

Outline Proposal for **Carbery Housing Association**

Project report for the Seafields sites at Bantry

March 2003.

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Introduction

The following document illustrates the submission for outline planning approval for the Seafields site off Beacon Hill and off Blackrock Road, Bantry. Both schemes include 2 and 3 bed housing and the Beacon Hill scheme also allows for a communal facility. The design of the housing is both a response to the environmental factors outlined below and to the context of Bantry itself.

The site layout reflects the traditional terracing of buildings along the hillside as the town steps away from Wolfe Tone Square. The external material palette reflects the rendered, slate-roofed local vernacular. Whilst the form, although contemporary, is low and the roof pitched. In addition to their social agenda Carbery Housing Association has adopted an environmental agenda both for the design and for the longer term running of the project.

Environmental strategy.

1. Choice of site:

The site should be within walking or cycling distance of local amenities including shops, entertainment, schools, employment and public transport facilities. Studies have shown that the ecological footprint (i.e. the land required to support the lifestyle of an individual or community) cannot be lowered to sustainable levels without addressing the issue of private car usage (Bioregional solutions – Schumacher Briefings – Pooran Desai). Hence the choice of the Seafields site in close proximity to the centre of Bantry.

2. Energy strategy:

The housing design and orientation is to maximise passive solar gain whilst at the same time heavily insulating the buildings northern elevation. Thus the use of sun spaces as heat collectors which can give up to 30% useful heat contribution over a year; this in combination with levels of insulation higher than building regulations means that heat gains from occupancy can be utilised thus reducing the need for external heat sources. Solar thermal panels provide additional water heating and these are discreetly integrated into the houses' lower roof. The external heat source is to be from a ground source heat pump which utilises the earth's warmth. These measures taken in combination reduce each house's dependency on unsustainable carbon energy sources. This means that the scheme will positively contribute to Ireland's adherence to the Kyoto Agreement.

3. Construction and Health:

The bulk of the materials chosen for construction will be of low embodied energy and consist predominantly of poroton ceramic block with an external lime render finish and smaller areas of timber frame and cladding. The roof will be tiled in reused slate and internal materials will be chosen with the occupant's health in mind: non-toxic low-allergenic paints, avoidance of glues, non-sealed hygroscopic surfaces for internal moisture regulation. As legal measures against unhealthy building become more prevalent in Europe, healthy building should not be neglected.

Social aspects of the scheme.

The Joint Housing Strategy published by Cork Planning Authorities in August 2001 states that current social housing demand in the County is approximately 7,500 households. The Strategy also suggests that this demand is increasing by 1,200 units per annum. During the same period,

Local Authorities proposed to develop 900 units of social housing, and around 335 affordable units per year. In spite of this relatively high level of provision, the Strategy expected that by 2006 there would still be demand for 6,400 social homes.

The Strategy suggested that a key proposal was the reserving of 20% of new housing developments for social and affordable housing (Part V of the Planning and Development Act of 2002). However, this measure has failed to produce significant numbers of affordable or social housing units (estimated 300 nationally) and has now been reviewed. More realistically, the Strategy suggests that the Voluntary Housing Sector should be integrated into the County social housing strategy.

Carbery Housing Association (CHA), in spite of its newness, by January of this year had 98 applications for housing in West Cork, 70 of whom were on the Council housing list, some having been on the list for as long as 10 years. 58% of these were single persons, couples or single parents.

For Bantry specifically CHA had 33 applicants, 24 of whom were on the housing list, 18 of whom were single persons, couples or single parents. Most were employed or self-employed, but on low wages; 7 were unemployed; 3 were disabled. Most lived in private rented accommodation (21) and 11 declared their accommodation to be temporary, while the rest considered their accommodation in poor state or repair or overcrowded.

At the same time, CHA was unable to identify land on the open market that was both affordable within Department of Environment and Local Government Voluntary Grant costs limits, and at the same time was adequate in planning terms for social housing. From May 2002 to January 2003 over 12 approaches were made and negotiations undertaken with private owners or estate agents without success. At the same time approaches were made to Cork County Council and Skibbereen and Clonakilty Town Councils for land, without response.

For this reason, CHA is left with no option but to apply for planning approval on land that is not zoned for housing (although appropriate in every other sense). We believe that given the scale of need and the obstacles to land acquisition on the open market, the Council should be prepared to zone land specifically for social housing.

The environmental attributes mentioned above combined with the social goals of Carbery mean that the project should achieve exemplary status in terms of socio-ecological housing as well as fulfilling a very real housing demand in West Cork and particularly Bantry.

Contents

The written content of the document refers to non- site specific briefing and goals:

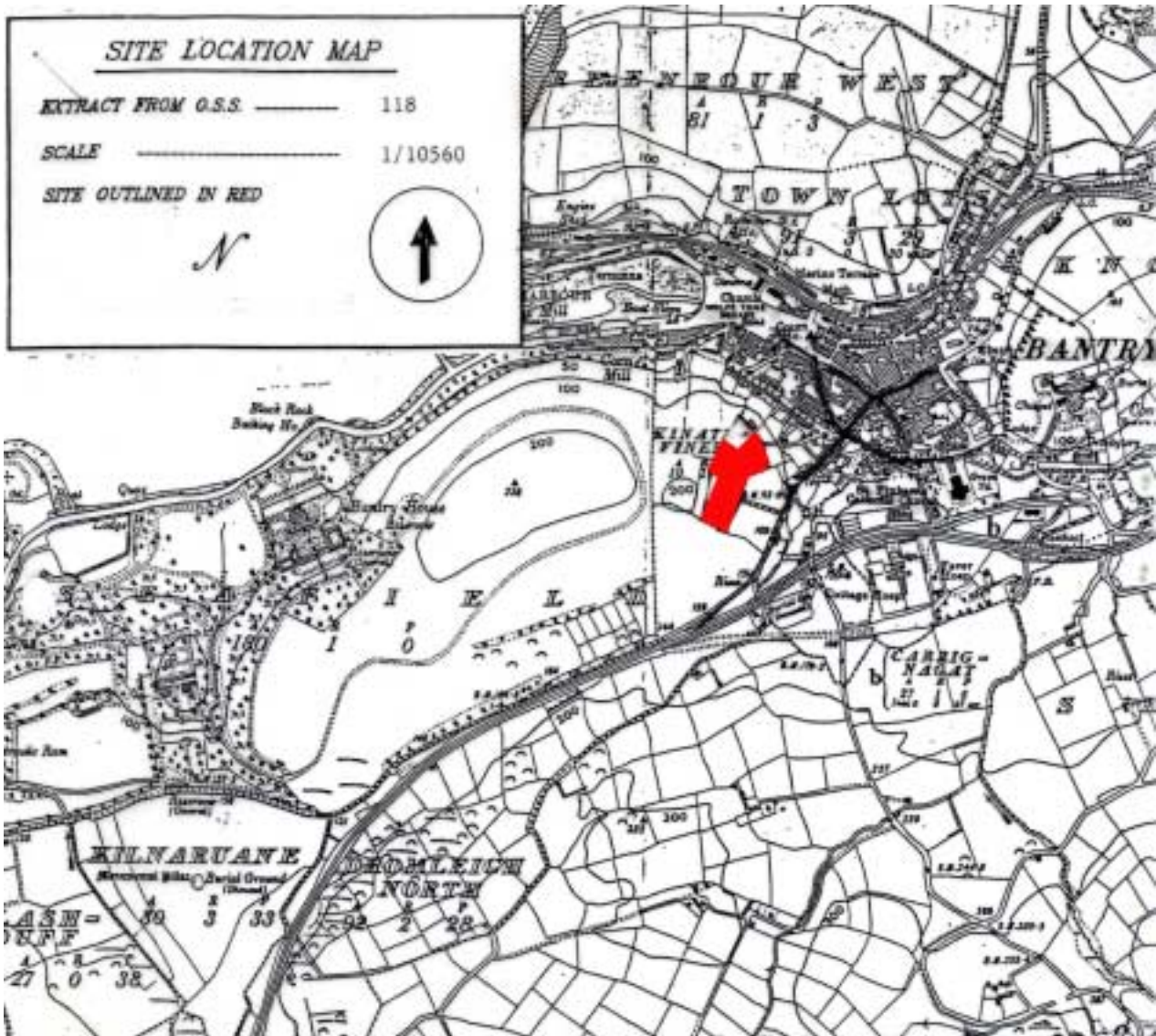
- Site selection criteria for Carbery in choosing a suitable location.
- Master planning and sustainability issues
- Performance criteria for housing design brief
- Outline design brief for the CHA
- Best practice proposed goals
- Bioregional and ecological housing case studies

