

# RSE Inquiry

## 25<sup>th</sup> August, 2005



# ‘Reinvigorating Communities through Renewable Energy’

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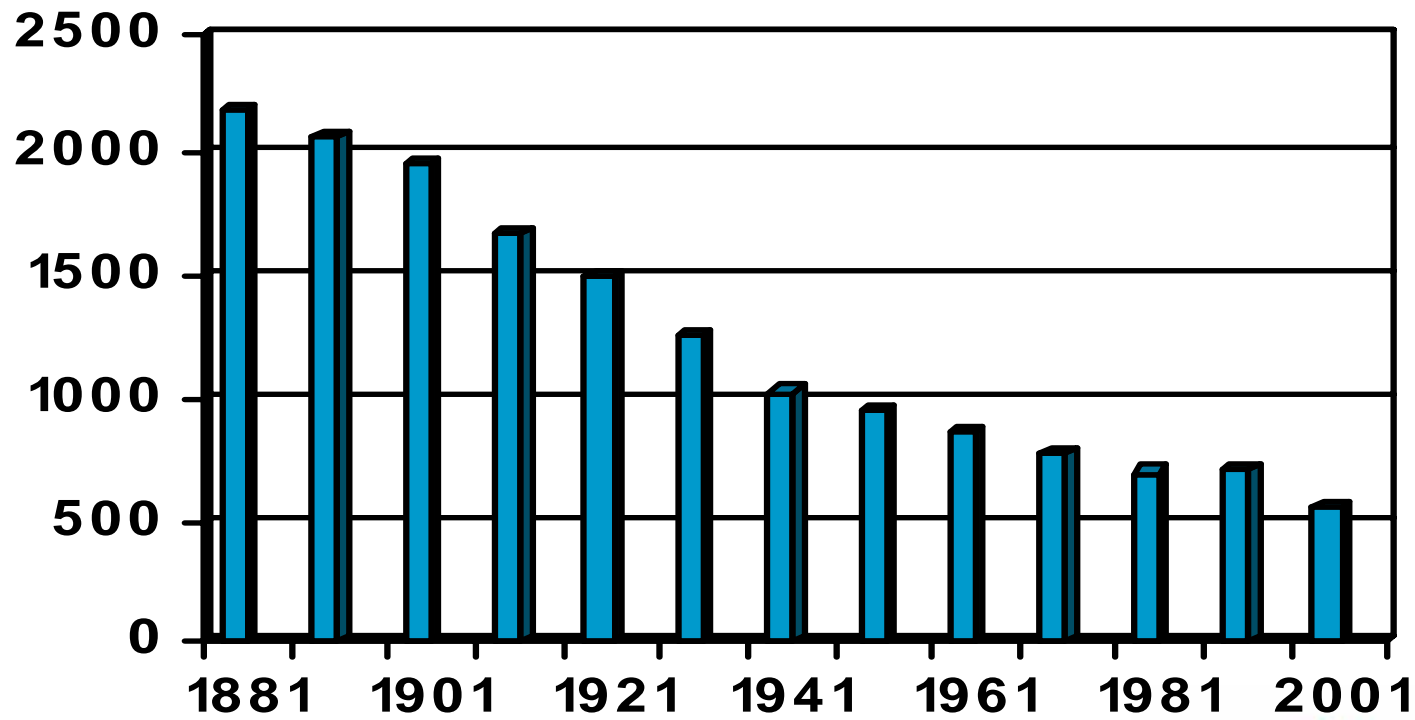
# WESTRAY



