

21.9 OPTIONS FOR IMPLEMENTATION

This is the second of three reports looking at the housing environmental strategy for the proposed development of Ballymun. This section describes the overall energy and environmental strategy which will be employed in design and construction of the new houses.

The following areas are covered:

- Energy
- Health
- Environmental impact of materials
- Water
- Transport
- Waste

21.10 INTRODUCTION

Section 21.11. outlines the energy and environmental policy which will be followed in this Ballymun Regeneration Project. Section 21.12. onwards describes the strategy for implementing this policy.

All the houses will incorporate a range of best practice energy and environmental features. The strategy for the heating system is described in section 21.12. The other energy and environmental features which will be incorporated into all of the houses are detailed in section 21.13.

Innovative features will be incorporated into 5% of the houses. These features are defined as proven technologies which do not have very large cost implications. In the case of the energy features the cost payback is reasonable at around 10 years. They have been demonstrated in existing housing but are not standard practice. These features are described in section 21.14.

Experimental features which will be used on 1% of the houses. These features are defined as either those where the technology is promising but not well proven or those where the technology is well proven but the costs at present are too high to encourage widespread use, as in the case of photovoltaic (PV) panels. However the costs of the technologies are likely to come down in the future with a corresponding increased uptake. Section 21.15. describes these features.

Section 21.16. discusses the implementation of this strategy. Section 21.17. outlines environmental standards to be met by the non-housing development

21.11. STRATEGY



21.11.1 Energy Policy for Housing

The Ballymun Regeneration Energy Policy will pursue the following objectives:

- New Buildings will costs tenants no more to heat than in the existing housing
- The maximum benefits from reduced energy use will be sought through increased energy efficiency in boilers, heating equipment and domestic appliances
- Waste of energy will be eliminated through good control of heating systems and insulation
- The impact of energy consumption on the environment will be minimised through choice of clean fuels, such as gas, which have lower emissions of the greenhouse gas CO₂ and other polluting gases
- New Approaches on energy will be followed and those which are driven by the European community will be monitored to determine their performance.
- Alternative sources of renewable energy will be pursued, at least in a percentage of the new buildings

- Energy conservation in transport will be promoted by minimising transport demand and maximising the use of pedestrian, cycle and public transport facilities
- Wherever possible materials will be locally sourced to reduce energy consumption in transportation.
- This energy policy will contribute to the sustainable development of the new Ballymun through promoting training and employment opportunities in the energy sector.
- The health of the people living and working in Ballymun will be given priority through good thermal comfort in the home, reduction of environmental pollution and choice of building materials.
- This energy policy embodies the key energy elements of sustainability as set out by Local Agenda 21. It is progressive and dynamic in response to an ever changing set of demands and targets.

21.11.2 Environmental Policy for Housing

- Water consumption will be minimised wherever possible.
- The amount of waste going to landfill will be minimised by encouraging the separation and reuse of waste both in the construction phase and in use.
- The requirement for the extraction of natural materials will be minimised by reusing materials or using waste material wherever possible
- Timber will be only specified where it can be shown that it is from well managed sustainable sources.

It is proposed that this policy will be carried out in practice using the strategy outlined in the following sections.

21.12. HEATING AND HOT WATER

21.12.1 Aim

To provide a controllable heating system at a running cost which is no more than (and preferably less than) the subsidised rate paid by tenants at present..

A detailed analysis of the most suitable heating system has been carried out and was described in Report 1. The characteristics of the system which were chosen and the insulation standards are given in this section.

21.12.2 Method

21.12.2.1 Minimising the requirement for heating energy

The energy requirement for heating and hot water will be reduced by the following means:

Building form:

Designing the houses with a compact form to reduce the area of heat loss and orientating the housing (or rooms within the house) to maximise the use of passive solar energy for heating.

Wind shelter belts will be provided by landscaping.

Insulation

The standards of insulation of the fabric will go well beyond current Irish building regulations. The following U-values will be achieved:

Walls: 0.3 W/m² K
 Roof: 0.2 W/m² K
 Floor: 0.3 W/m² K

50mm of insulation will be specified for the hot water tank.