These have been used in the selection of a suitable site and the targets to be aimed for by the project in terms of energy performance, site layout, and house design.

The drawing content of the document refers to site investigations carried out at Seafields in Bantry. The principles of the design stem from the bioclimatic briefing studies undertaken previously and illustrate the required housing mixture for the Bantry group of the CHA. The drawings show:

- Site proximity to Bantry town centre
- Use of sun path and slope as design determinants
- Housing mix, community building location
- Site energy usage
- Typical house section and material usage
- Typical house section in respect to energy usage.

The design approach is indicative of the manner a housing project would be undertaken following the principles outlined within and could be transposed to other suitable sites should the Bantry site prove unsuccessful in planning.



Beacon Hill Site Location


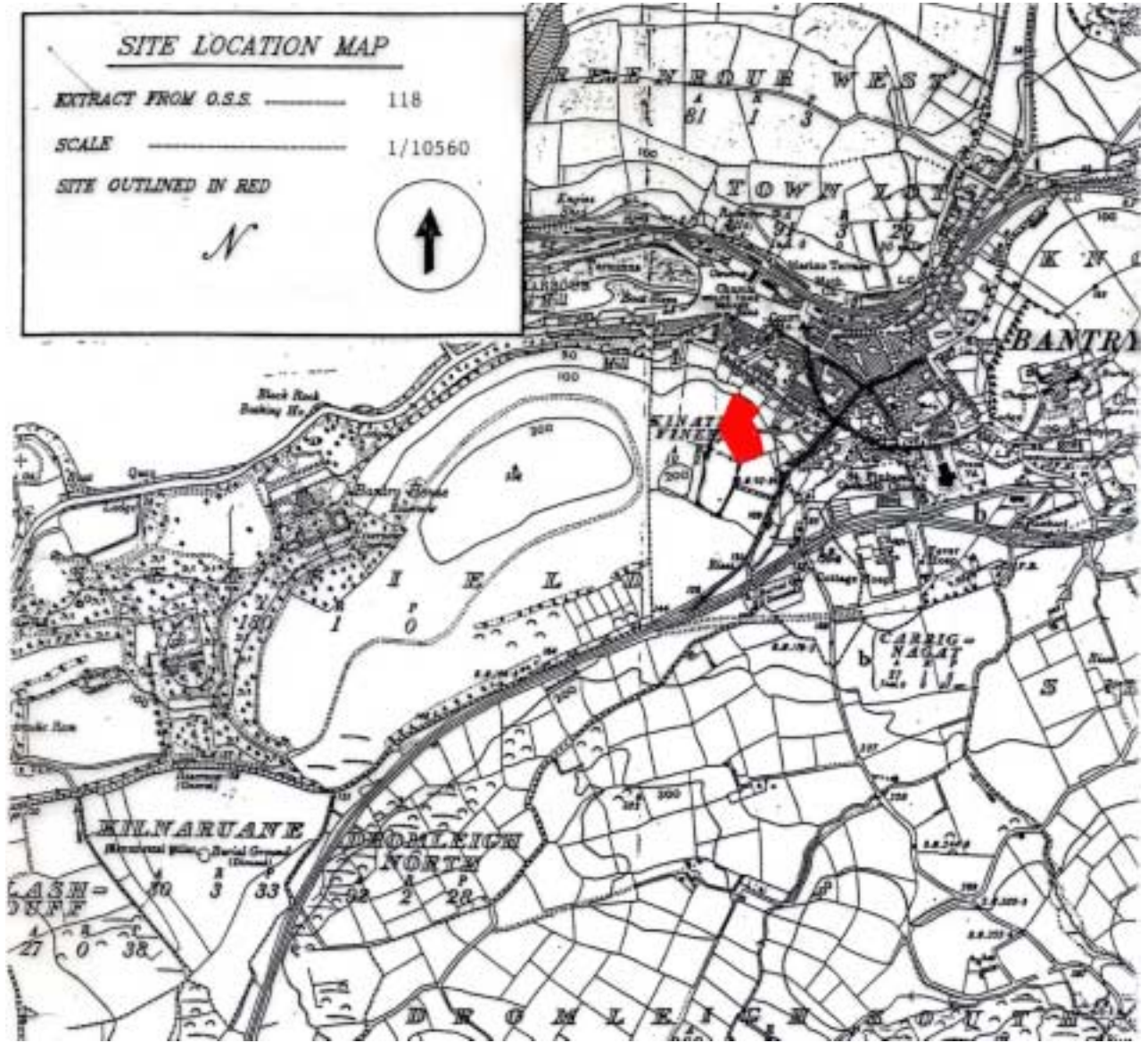
SITE LOCATION MAP

EXTRACT FROM O.S.S. _____ 118

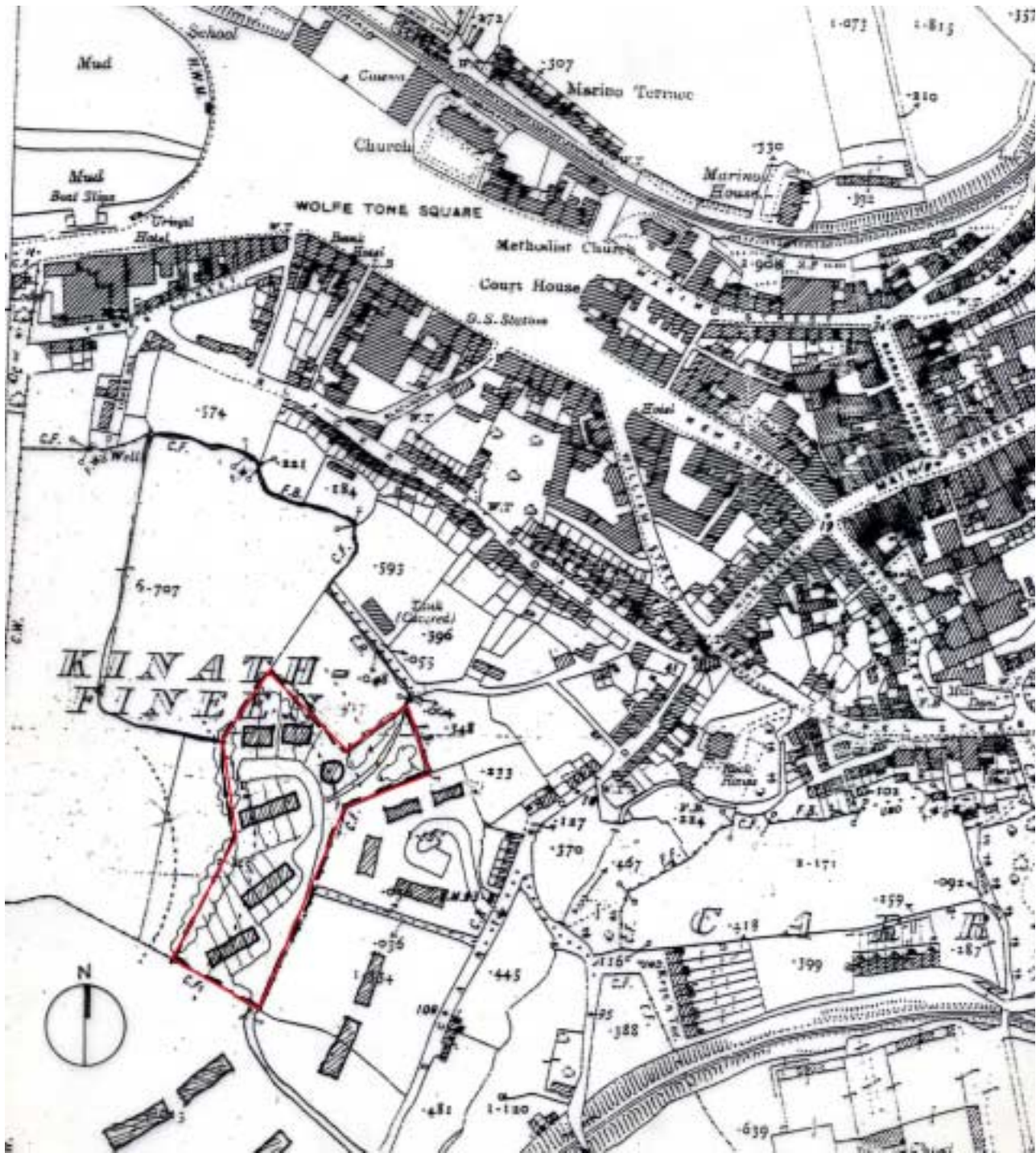
SCALE _____ 1/10560

SITE OUTLINED IN RED

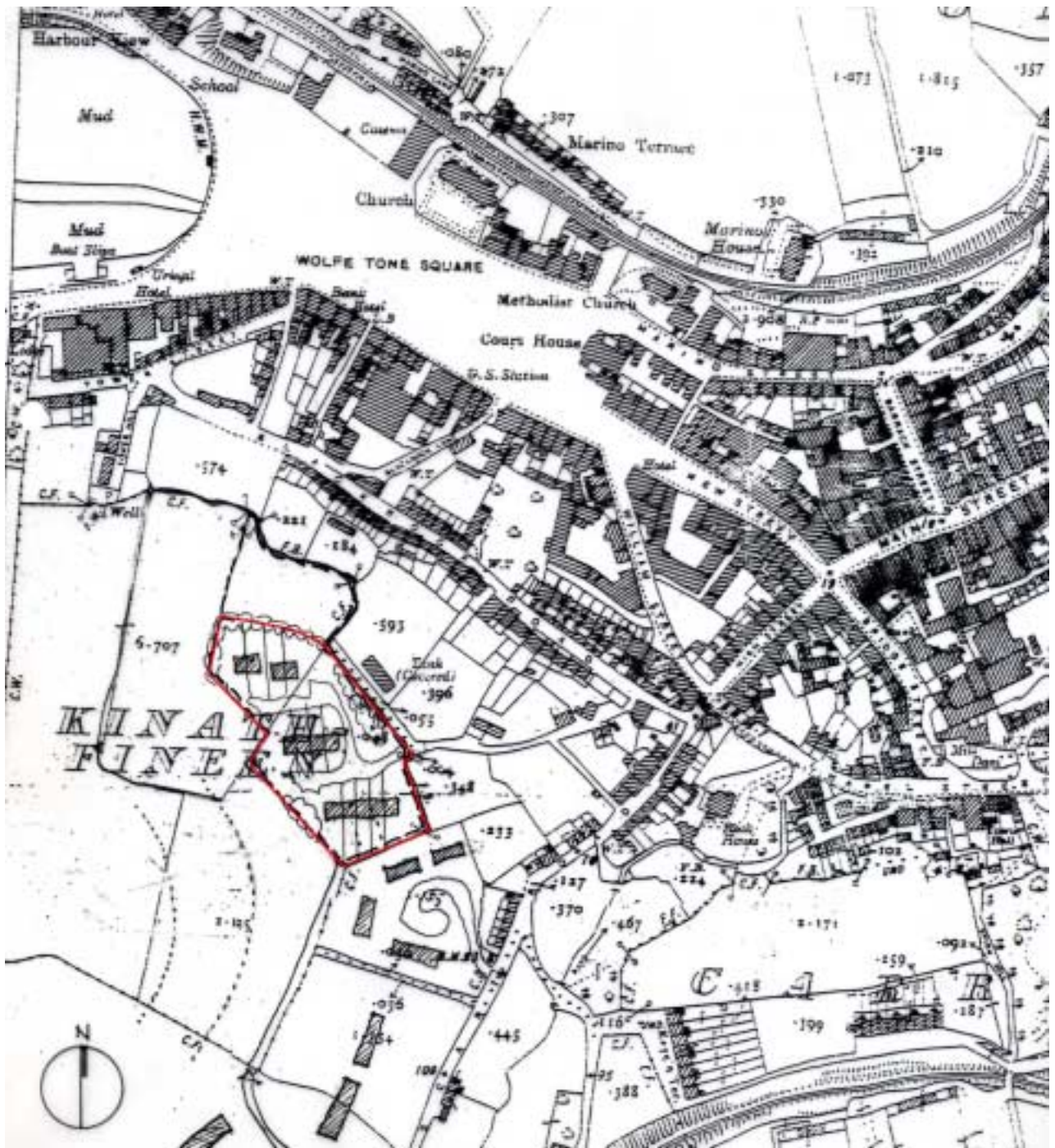
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Blackrock Road Site Location



