

# Housing Strategic Policy Committee

Housing and Community Services

Mechanical and Energy Efficiency Section

Energy Efficiency / Circular Economy

8<sup>th</sup> November 2023

Presented By Shane Hawkshaw - Senior Executive Engineer



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Bhaile Átha Cliath  
Dublin City Council

# Introduction

This presentation is intended to provide a progress update on Energy Efficiency Initiatives and Improvements which are delivered to our tenants under the following Programmes in addition to incorporating the Circular Economy:

- Boiler Replacement Programme
- Energy Efficiency Retrofitting Programme (EERP)
- EERP Tender 2023
- Enhanced Works Programme
- Circular Economy



# Boiler Replacement Programme Update



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# Boiler Replacement Programme

- From 2017 to 2020, DCC upgraded a total of **2,686** domestic gas boilers and heating systems in tenant's dwellings
- During 2021 & 2022, DCC has upgraded a total of **1,384** domestic gas boilers and heating systems in tenant's dwellings
- Approximately 5,000 of our domestic boiler stock have been replaced since 2017 with high energy efficient boilers which represents 25% of our total stock
- Procurement via an open tender for domestic gas boiler replacements and gas heating system upgrades has been tendered, evaluated with contracts now awarded. The framework is envisaged to run for 4 years
- This procurement process also includes a number of new initiatives and efficiency upgrades on existing gas heating installations which will return estimated savings of **€150-€200\*** per dwelling annually for DCC tenants (\*Source CODEMA)



# Energy Efficiency Retrofitting Programme Update



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# Energy Efficiency Retrofitting Programme

- The Energy Efficiency Retrofitting Programme is designed to reduce unnecessary energy consumption, greenhouse gas emissions and demands for non renewable resources in Dublin City Councils housing stock. It also provides tenants with healthier living conditions and offers significant money savings in heating costs.

The programme is rolled out on a phased basis:

- Phase I
- Phase II
- Revised Energy Efficiency Retrofit Programme 2021

# Energy Efficiency Retrofitting Programme

## **Phase I**

Phase I of the programme involved the following upgrades:

- Cavity Wall Fill Insulation
- 300mm Attic, Tanks and Pipes Insulation
- Roof and Wall Ventilation
- Draught Proofing
- Cylinder Lagging Jackets

Phase I is now complete which saw 8,057 units upgraded



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# Energy Efficiency Retrofitting Programme

## **Phase II/EERP**

Phase II/EERP of the programme involves the following upgrades:

- External Wall Insulation
- 300mm Attic, Tanks and Pipes Insulation
- Roof and Wall Ventilation
- Draught Proofing
- Insulated Cylinders
- Windows and Doors
- Heat Pumps

Phase II/EERP of the programme has seen 1,129 units upgraded to date



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# Energy Efficiency Retrofitting Programme

## **Revised Energy Efficiency Retrofitting Programme**

In 2021, the Department of Housing, Local Government & Heritage made significant changes to the Energy Efficiency Retrofitting Programme in light of Programme for Government commitments. Some of these changes include:

- Retrofitting of Local Authority Housing Stock to a B2 / Cost Optimal equivalent (BER) standard
- Increase in grant support for measures such as External Insulation, Heat Pumps, Window & Door Replacement, etc.
- Works Programme to be approved by the Department prior to works commencing on site
- Pre works BER Certs required for all properties along with the existing requirement of Post Works BER Certs



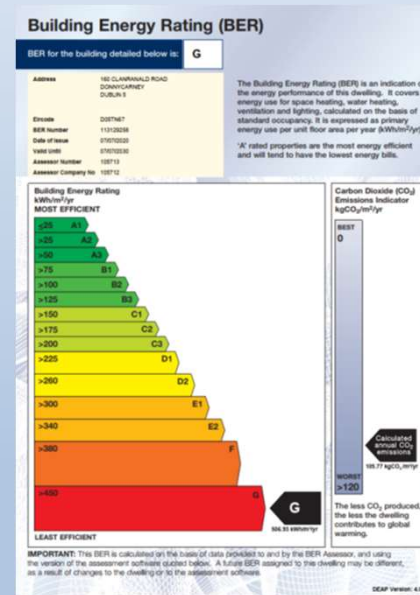
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# Energy Efficiency Retrofitting Programme

