



Mitchels Boherbee Regeneration

Vision Statement

Establish an Energy Efficiency self sustaining area meeting the identified demand, transforming the local economy base through job creation and achieving a high living standard and excellent quality of life.



TOBAR NAOFA

- *HIGH QUALITY, ACCESSIBLE ACCOMMODATION FOR THE ELDERLY*
- *In November 2008, Tobar Naofa was completed as part of Phase One of the Regeneration Project*
- *Consists of 41- Apartments and caretaker accommodation.*
- *Fully accessible and designed for independent living by the elderly.*
- *Secure Living : On-site resident caretaker, controlled access gate from Dean's Lane and private open space*
- *Heat on demand at low cost*



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SUSTAINABILITY

- **Economic Sustainability** in re-using a brown field site close to the town centre and achieving a density of 44 units per hectare.
- **Social Sustainability**- by providing a safe environment for elderly people to live independently within their community and with back up services at hand.
- **Environmental Sustainability** by reducing the energy demand of the residents and the use of a sustainable fuel.



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TOBAR NAOFA

GREEN DEVELOPMENT

Designed to SEI 'House of Tomorrow' standards i.e. 40% better insulated than the 2005 Building Regulations

Average annual saving of 0.8 tonnes of CO₂ / €200 per 2-bed apartment per year

Renewable resource- Wood Chip-fuelled District heating system sourced locally



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TOBAR NAOFA



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Wood Chip Boilers



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Wood Chip Conveyor and Store



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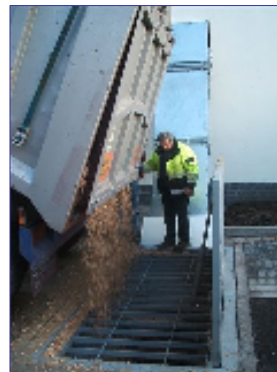


Wood Chip Conveyor and Store

•The Wood Chip is unloaded
into the underground conveyor.

•The Chip is then transferred into
the 80m³ Fuel Store.

•Unloading of a six ton delivery
takes ½ hr. approx.

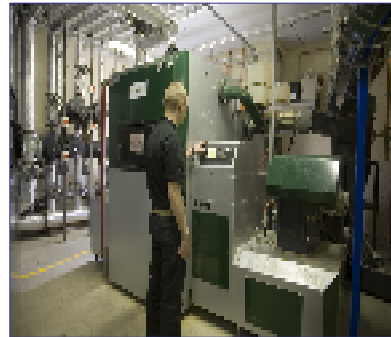


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Plant Room

- Two 500kW Hertz Wood Chip Boilers each with an auger feed system from the fuel store.
- The boilers which operate on duty/assist control are linked to two 5,000l thermal store buffer tanks.
- Distribution header with separate branch, pump and district heat pipe for each block of apartments and spare connections for future demand.



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Fuel Supply

Annual Demand

- 115 ton Wood Chip
- < 25% moisture content
- 346 MWhr Produced
- 3.01 MWhr per ton
- 8,230 kWh per Apartment
- €291.00 per Annum



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Heat Meter

- The kWh heat output from the Boiler Plant is recorded on the Heat Meter.
- The Wood Chip Supplier records the reading at each delivery for billing purposes.
- The Supplier bills the Council on kWhs of heat produced.
- North Kerry Wood Chip, Knocknagashel, is the present fuel supplier.



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Grant Support

The Biomass Boiler Plant was Grant funded by Sustainable Energy Ireland SEI under their Renewable Heat Deployment Programme.



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District Heating System

- District Heat Pipe Network to each apartment block providing temperature controlled Space Heating and instant Hot Water on demand at low cost.
- Supplying water at 800c throughout the development

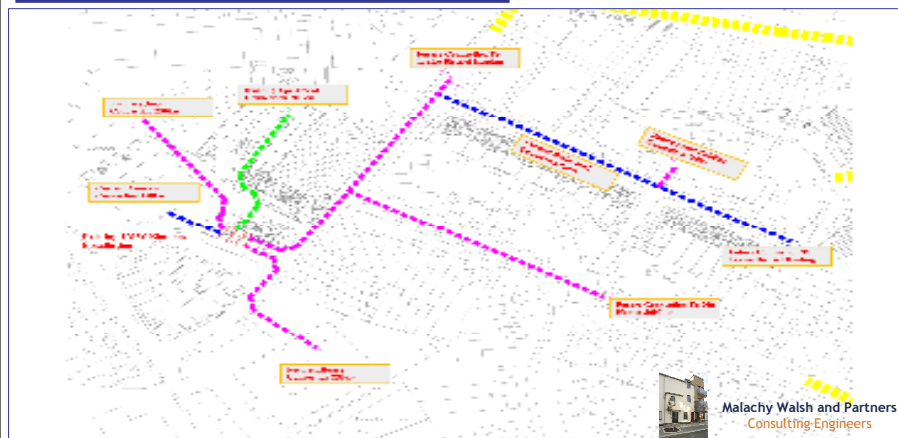


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District Heating Route



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Consulting Engineers

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Heat Distribution Substation

- Heat exchanger for instant hot water with anti-scald control.
- Underfloor heating manifolds with circulating pump and temperature limiting control.
- Time clock to control space heating times.
- Heat Meter measuring Kilowatt Hours.
- Pre-Payment Card System linked to an isolating valve.