Beacon Hill Site



Blackrock Road Site



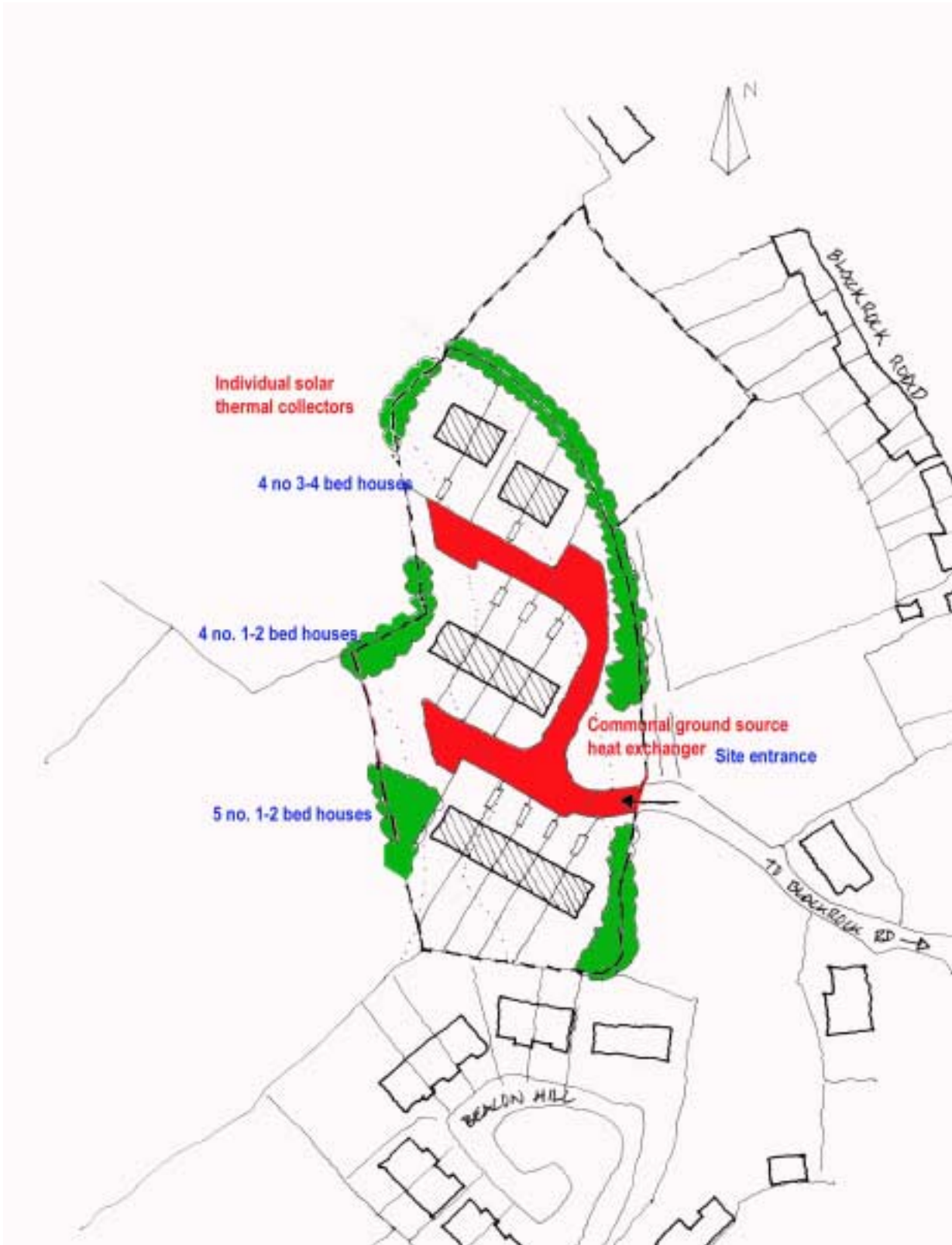
Beacon Hill Site Layout



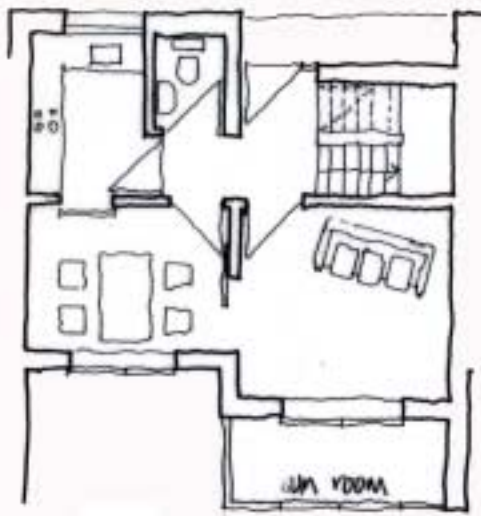
Blackrock Road Site Layout



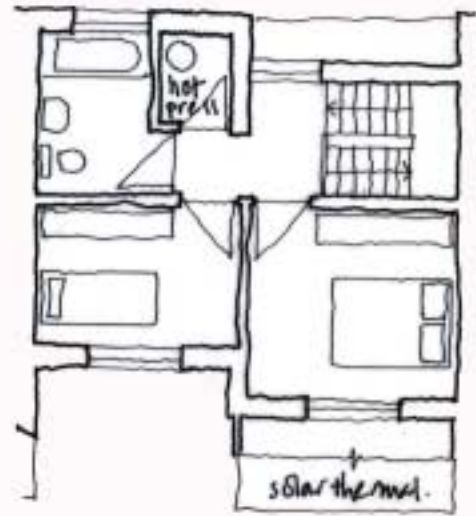
Beacon Hill Site Energy Sources



Blackrock Road Site Energy Sources