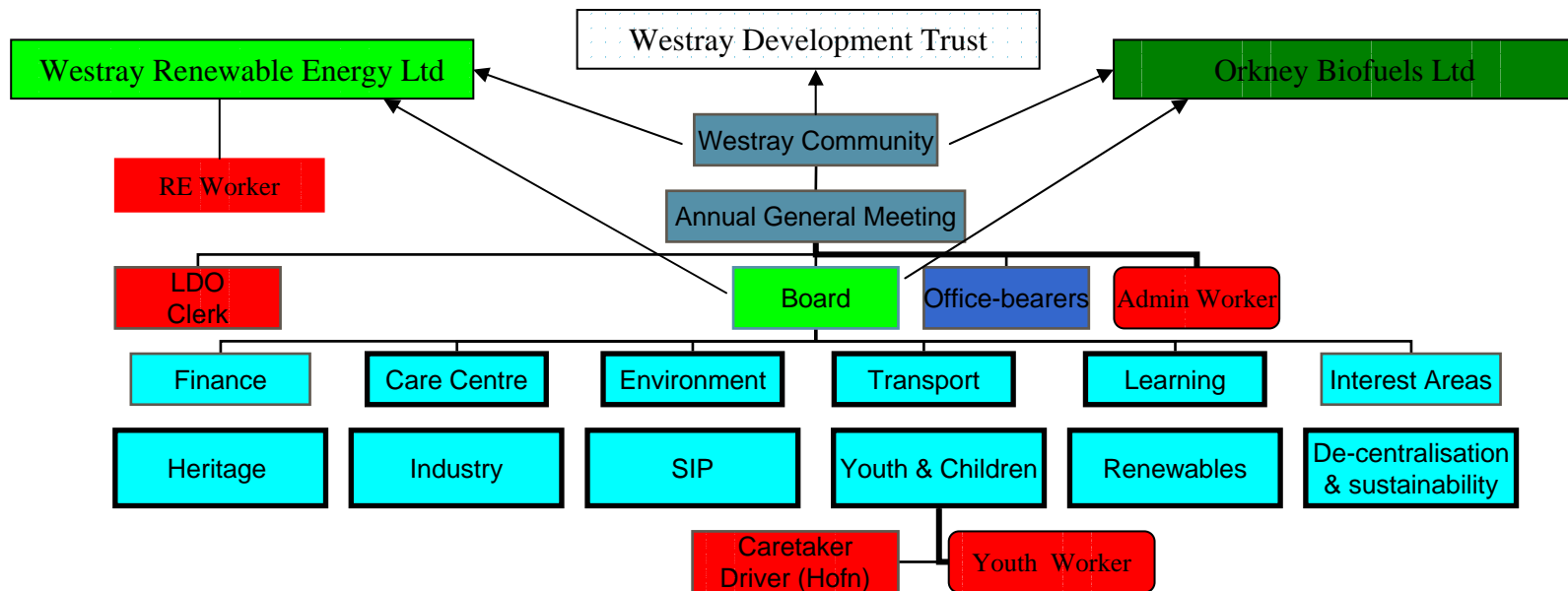
- Population 574
- Initiative-at-the-Edge two year wind down phase
- Farming/Fishing/Tourism
- Trust formed in 1998
- Energy Plan 2002



# Population decline



# WDT - Structure





# RSE Inquiry – Energy Supply

- How should Scotland provide for its energy needs over the next 5, 15, 30, 45 years, in the context of the likely UK, European and global energy environment?
- Should Scotland aim to be self-sufficient in energy in general, and in electricity in particular, despite trends towards interdependence within Europe?
- What are the possible implications and consequences for Scotland, and the UK, of becoming increasingly reliant on imported oil and gas for their energy needs?



# Providing Future Needs Sustainable Community.....

five dimensions of the ideal sustainable community<sup>1</sup>

- Increase local economic diversity
- Self reliance
- Reduction in the use of energy and careful management and recycling of waste products
- Protection and enhancement of biological diversity and careful stewardship of natural resources
- Social justice

1. Bridger, J.C. and Luloff, A.E. (1999). Toward an interactional approach to sustainable community development. *Journal of Rural Studies*.



# Providing Future Needs

## Westray Energy Plan 2002-2012.....

- Register with EU as 100% RE Island
- Identify all renewable sites and prioritise
- Conduct an Energy Supply & Demand Audit
- Maximise youth involvement
- Green transport project by 2004
- Community Energy Company in 2004
- Local production of bio fuels
- Eliminate fuel poverty by 2006
- Secure access for export to the national grid

# Providing Future Needs

## Human Capital.....



...arcus, Westray's development officer.