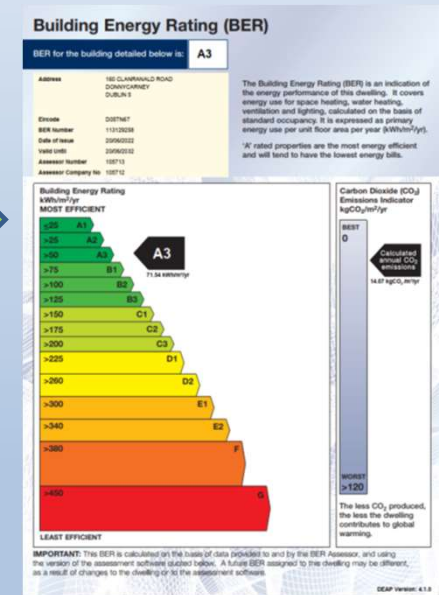
## Results For 2022:

- EERP 2022 – **201** Units Upgraded.
- EERP 2022 – **128** Air Source Heat Pumps.
- 2 out of every 3 DCC homes upgraded received a new heat pump in 2022 .
- **60No.** Units upgraded to **A3** Energy Rating.
- **122No.** Units upgraded to **B2** or Better.
- 77No. Units cost optimal in 2022.
- **54 Units** upgraded from pre works rating of F or G (lowest) with **11No.** being upgraded to an A rating (highest) in 2022.
- **2023 to date:** 227 Units complete, 46 units in progress => Target completion of 273 units upgraded inclusive of 165 Heat Pumps

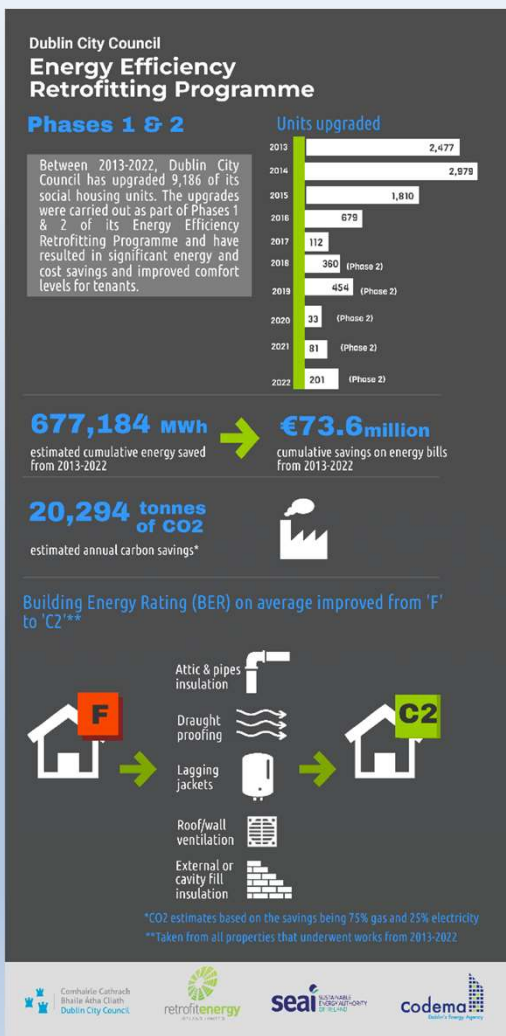
Post Works BER Rating	A3	B1	B2	B3	C1	C2	C3
No.	60	51	11	49	17	6	5
	122No. B2 Rating or Better				77No. Cost Optimal		



**85%**  
**Energy**  
**Saving**



# Energy Efficiency Retrofitting Programme



## Results Overall:

- Phase I Complete – **8,057 Units Upgraded** (cavity fill insulation, attic insulation & cylinder lagging).
- Phase II / EERP – **1,129 Units upgraded** as of 2022. (heat pumps, external wall insulation, upgraded windows / doors & attic insulation).
- **Total of 9,186 Units Upgraded** as of 2022 under Phase I and Phase II / EERP programme.
- Average BER improvement from an F to a C2 overall, Average BER improvement from an F to a C1 Phase II / EERP.
- Approximately **80%** of our houses have now been upgraded under the programme as of 2022.
- **Estimated €73.6 Million saved in energy bills for our tenants up to the end of 2022.**

# Energy Efficiency Retrofitting Programme

## Going Forward

- Estimated 2,387 houses remain to receive upgrade works – Target B2 BER or better
- Estimated cost of €83.1 Million to complete programme at current rates
- The timeframe to complete the programme will be determined by the level of annual departmental funding received in addition to other variable factors such as COVID, market conditions, material availability etc.
- Based on current funding levels, it would take a further 8 years to complete the programme
- Funding is projected to increase year on year which would reduce this timeframe