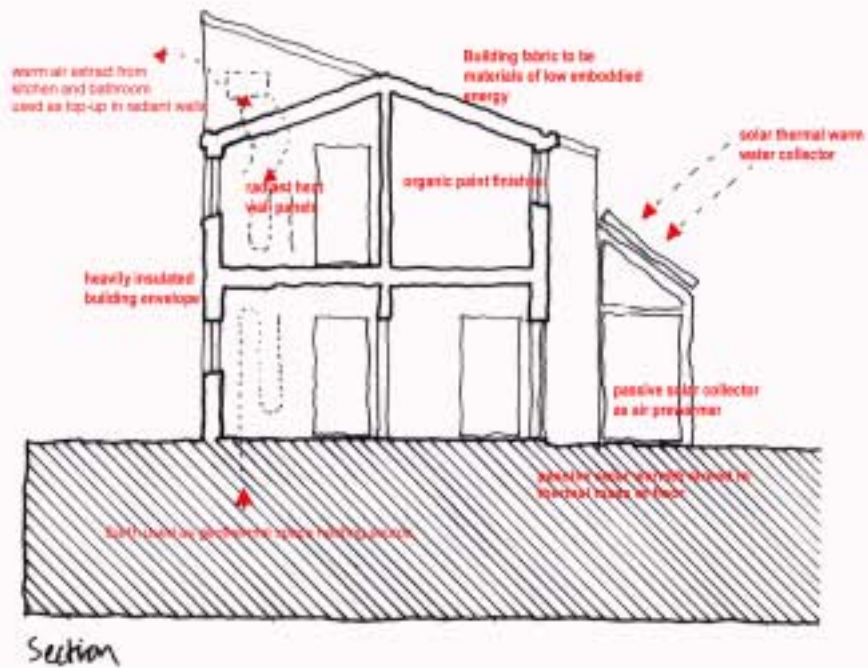


Ground Floor Plan



First Floor Plan

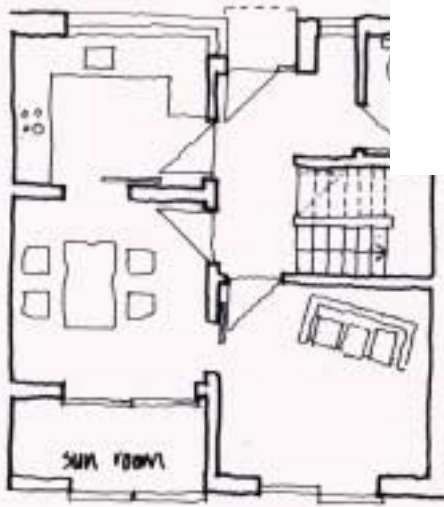
Two Bedroom Unit Plans



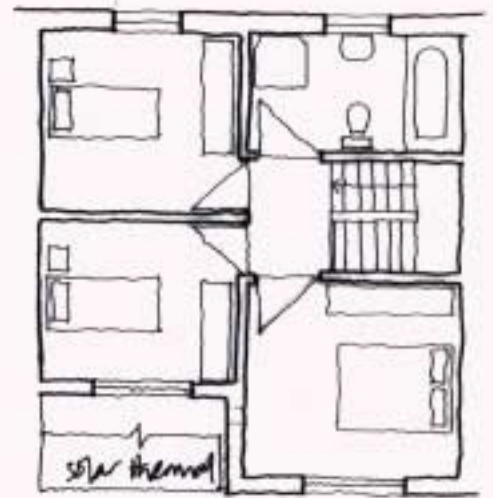
Section through 2 bedroom unit



Two Bedroom Unit Elevations

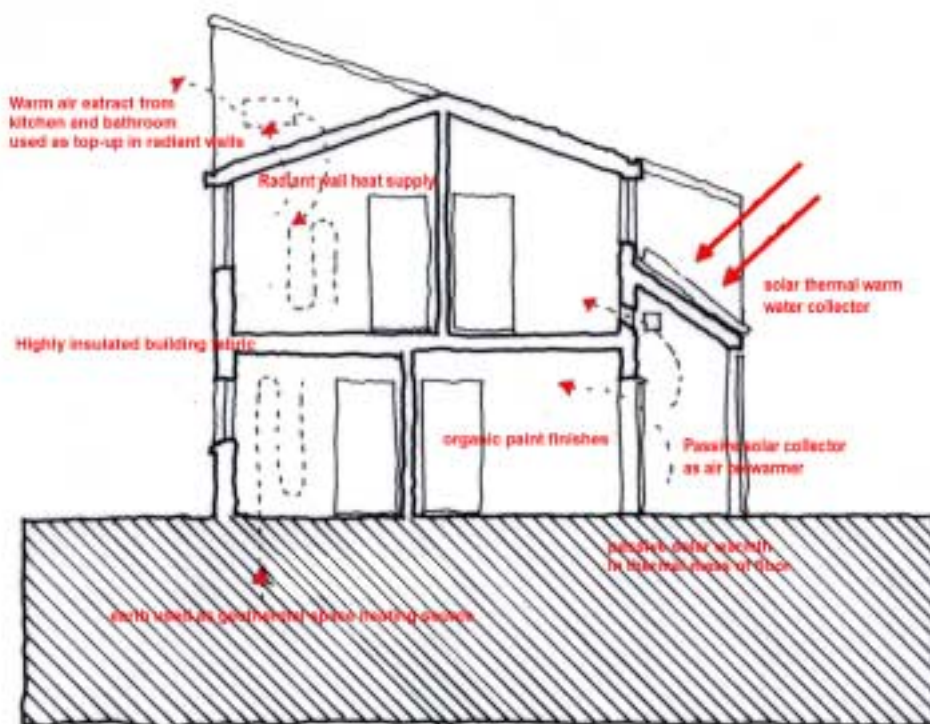


Ground Floor Plan