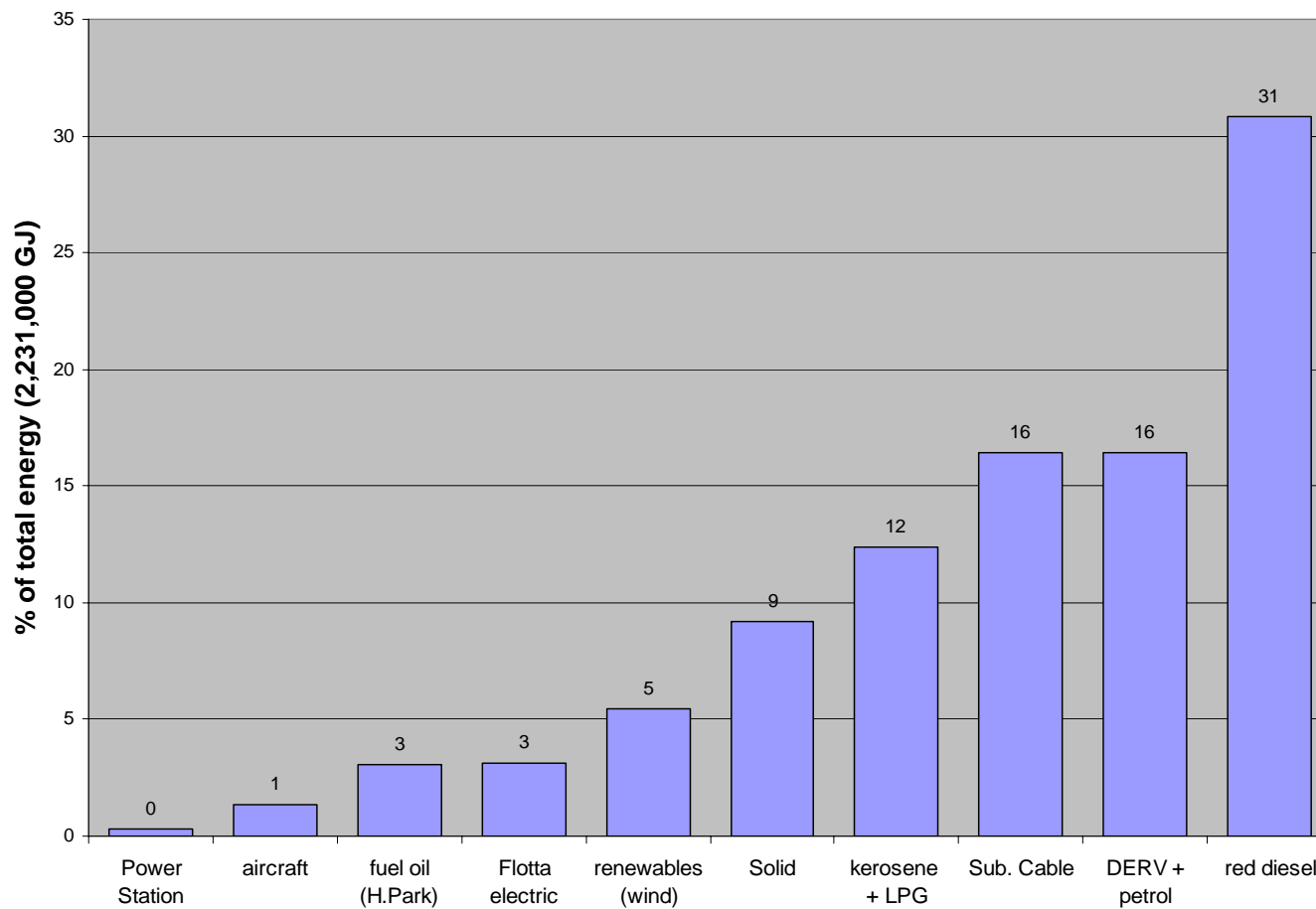
- Renewables Worker
- Cost £75,000
- In Place May 2004
- Energy Saving Trust  
– Scottish Projects  
Fund
- 2 yr post



# Providing Future Needs

## Reliance on imported energy.....

How Orkney's energy divides (2003)