## Programme Challenges

- Skilled Labour Shortage
- Material Shortages
- Utilities - ESB delay's (cables)
- Utilities – GNI delay's (meters)
- Weather
- Access
- Security
- Covid-19
- Health & Safety
- Queries



# Energy Efficiency Retrofitting Programme Tender 2023



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# EERP Tender 2023

## Overview of the Multi Party Framework Agreements for Dublin City Council's EERP in 4 Lots:

- Tender Procedure is an Open Procedure (OJEU)
- Successful Contractors will be admitted to the Framework in ranked order. All work will be allocated via a cascade method for all Lots
- **4 Lots in Total** – 3 Lots will have 5 Framework members per Lot. All 15 successful contractors are entered in to Lot 4
- **Lot 1:** North West Area comprising of Ballymun & Finglas: c.800 dwellings as of Q1 2023
- **Lot 2:** North Central, Central & South East Areas comprising of Artane, Whitehall, Donaghmede, Clontarf, Cabra, Glasnevin, North Inner city, South-West inner City, South east Inner City, Kimmage, Rathmines & Pembroke c. 1000 dwellings as of Q1 2023

# EERP Tender 2023

- **Lot 3:** South Central Area comprising of Ballyfermot & Drimnagh: c.800 dwellings as of Q1 2023
- **Lot 4:** Citywide for Mini Competitions. Numbers and specific locations will be as per each mini competitions as required i.e. Enhanced Works Programme for complexes for example
- **Tender Return Date:** 28<sup>th</sup> of September 2023
- **Tender Timeframe:** 96 months/8 years
- **Tender Value:** €125 Million
- **Performance Review:** Operation of the framework will be subject to an annual review. A detailed list of Key Performance Indicators (KPI's) such as cost competitiveness, quality of work, service and response times will be the main criteria for measuring performance



# Enhanced Works Programme



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# Enhanced Works Programme – Canon Burke Complex



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# Enhanced Works Programme

## **Scope of Works:**

Proposed scope of works involves the following upgrades:

- External Insulation
- 300mm Attic, Tanks and Pipes Insulation
- Roof and Wall Ventilation
- Draught Proofing
- Insulated Cylinders
- Windows and Doors
- Heat Pumps
- Full internal fit out of all units
- Ancillary works to external communal areas
- Upgrade of incoming ESB mains



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# Enhanced Works Programme

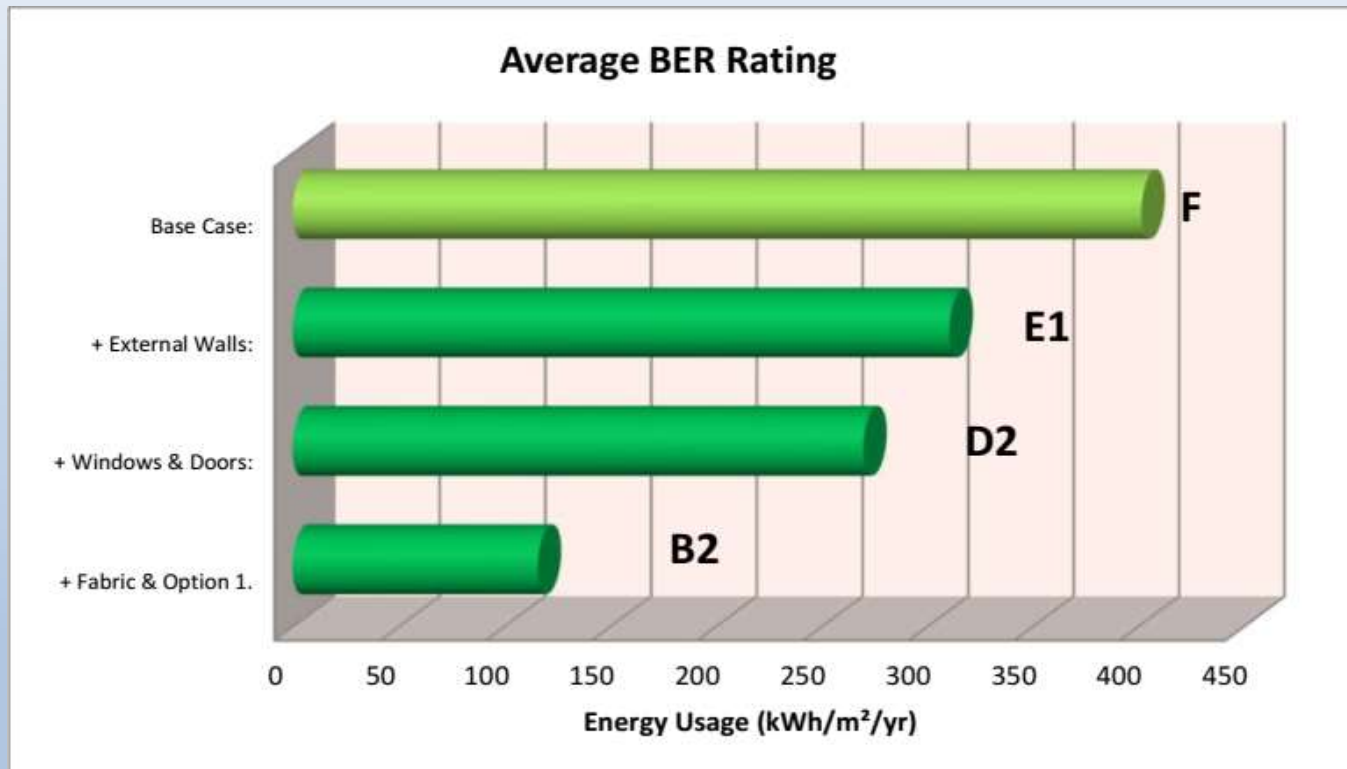
## Summary of potential BER improvements