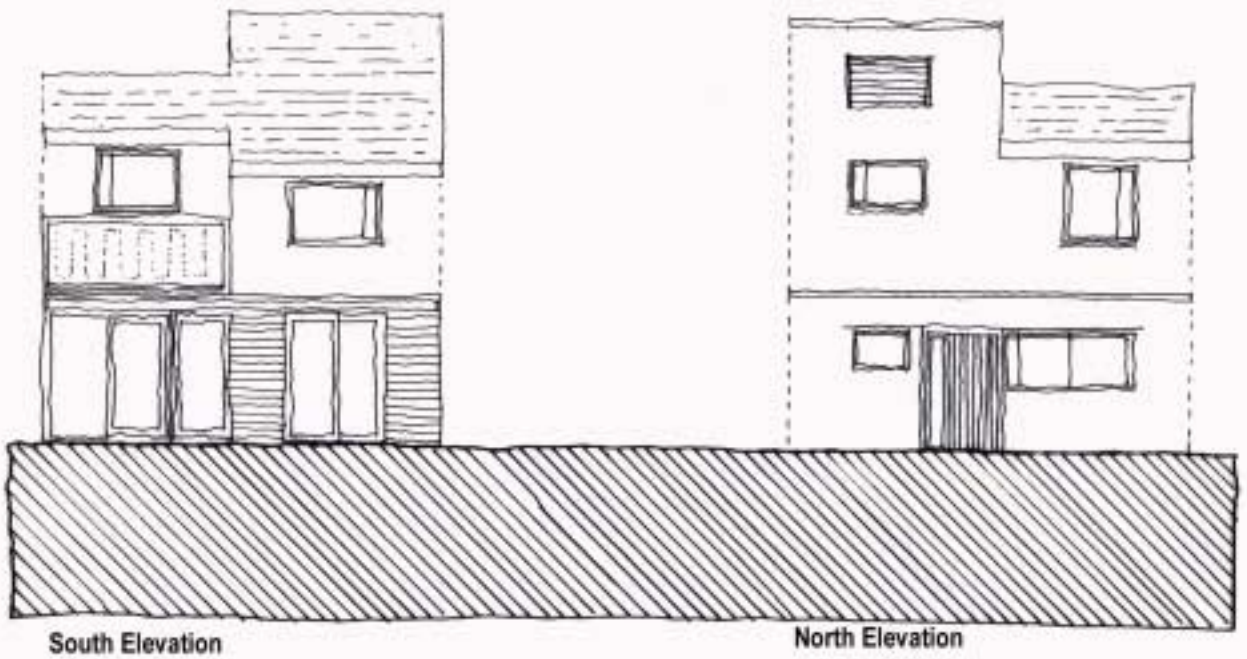


First Floor Plan

Three Bedroom Unit Plans



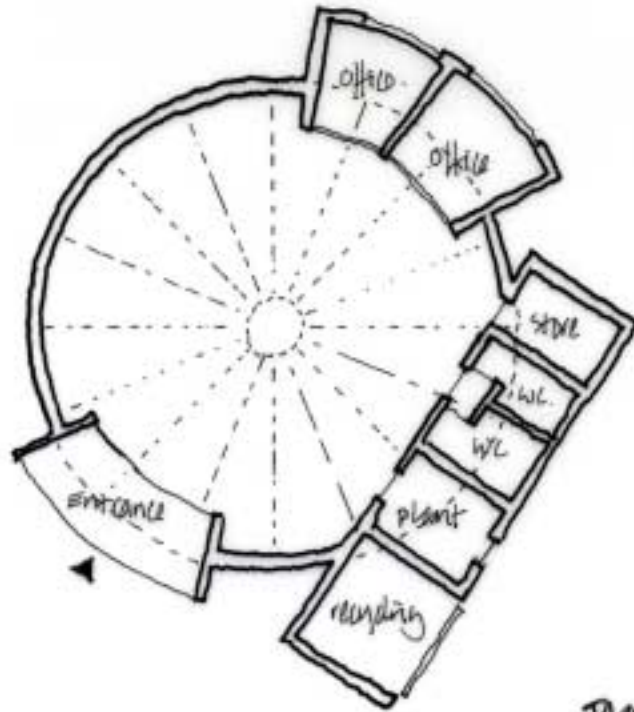
Section through 3 Bedroom unit



South Elevation

North Elevation

Three Bedroom Unit Elevations



Plan

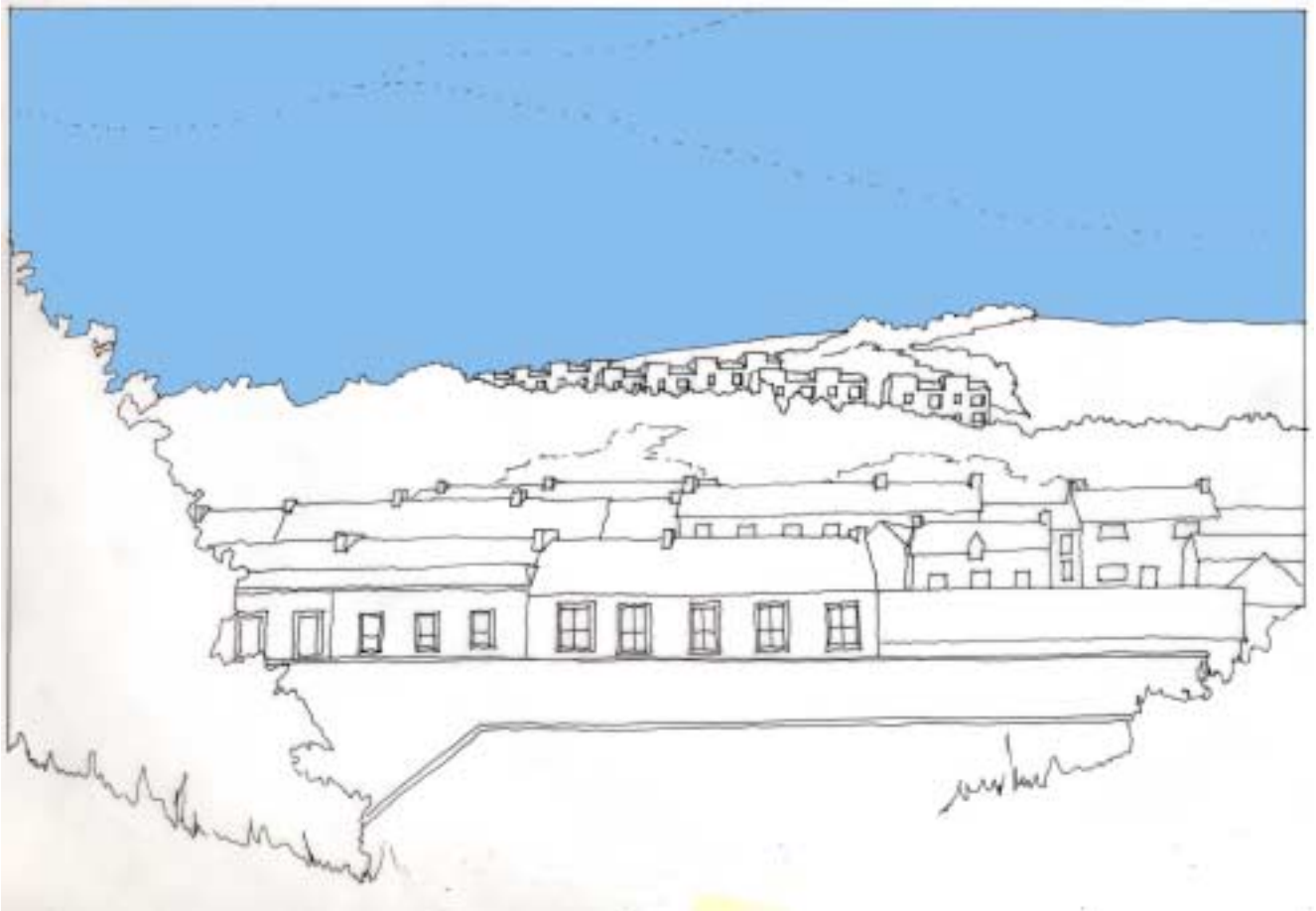


Elevation .