# Increasing Economic Diversity

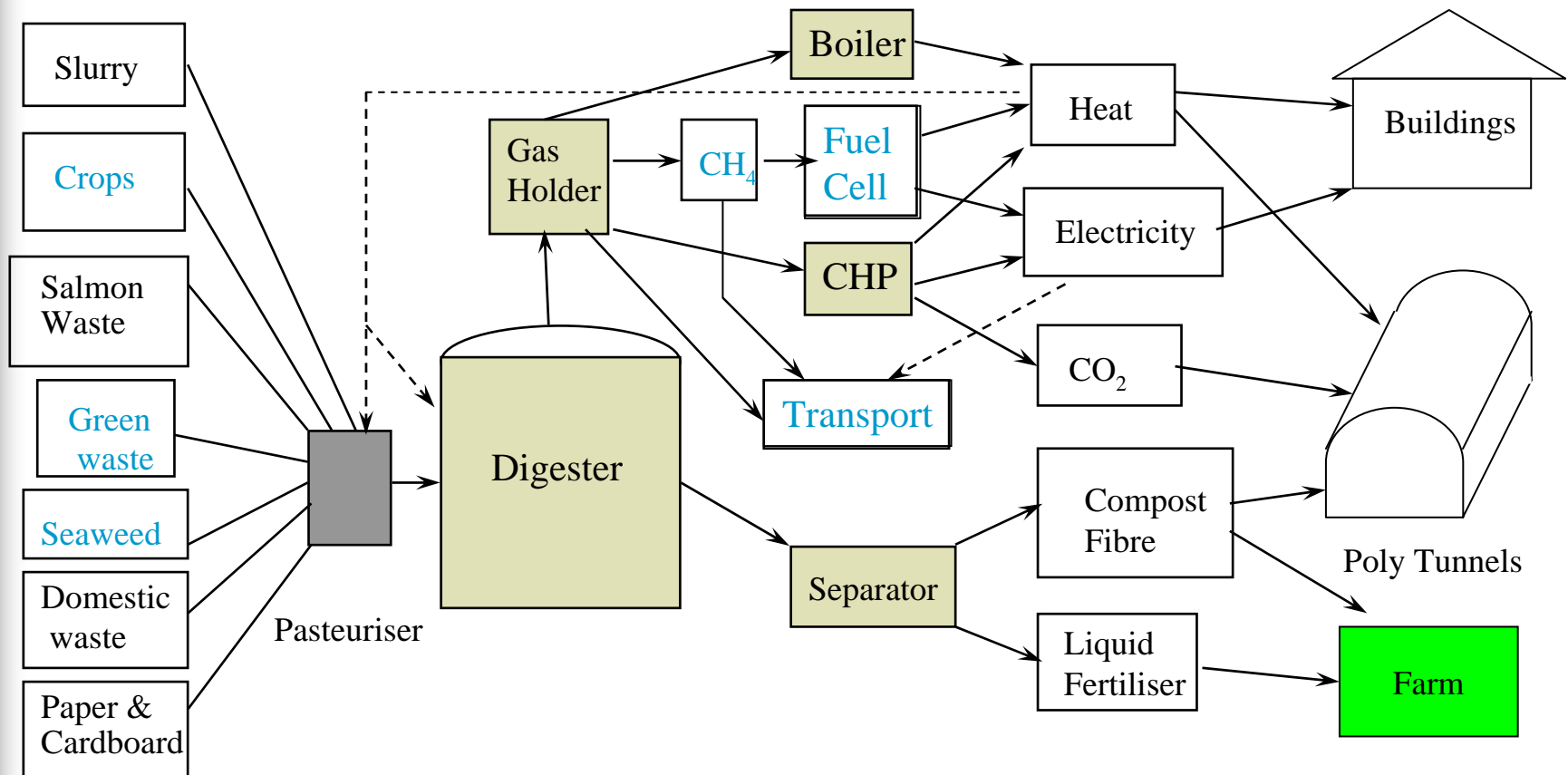
Westray Zero Waste Centre.....



- Anaerobic Digestion
- Demonstration project
- Slurry & other organic wastes
- Methane produced and burned to generate electricity, heat and CO<sub>2</sub>
- Capital Cost £800k+
- 1.5 FTE jobs created
- Grant & Debt funded

# Increasing Economic Diversity

## Westray Zero Waste Centre.....



- Opportunity to further research feedstock, methane fuel cells and gas transport.

