption.

Our design employs that all apartments will have a very high energy performance & amount of energy required will be covered to a very significant extent by energy from renewable sources.

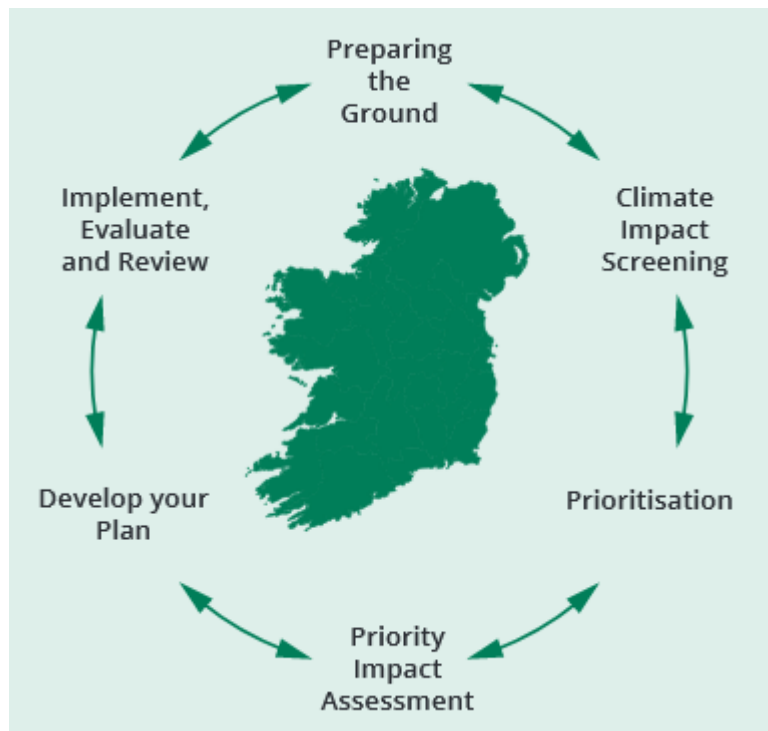
Our in-depth analysis and design modelling of the development will show that the most suitable system to be compatible with possible connection to district heating scheme are high efficiency modulating gas boilers in cascade arrangement providing heat and hot water for each apartment via heat interface units in each apartments. The renewable targets will be met with the roof mounted PV panels producing renewable electricity on site.

The building is designed in such a way so the central core risers are all collectable & link so to allow for future centralisation of services which would allow for ease of connection to future centralized heating system as wayleaves are provided compatible with the HEATNET district heating scheme.

2. CLIMATE CHANGE ADAPTATION STATEMENT

Climate Change Adaptation Statement aims to ensure that this project will be better prepared to respond to current and future climate change impacts by reducing our vulnerability to climate change. Adaptation actions aim to reduce the impacts of climate change and also to take advantage of any opportunities presented by climate change.

Local Authority Adaptation Wizard provided by Climate Ireland was used as a baseline to prepare this statement.



This document divides adaptation responses into 3 basic categories:

- Grey Actions - Technological and engineering solutions.
- Green Actions - Ecosystem based approaches that use the multiple services of nature
- Soft Actions - Managerial, legal and policy approaches that alter human behaviour and style of governance.

Climate Change Adaptation Statement provides effective strategies to lower Greenhouse Gases for the development, with respect to:

- Construction stage – waste management & recycling
- Services - lighting, space heating and hot water,
- Climate-dependent envelope changes – high levels of insulation, air-tightness
- Human behaviour - using fewer resources, efficient appliances, efficient transport
- Renewable energy sources - solar photo-voltaics

2.1 Project Location

The proposed development site is located within The Cookstown Station Precinct as referenced in Tallaght Town Centre Local Area Plan (South Dublin County Council). The site is located on the north western edge of the Town Centre area walking distance to the Cookstown LUAS Station. The development of the station has elevated the importance of the area in terms of establishing an integrated land use and transport corridor along the LUAS line.



2.2 Climate Impact Screening

Building sector has high energy demand which includes the energy used during construction, embodied energy of materials used and in addition there is energy demand of the buildings once occupied.

During the construction process waste is generated and efforts to reduce and recycle waste need to be incorporated.

Changes in climate are being observed and these impacts are expected to continue and intensify into the future. Risk of flooding would be assessed as part of the adaptation design.

2.3 Assess Climate Risk

Energy Demand & Waste Materials – Construction

Energy demand of the construction process includes production and removal of waste generated on site.

Energy Demand – Occupied Building

Energy demand of the occupied apartments can contribute to the climate change as at present majority of generated energy comes from carbon-based fuels. Carbon footprint of the occupiers can be based on the commuting and consumption patterns.

Flood Risk

Extreme weather patterns can pose higher risk of flooding which can cause high economical damage and disruption to the community. Review of the flood risk is included in the Engineering services report and it is deemed to be outside the 1000 year flood events (Zone C)

2.4 Impact Statement - Adaptation Options

Reduce Energy Demand – Grey Actions for the Occupied Building

The development design includes measures to reduce carbon footprint of the building. High level of insulation and high performance glazing will reduce the heating demand on the plant and on site produced renewable energy will further decrease the energy demand. Chapter 3 provides description of Energy Conservation & Renewable Energy which serve as the Grey actions to reduce the energy requirements of the building.

As part of the design process IS 399 was used to review the energy efficient design and to include the energy design. The provision for a connection to the future district heating network will aid the adaptability of building and enable the building to be retrofitted or refurbished to meet higher energy efficiency standards into the future.