Communal Facility



Aerial view of Beacon Hill Scheme



View from Marino Terrace towards Blackrock Road Scheme

Appendices

Ecological Site Selection criteria. Carbery Housing Association

1. Site Context

- Planning zoning

Check development policies and local plans for use-zoning and potential allowable densities.

- Planning history

Check for previous or existing planning applications and permissions.

- Adjacent land use

Avoid any sources of noise pollution or air pollution particularly upwind of the proposed site including heavily used roads, factories and intensive farms. Check for future change in uses with planners.

- Social context

Check condition of surrounding properties including for signs of vandalism and neglect.

- Existing services

Check position and type of existing service runs for ease of potential connection.

2. Transport

- Adjacent road use

Check traffic volumes and speed restrictions on adjacent roads.

- Access

Check ease of road access with sight lines; connection to cycling and pedestrian routes to local amenities.

- Proximity to amenities

Sites should be preferred that are within cycling or pedestrian distance of local amenities including shops, entertainment, schools and employment opportunities. Equally sites should be preferred that are within walking distance of public transport facilities.

3. Site Evaluation

- Archaeology

Sites with visible and/or suspected subsurface archaeological remains should be treated with caution and historical records/archaeological records of the site consulted.

- Topography

Slopes steeper than 1:12 will impose restrictions on form and access in order to minimise cut and fill and retaining walls.

- Solar access

Opportunities for solar access should be maximised with a gentle slope towards the south being the ideal in order to take full advantage of available solar energy. Any obstructions to this should be noted.

- Site exposure

Check for prevailing wind and exposed areas both as areas to be protected and as potential sources of wind energy.

- Water and drainage

Check that land is well drained and not liable to flooding. A gently sloping site will be able to use gravity flow for drainage.

- Ecology

Wildlife corridors should be preserved and sites with sensitive fauna should be only developed with care, aiming to maximise their retention. Existing trees and hedges should be maintained wherever possible. Site development should be aiming to optimise opportunities for life.

Best practice – proposed goals. Carbery Housing Association

Density:

Recommendations for brownfield sites for housing are between 30 – 50 units per hectare. Suburban greenfield housing should be aiming for at least 20+ units per hectare though zoning densities are often planners' requirements.

Energy:

Passive solar with high insulation values to gain at least 20 % useful solar contribution. Space heating requirements of 50 kWh/m²/yr.
Potential centralised heating plant to gain economies of scale; use of ground heat source.

Materials:

Bioregional sourcing of materials, low embodied energy sourcing and healthy baubiologically sourced materials.

Transport:

Links to public transport, proximity of services (see site selection criteria), potential car sharing and cycle stores.

Water:

Low volume taps and baths, dual flush w.c.s. rainwater collection and grey water recycling, porous surfaces.

Waste:

Minimisation of construction waste, separation of household waste, composting facilities.

Outline design brief for Carbery Housing Association

(To be read in conjunction with the best practice proposed goals 14-06-02)

FOR DISCUSSION PURPOSES

Apartments:

Minimum sizes of apartments:

| | |
|--|---------|
| One bed apartments (two bed spaces) | 42 sqm. |
| Two bed apartments (three bed spaces) | 52 sqm. |
| Three bed apartments (five bed spaces) | 74 sqm. |

Houses:

Minimum sizes of houses:

| | |
|-----------------------------------|---------|
| One bed house (two bed spaces) | 48 sqm. |
| Two bed house (three bed spaces) | 69 sqm. |
| Three bed house (five bed spaces) | 86 sqm. |

N.B. we would hope to be designing for at least 10% more than the minimum spatial standards.

Private outdoor space:

| | |
|--|-----------|
| Sunrooms, minimum size | 6 sqm |
| Balconies (potential combination with sunroom) | |
| Garden space (potential inclusion in communal gardens) | 45-80 sqm |

Communal external space: 10% of site area
(combined with other uses?)

Communal facilities:

| | |
|---------------|----------------|
| Meeting space | 2.5 sqm/person |
| Crèche | 3 sqm/child |
| Workshop | 70 -80 sqm |
| Laundry | 25 sqm |

| | |
|---------------|-----------------|
| Bike storage | 1 per bedspace |
| Car parking | 1 per household |
| Guest parking | 1 per 5 houses |

Road access

N.B. potential car pooling should be considered

Composting facilities

Community gardens/allotments

Reed beds for ground water run-off and associated swales.

Masterplanning

To consider:

Public Realm

- Network of public spaces
- Density and pyramids of intensity
- Mixing uses
- Mixing households

New Housing

- Long life, loose fit, low energy, future proof.
- Design efficient dwellings
- District energy heating CHP

Key principles

- Site and setting
- Context scale and character
- Public realm
- Access and permeability
- Optimising land use and density
- Mixing activities
- Mixing tenures
- Building to last
- Sustainable buildings
- Environmental responsibility

Spatial Master planning

- Public spaces and connections
- Heights, massing and density
- Use distribution
- Movement
- Environmental design
- Community issues

Movement

- Streets as places
- Priority to walking and cycling
- Improving public transport
- Compact land use.

Sustainable Masterplanning

Energy

- Photovoltaics for cluster housing
- Wind/hydro (5 no. 500kw turbines for 2000 households)
- Solar thermal (south facing roofs)
- Short rotation coppice for CHP, (500 houses need 150 ha)
- Passive solar (southerly orientation)

Water

- Grey water recycling (individual houses) (communal with reed bed)
- Rainwater collection (individual houses).

Waste

- Primary treatment (septic tank/anaerobic)
- Secondary treatment (vertical reed beds 2m³/per)
- Tertiary soak-away or reuse
- Composting toilets.

Urban ecology

- Diversity and choice
- Connectedness
- Hydrological cycle (porous surfaces, streams)
- Plants – woods, meadows, marshes (temp. control, air quality, water control) – and wildlife.

Bioregional (temperate-maritime) and ecological Case Studies

Bedzed, south London, UK
2001-2 Bill Dunster Architects

82 dwellings. Density: 100 homes/ha

Energy:

- Zero energy development all buildings powered by renewable energy
- Bioclimatic – passive solar
- 60 % reduction in total energy demand compared to standard housing
- 90 % reduction in thermal energy requirement cf. standard housing
- CHP fuelled by waste timber
- PV installation

Materials:

- Bioregional sourcing

Transport:

- solar powered car pool
- work spaces on site
- shops on site
- links to public transport

Water conservation:

- Low volume baths and taps
- Dual flush w.c.s
- Rain water collection
- Water recycling in Living Machine
- Porous surfaces

Waste:

- On site composting
- Separated rubbish for recycling.

Hannover Kronsberg, northern Germany
2000, Urban planning group for World Expo.