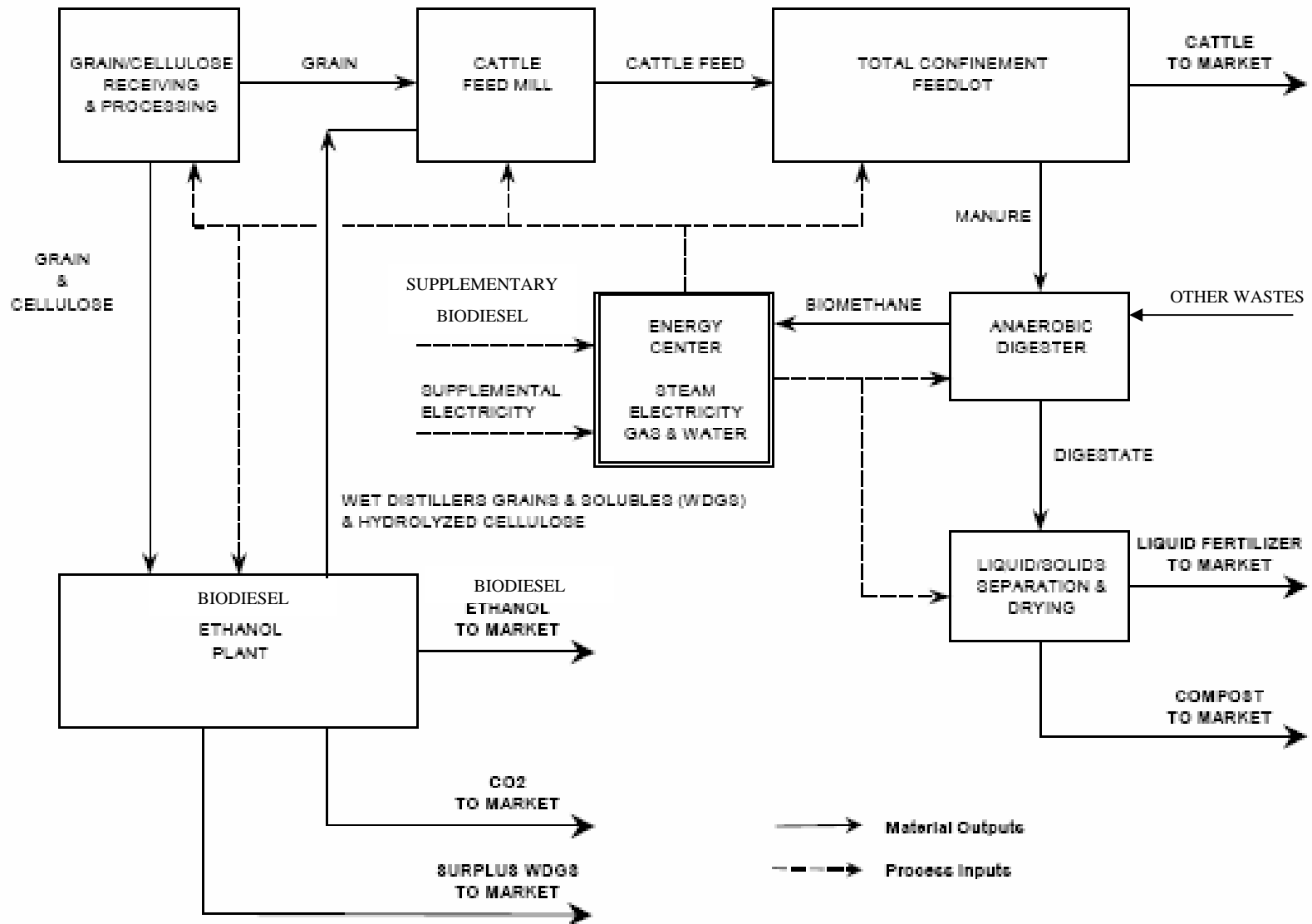
# Increasing Economic Diversity

## Biofuels Project.....

- Bio-diesel from animal by products
- Crop trials of turnip rape, rape, linseed and sugar beet at the Agronomy Institute
- Ethanol and Bio-diesel fuel production in Westray



# The future – a complete bio-refinery



# Increasing Economic Diversity

## Biofuels Project.....

- 850kW Wind Turbine
- £890k Capex
- 2 FTE jobs
- Various models of ownership
- Grant/Private/Debt
- Planning permission applied for
- 900kW grid access secure



Westray Renewable Energy Ltd.





# RSE Inquiry – Energy Demand

- What will the impact of energy availability and price be on the demand for energy by commerce and industry in Scotland?
- What are the likely trends in the domestic demand for energy for space heating and other purposes? What would need to be done to achieve major savings? What are the investment costs?
- What are the likely trends in the demand for energy for transportation in Scotland? What is the likely time-scale and scope for substituting other power sources for fossil fuels? What are the likely investment costs?

# Space Heating

## Kilnman's Cottage.....



- Eco Tourism
- Self Catering But & Ben, Opened 2002
- Heat Pump
- Won business & environment award in 2003