Behavioural Measures – Soft Actions for the Occupied Building

The way people use energy in the home, at work and in commuting between the two places, has the potential to save up to 20% of total energy consumption.

Many Irish households are unaware of the large ecological footprint that they have on the environment and how to easily save resources and prevent waste. Soft actions will aim to inform the building occupants on effective strategies to use less resources, efficient appliances, efficient use of their heating/hot water controls and efficient transport/ commuting.

Reduce Energy Demand – Grey & Soft Actions during Construction

This is covered by the document 'DRAFT CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT PLAN' which is included in this planning application by GDCL Consulting engineers. This document is intended to set a clear path and philosophy for the future nominated contractor in drawing up their own final strategy for Construction and Demolition Waste Management Plan.

Flood Risk

The subject site is located more than 1km from the Whitestown Stream and therefore has not been included in the Draft ECFRAMS study currently under public consultation. The site is therefore deemed to be within Flood Zone C, i.e. outside the 1000 year flood events. Additionally, the site is also located more than 12km from the coast. The sequential approach recommended by "The Planning System and Flood Risk

Management Guidelines for Planning Authorities” has been complied with for the subject site as it is within Flood Zone C.

2.5 Implement, Evaluate & Review

The adaptation options outlined above should be implemented by the main contractor and after building handover by future management company. The management company will be responsible to develop a final implementation plan, a monitoring routine and a schedule of evaluation and review.

3. ENERGY CONSERVATION & RENEWABLE ENERGY

The apartments will be constructed with high standard of insulation & air tightness which aim to exceed the requirements of Part L Building Regulations. Energy demand minimization will be achieved by best practise in heat recovery ventilation and energy efficient building design. All windows will come with high performance glazing.

The specification of individual building elements, building services and items linked to energy efficiency was reviewed in detail for the typical apartment types occurring throughout the development to ensure compliance with the building regulations and requirements of the SDCC.

Key Sustainable Design Elements:

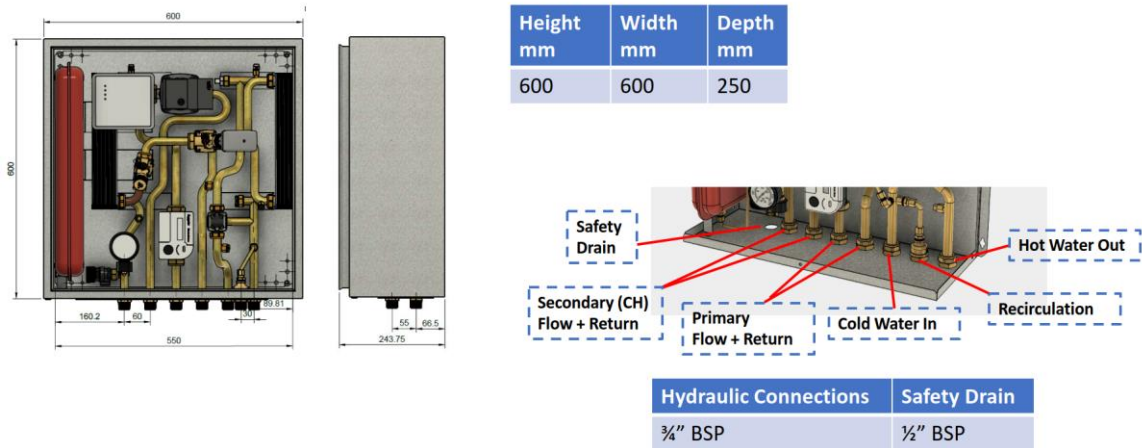
- High performance glazing in the windows.
- High levels of insulation
- Low energy lighting throughout the development.
- High levels of airtightness of the apartments.
- High efficiency centralised plant serving heating & hot water requirements
- Behavioural Measures

The building shall be designed in such a way so that central core risers are all collectable & link to basement plantroom area as indicated in the drawing J488(6-03).

Part L compliance shall be achieved by implementing of high efficiency centralised heating system. The Part L renewable contribution shall be covered by the Roof Mounted PV Panels. A space allowance analysis has been carried out to ensure adequate plant space is provided to facilitate Plant & Equipment and sufficiently sized services risers are provided.

We have liaised with Gas Networks representative and they have confirmed there is 125 PE 4 BAR Gas Main available adjacent to the site.

Each apartment will be fitted with a Heat Interface Unit (HIU) which shall be wall mounted and designed to provide indirect space heating and Instantaneous DHW. Each unit contains an ultrasonic heat meter to fitted with MBUS communications which will be linked back to plantroom and provide a record of heat and hot water used by the occupier for purpose of billing.



Infrastructure

The proposed site location is very well serviced by all major utilities. Major spine services for Gas, Electricity Water and Communications have local network sufficient to meet the needs of the new development.

We have explored utilities which are in immediate close proximity to the site & reviewed specific service diversions, service routes and capacities to the site. The appended drawing J488(6-)02 indicates current and future infrastructure.

References

- South Dublin County Council Development Plan 2016 - 2022
- Tallaght Town Centre Local Area Plan (South Dublin County Council)
- A Strategy Towards Climate Change Action Plans for The Dublin Local Authorities
- Dublin City Sustainable Energy Action Plan 2010 - 2020 – v2
- South Dublin County Council - Pre-Planning Guidance
- EUROCITIES Declaration on Climate Change
- National Climate Change Adaptation Framework Building Resilience to Climate Change, DECLG (2012)
- The EU Strategy on adaptation to climate change