6000 dwellings, high density to medium density mix, 4 storey to 2 storey

Energy:

- Bioclimatic –150 passive solar dwellings with heat exchanger -space heating requirements of 15-20 kWh/m²/yr
- Energy use standard for low energy house: 45 kWh/m²/yr (cf. 70 kWh/m²/yr normal low energy houses)
- 60 % reduction in CO₂ emissions through energy efficiency and renewable energy use
- District heating CHP and fuel cell block
- PV installation
- Wind turbines

Materials:

- Low embodied energy material selection.

Transport:

- car pool
- shops on site

links to public transport all dwellings within 600m of tram stop
cycleway

Water conservation:

Low volume baths and taps
Dual flush w.c.s
Rain water collection
Grey water recycling
Decentralised water retention and slow release into water features.

Waste:

On site composting
Separated rubbish for recycling.
Waste reduction

**Ekostadten Augustenborg, Malmo, Sweden
1998-2002, MKB housing company**

Mixed use refurbishment of 1950s housing scheme

Energy:

Solar thermal
Heat pumps and district heating system
Increased insulation
Energy saving devices

Water conservation:

Low volume baths and taps
Dual flush w.c.s
Grey water recycling
Porous external surfaces, swales and ponds
Green roofs

Waste:

On site composting
Separated rubbish for recycling.
Waste reduction

Transport:

Electric car pool
shops and services on site
electric buses
cycleway

**Carrigeen Park, Clonmel
1986-9 Jim Barrett Architects**

63 three bedroom houses, 22 standard design, 19 highly insulated, 22 passive solar, medium density

Energy conclusions:

20% solar contribution to the gross space heating load in passive solar houses though on average same use of auxiliary heating fuel as the well insulated houses.

**Hockerton Housing project, Nottinghamshire
1999 Robert and Brenda Vale**

Terrace of 5 units

Energy:

- Passive solar, northern earth shelter.
- No CO2 emissions from space heating
- 70% heat recovery using heat pumps, pipe runs and exchanger units
- potential aero generator

Water:

- On-site rain water collection and treatment
- Low flush w.c.s
- Grey water treatment

Waste:

- Waste recycling

Dannebrogsgade and Hedebygade, Vesterbro, Copenhagen, Denmark
1992, Lundgaard, Tranberg Architects and others

Renovation of existing urban housing

Energy:

- Passive solar
- Active solar thermal
- Heat exchanger from air extract.

Water:

- On-site rain water collection and treatment
- Low flush w.c.s
- Water saving taps
- Grey water treatment

Waste:

- Waste recycling
- Compost drum

Ecolonia, Alphen aan den Rijn, Netherlands
1989-93, Lucien Kroll masterplan

208 units on reclaimed polder

Energy:

- Goal of 25% reduction in energy consumption compared with standard dwelling.
- Passive solar
- Solar thermal
- High insulation

Water:

- Reed bed cleansing of surface run-off and central collection pool

Waste:

- Waste minimisation and recycling

Transport:

- On site services
- Regional train station
- Cycling routes

Traffic calming measures

Courtyard houses, Shenley Lodge, Milton Keynes, UK
1985 Feilden Clegg Architects

8 single storey 3-4 bedroom bungalows

Energy:

- Energy consumption index of 45-55kWh/m²
- Passive solar – useful gains of 18 – 27% of heating requirement
- Air-tight envelope
- High insulation and triple glazing

Paxton Court Phases 1 and 2, Sheffield, UK
1982-87 Cedric Green Architect

5 single storey houses, 4 two storey houses, self-build scheme.

Energy:

- Energy consumption index of 50-70 kWh/m²
- Passive solar and underfloor heat store– useful gains of 14% of heating requirement
- High insulation

Gartenhofstadt Heinrich-Boll Siedlung, Berlin Pankow
1997 Joachim Eble Architekten

650 apartments on 8 hectares.

Energy:

- Bioclimatic passive solar dwellings -space heating requirement of 50 kWh/m²/yr
- PV installation
- Radiant walls

Materials:

- Low embodied energy material selection.
- Baubiological approach to material selection

Transport:

- Close links to public transport
- Walking distance to shops
- Cycleway

Water conservation:

- Low volume baths and taps
- Dual flush w.c.s
- Surface run-off cleansed and collected on site.

Waste:

- Separated rubbish for recycling.
- Waste reduction

INTEGRATED SITE PLANNING

- Pedestrian and bike friendly
- Household waste management
- Garden waste management
- Sanitary waste management
- Group or district heating with efficient distribution

BUILT FORM, DESIGN & ORIENTATION

- Compact built form to minimise surface area for heat loss
- Orientation and internal zoning to facilitate passive solar heat gain
- Spatial design for day lighting
- Design for natural cooling and ventilation
- Minimised glazing to the North
- Optimised glazing to South and West
- Appropriate thermal mass for passive solar heat storage
- Sunspaces and collector walls/ floors

BUILDING MATERIALS

- CFC and HCFC free materials
- Low toxicity materials
- Materials from sustainable sources
- Local materials
- Low embodied energy materials
- Materials with recycled content

THERMAL INSULATION

- Detailing to minimise cold bridging
- Insulated external doors
- Roof insulation (U-value $< 0.13 \text{ W/m}^2\text{K}$)
- Floor insulation (U-value $< 0.2 \text{ W/m}^2\text{K}$)
- Wall insulation (U-value $< 0.22 \text{ W/m}^2\text{K}$)

GLAZING

- Argon filled low emissive double $< 1.5 \text{ W/m}^2\text{K}$)

VENTILATION & AIR QUALITY CONTROL

Draught lobby

Controllable trickle ventilation

Mechanical air extract from kitchens & bathrooms, with humidity activation

Draught sealing of all openings and joints

Radon reduction (where applicable)

HEAT GENERATION SOURCE (single or group)

Active solar space heating installation

Heat pump installation (gas or electric)

SPACE HEAT DISTRIBUTION & EMISSION

Insulation of all heating pipes and ducts in unheated locations

Radiant wall heat system

SANITARY H&C WATER & WASTE FACILITIES

Solar hot water heating

Water economy measures (mixer taps, economy flush toilets, grey water capture. ...)

HEATING CONTROLS -ALL SYSTEMS

Separate space & water heating circuits

Zoned and timed temperature controls

Weather compensating temperature control

User friendly heat metering

APPLIANCES: REDUCED ELECTRICITY USAGE

Low energy lighting

Provision for natural clothes drying

Cost report summary

Andrew Nugent Associates undertook the attached cost report summary on the basis of the outline specification and the drawings enclosed which were submitted for outline planning approval.

The following points should be made in connection with this:

The two bed house cost can be reduced through further looking at room areas, particularly the provision of a separate single room and dining space below.

The external works includes the cost of the ground source heat exchanger and pump, 50% grant funding for which is available through the House of Tomorrow programme.