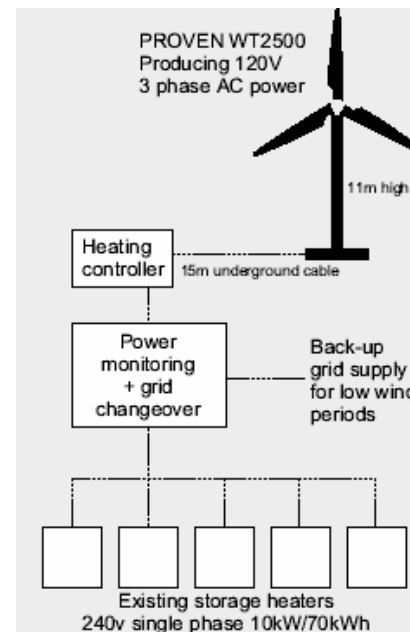


# Space Heating

## HÖFN Youth Centre.....

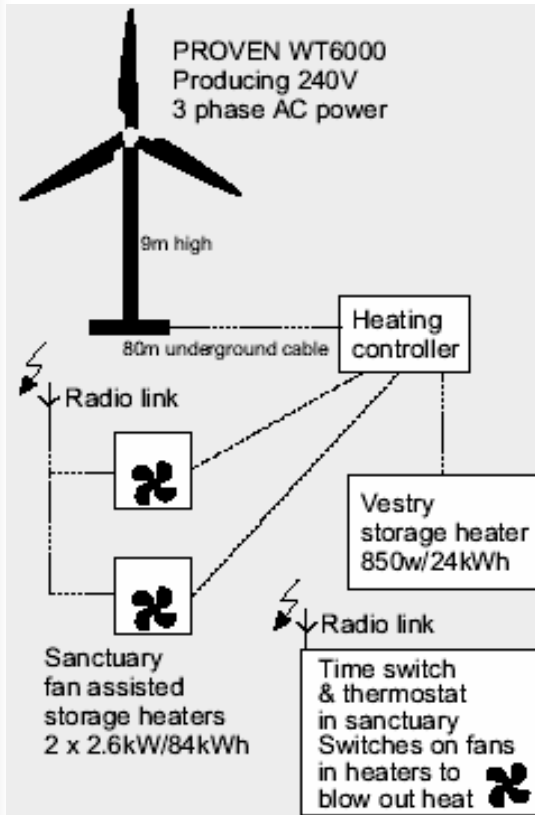


- 2.5kW WT - £15,000
- WT Installed March 2003



# Space Heating & Power

Westray Kirk.....

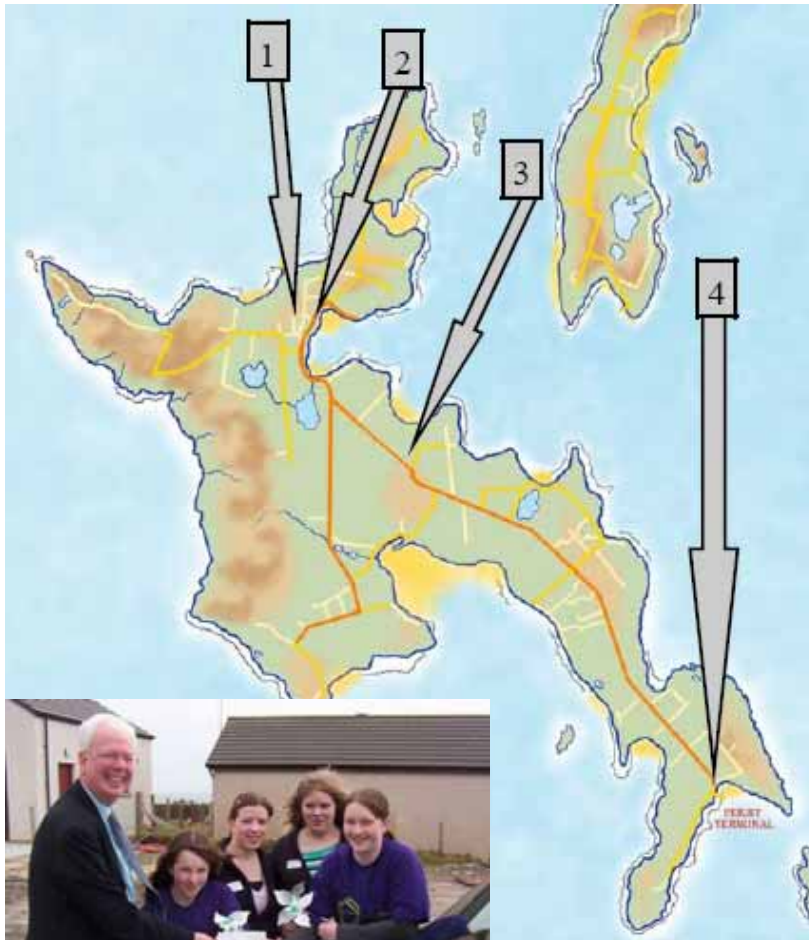


- WT Cost £26,000
- 6kW Turbine March 2003
- Heat Pump installed in 2002
- Bio-diesel in standby generator



# Transport Projects

## Electric Vehicles.....



- Wind Powered Vehicle - £55k EST Transport Energy
- SPGT £16.5k support
- Commission disabled access Renault Kangoo converted to electric power
- Install a fourth & fifth turbine at pier and office
- charging points across island