Ventilation

In order to provide controllable, effective ventilation during the winter months, windows will be fitted with controllable trickle ventilators.

Glazing

Low emissivity glazing will be specified to reduce heat loss from the windows, this glazing has a U-value of approximately 2.0 W/m² K.

Ensuring quality of construction

Thermographic surveys will be carried out on the housing to ensure that cold bridges are not present. Where cold bridging is found on the first phases of the project, steps will be taken to ensure that this is rectified on the subsequent construction.

Pressure tests will be carried out to look for areas of excessive air infiltration, again where areas of excessive air leakage are found in the building fabric, steps will be taken to ensure that this is rectified on the subsequent construction.

21.12.2.2 Production of heat

High efficiency gas condensing boilers will be specified for the production of hot water for both space heating and domestic hot water requirements. The heat will be distributed via radiators and a highly insulated hot water tank.

21.12.2.3 Control of the heat

The boiler will have timed control and each radiator will have thermostatic radiator valves (TRVs) which can be used to control the temperature in each room. There will also be a room thermostat to control the pump for the hot water circuit.

Simple, easy to use instruction booklets will be provided for all the occupants, so that they can easily understand their heating systems and they can be operated effectively.

21.12.2.4 Monitoring of energy performance

The energy performance of the heating system will be monitored, particularly in the early schemes. This will serve to reassure the residents that the levels of comfort and the energy costs do, in practice, meet the results anticipated. It is also very important, not just within this project, but also on how the project can contribute to the European experience.

The performance, in operation, of the high efficiency condensing boilers will be evaluated in terms of running costs, technical performance (heat load, efficiency and emissions) and maintenance. This will include a full energy survey of the new buildings as part of the evaluation process. Thermal comfort monitoring, including air temperature, radiant temperature, humidity and air movement inside the dwellings will be part of the survey.

This approach will be person-centred and therefore will put the focus on the end-user as an important factor in achieving energy efficiency. It has been found that the energy solutions, which are interwoven with the fabric of social needs, are more likely to succeed than those based solely on service engineering.

This perspective identifies the need for an in-depth questionnaire which will also be part of the energy survey. A particular emphasis will be placed on consumer satisfaction and any areas requiring further training or instruction will be identified.

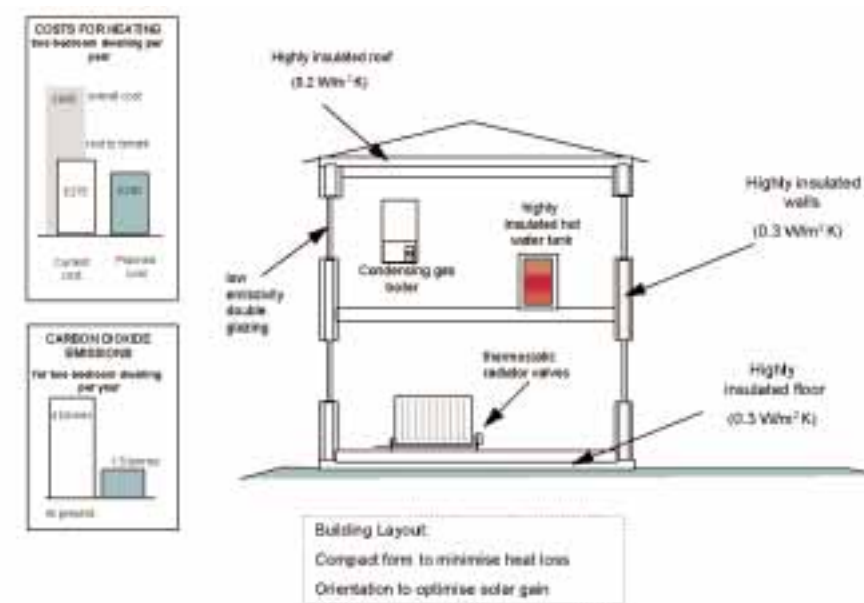


Figure 2 - Heating and Hot Water System

The Masterplan attempts to be a flexible framework. Consultation will be on-going throughout the regeneration process.

This section explores ways in which energy can be saved.