Flat Type A - Canon Burke Flats [Ground Floor - End of Terrace]						
Element	Upgrade	BER Rating	Energy Value (kWh/m <sup>2</sup> /yr)	CO2 Emissions (KgCO <sub>2</sub> /m <sup>2</sup> /yr)	Heat Loss Indicator (HLI)	Budget Costs (€) Ex VAT
<b>Base Case:</b> Dwelling - Current Condition	-	F	401.68	72.56	4.03	-
<b>+ External Walls:</b> Solid Walls & Timber Frame	External Wall Insulation	E1	310.59	55.75	2.81	€9,060
<b>+ Windows &amp; Doors:</b> Windows & Doors upgrades	High efficiency triple glazed uPVC windows (1.1 W/m <sup>2</sup> K or lower) & insulated doors (1.1 W/m <sup>2</sup> K)	D2	269.79	48.22	2.28	€15,443
<b>Additional Measures:</b> (Option 1) Fabric & Heating upgrades [Air-to-Water - Monobloc Unit]	Complete fabric upgrade plus Air-to-Water Heat Pump System & Heating Controls	B2	115.83	14.83	2.28	€30,183



# Enhanced Works Programme

## Summary of potential BER improvements



# Circular Economy



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# Circular Economy



# Circular Economy

## **Circularity of Renewable Energy:**

The following are the three principles of the circular economy:

- Designing out waste and pollution
- Keeping products and materials in use
- Regenerating Nature

The switch to renewable energy can contribute to all three principles of the circular economy by designing out waste and pollution, keeping products and materials in use and regenerating nature.

So where are Dublin City Council adopting and endeavouring to lead as a local authority in the embracement of the circular economy in energy efficiency???



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# Circular Economy

- **Housing Stock** – Regenerate existing as opposed to demolish and rebuild
- **Heat Pumps** – Recognised renewable energy system
- **External Insulation** – Rockwool, a closed-loop recycling system to allow stone wool insulation materials – typically considered waste and discarded in landfills – to be recycled and used as secondary raw material for new products
- **Attic Insulation** – As above
- **Heating Pipework and Radiators** – Copper only pipework, no plastic/i.e. qualpex permitted. Reuse existing where possible or existing is recycled where new is required
- **Thermostats** – Hardwired as opposed to battery operated negating the requirement for replacement batteries





# Circular Economy

- **Insulated Cylinders** – Existing cylinders recycled and new stainless steel cylinders manufactured from recycled materials
- **Windows and Doors** – All windows and doors (glazing) that are upgraded in the EERP are brought to DCC storage, collected by third party contractor at no cost to DCC, recycled into new PVC windows, no additional cost versus newly manufactured PVC windows and are available to all window suppliers and installation companies

***In conclusion, Dublin City Council are embracing the circular economy as part of the rollout of the Energy Efficiency Retrofitting Programme and endeavouring to take a leading role as a local authority in the provision of same.***



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# Circular Economy

Before



After



# Thank You

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