# Transport Projects

## Biofuel Vehicles.....



- Bio-ethanol production trials
- Bio-diesel being produced
- Bio-gas from WZWC
- Bio-fuel station at local garage
- Confusion between Government Depts.
- No Duty require on Biofuels to make it economic

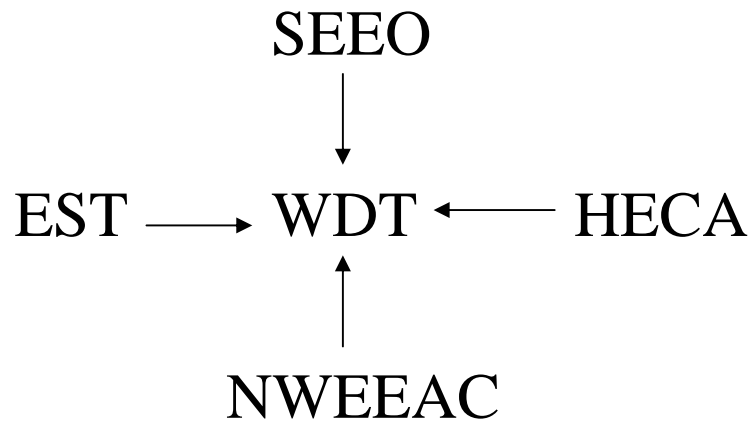


# RSE Inquiry - Environmental and Social Issues

- What are the environmental concerns that need to be taken into account, in terms of the impact on ecological and other natural resources, as well as waste management and impacts on the landscape?
- Can the objectives of environment improvement and economic growth both be met without a major increase in energy costs? What steps should be taken to enable an informed debate on the issue?
- What are the social values and consequences of energy generation and distribution on employment opportunities, health, and energy affordability?



# Reduction in the use of energy and careful management and recycling of waste products....

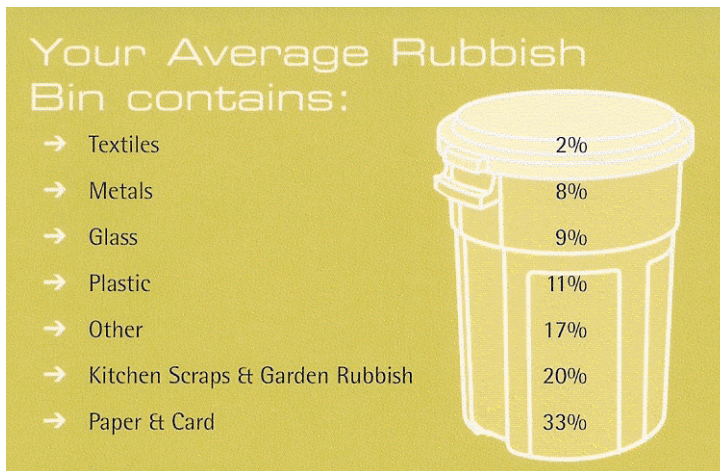


## ■ Energy Efficiency

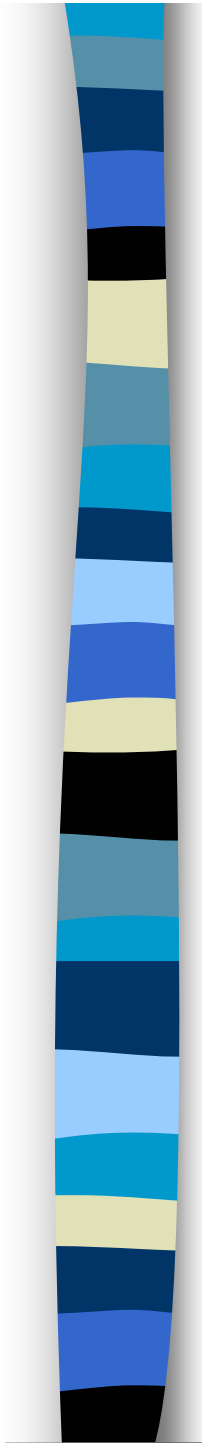
- Major Energy users surveyed
- Houses still to be surveyed
- ESCO being designed
- Targets being developed

## ■ Waste Management

- Founder members of OZW
- Zero Waste Community
- 53% of household waste can be AD
- Glass and plastics to be collected for insulation
- 27% remaining