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Underfloor Heating

- Energy efficient uniform heating throughout the apartment.
- Underfloor network designed to operate at low temperature 35°C.
- Heat thermostatically controlled in each unit
- Heat store is built up gradually - no peak demands on Boiler Plant



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PAY AS YOU USE PREPAYMENT SYSTEM

"Pay As You Use Pre Payment System" will provide the following benefits to the householder

- Addressing the issue of fuel poverty
 - Control over their budget
 - No bulk purchase of fuel required
 - Energy Awareness Tool.
 - Hot water and heating on demand
 - Increased comfort level at reduced cost
-
- Pay As You Use (Prepayment) already in use in 200 houses in Tralee and 60 in Killarney



BIOMASS RESOURCE

- 55,000 ha of forest plantation in Kerry (11.6% of County area)
- 35,500 ha (65%) is in private ownership
- 1400 local farm families involved
- Co-ops being formed in the County
- Average holding 9ha
- 10% of National Plantation Target being achieved in Kerry



BIOMASS RESOURCE

- Thinning will give 25% more income to farmers
- 50,000m³ of woodchip per annum available
- Could generate 26,000MWh of heat and 6,000 MWh of electricity with Biomass Combined Heat and Power.
- Displace over 3.5 million litres of oil which costs over €2.8million
- If oil is used as a fuel 80% of the money generated goes out of the Country, while with wood-chip 90% of the money generated stays in the County.



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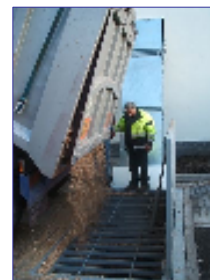
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BIOMASS RESOURCE DISTRICT HEAT & POWER SCHEME

Phase2: (Proposed Sustainable Energy Community)

Supply 12 MW Heat and 3MW Electricity to:

- 2,000 houses
- Kerry General Hospital / Health Board head office
- Dairy processing unit
- County Buildings / Clash Industrial Estate
- Hotels / Sports Complex / Aquadome
- Primary & Secondary Schools, ITT South Campus

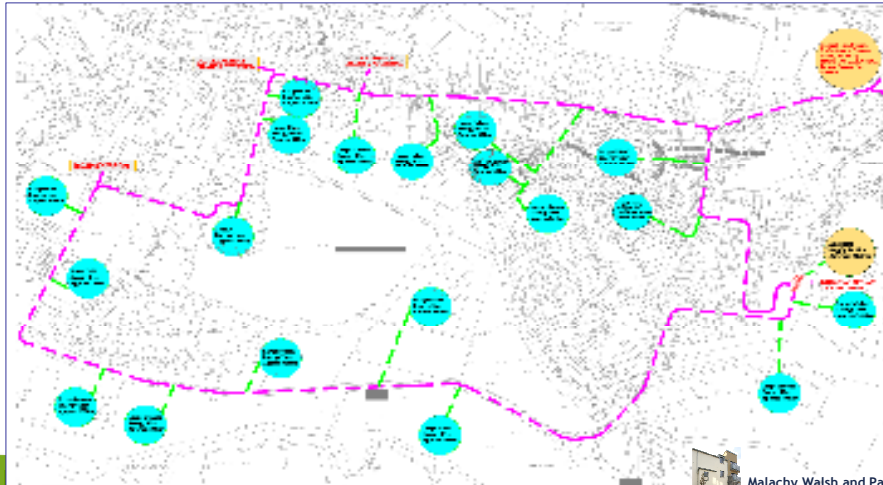


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Local Authority Social Housing
Workshop on upgrading and Building Energy Rating

Tralee District Heating Scheme



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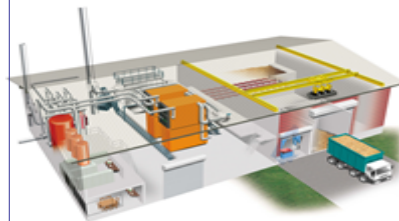
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THE FUTURE

- Potential Size 20MW Biomass Installation
- 5MW Electrical & 15MW Thermal
- Approx 15,000 Biomass Tonnes Per Year (50,000 available)
- Approx Biomass Flue Cost €1.2 - €1.4 million per year
- Potential Electrical Income €1,200,000.00
- Potential Thermal Income €3,000,000.00
- Approx 14,000 tonnes CO2 Saving
- 4,000,000L Oil Displaced



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PAY AS YOU SAVE

- Retrofitting houses to a BER level of C1
- Average cost per unit will range from €2,000 to €10,000
- Grants and tax relief are available for private houses with the balance being made up through the proposed Pay As You Save Scheme
- This will be recouped from the potential savings of €1000 - €1500 on energy cost per unit per year, over 3 to 5 years

EXTERNAL INSULATION



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ACKNOWLEDGMENTS

Tobar Naofa Housing Development

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Building Services Engineer NBA
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Structural Engineer NBA
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Domestic Plumber:

Biomass Boilers and Plant Room:

Sustainable Energy Authority of Ireland:

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