Ref: Area Waste Plan



## Protection and enhancement of biological diversity and careful stewardship of natural resources.....



### ■ Biological Diversity

- Change the farming pattern to incorporate biofuels
- Reduce loss of nutrients to atmosphere and water courses
- Tree planting with Orkney Woodland Project
- Reed beds and willows buffer zones around lochs
- Green Tourism

### ■ Stewardship of Natural Resources

- Ensure all exploitation of natural resources is by the community
- Add value to existing resources (e.g AD)
- Ensure development is focused on best sites overall and not landowner driven
- Poly tunnel enterprise to increase value
- Green Transport projects

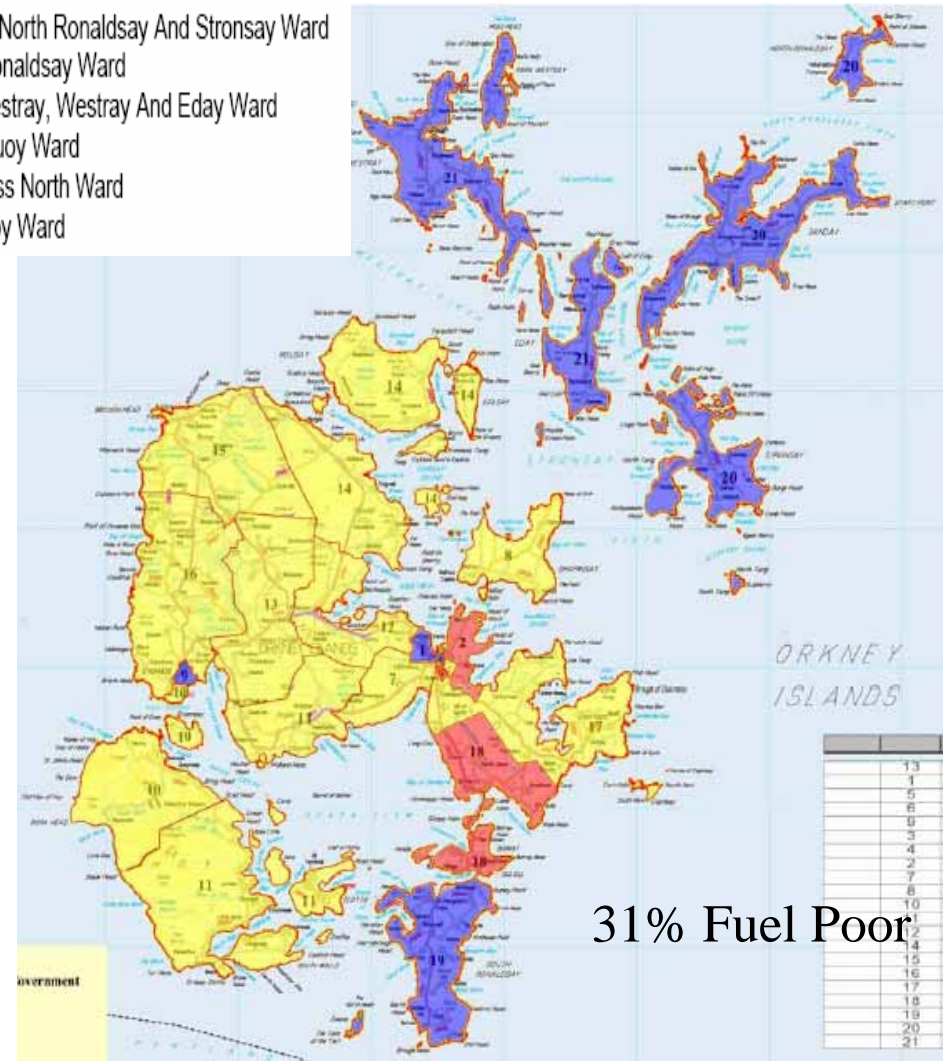
# Social Justice

## Fuel Poverty.....



- 31% in Orkney
- WDT Target
- 0% Fuel poor by 2006
- Raise Income
- Insulate Houses
- SAP
- ESCO

- Sanday, North Ronaldsay And Stronsay Ward
- South Ronaldsay Ward
- Papa Westray, Westray And Eday Ward
- Brandyquoy Ward
- Stromness North Ward
- Pickaquooy Ward



Ref: Mapping Fuel Poverty in the Orkney Islands – Alembic Research



# Summary

five dimensions of the ideal sustainable community<sup>1</sup>

- Increase local economic diversity
- Self reliance
- Reduction in the use of energy and careful management and recycling of waste products
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Energy will contribute to them all