

An architectural sketch of an eco-village. The drawing shows several long, single-story wooden buildings with gabled roofs and skylights. A central dirt path winds through the buildings, with smaller paths branching off. There are green trees and bushes scattered throughout the scene. In the background, a line of taller evergreen trees is visible against a light blue sky. The style is a line drawing with selective color in shades of green and blue.

Duneland ecoVillage

PHASE 1A
CONCEPT & DESIGN

John Gilbert
ARCHITECTS

Duneland ecoVillage

In January 2009 Duneland Ltd commissioned John Gilbert Architects to design and develop phase 1A of the Park Ecovillage as a development on Duneland land. This document sets out the concept philosophy and provides supporting information for the design.

We have been assisted in preparing these designs by:

Duneland Board Members and Shareholders
The Park Community at Findhorn
Chris Morgan - Locate Architects
Sue Roaf - Heriot Watt University
Tim Hurst - Synergie Scotland
Michael Sharpe - Build One
Fairhurst and Partners
Torrance Partnership

This document should be read in conjunction with the current revision of the design drawings.

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Prepared for Duneland Ltd by
John Gilbert Architects

Version 9 - June 2010

All illustrations and specifications are indicative

John Gilbert
ARCHITECTS

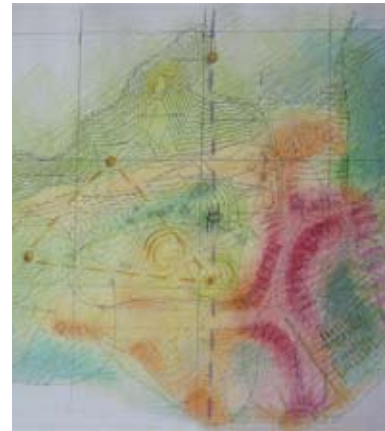
Masterplan

Duneland Ltd commissioned Gaia Architects to prepare a masterplan for the whole of the Magic Triangle. This was prepared through a number of workshops with the community and followed a 'listening to the land' process led by Margaret Colquhoun of the Life Science Trust, and Camphill Architects. It identified the current site as Phase 1A for higher density residential development.

This masterplan was submitted to Moray Council for Outline Planning Approval. It gained consent in 2008 for 40 residential units (across phase 1A and 1B) plus ancillary facilities. Within the 40 units, eight were to be for 'affordable housing'.

The outline planning approval was number 07/00765/OUT and was approved by Moray Council on 22 February 2008.

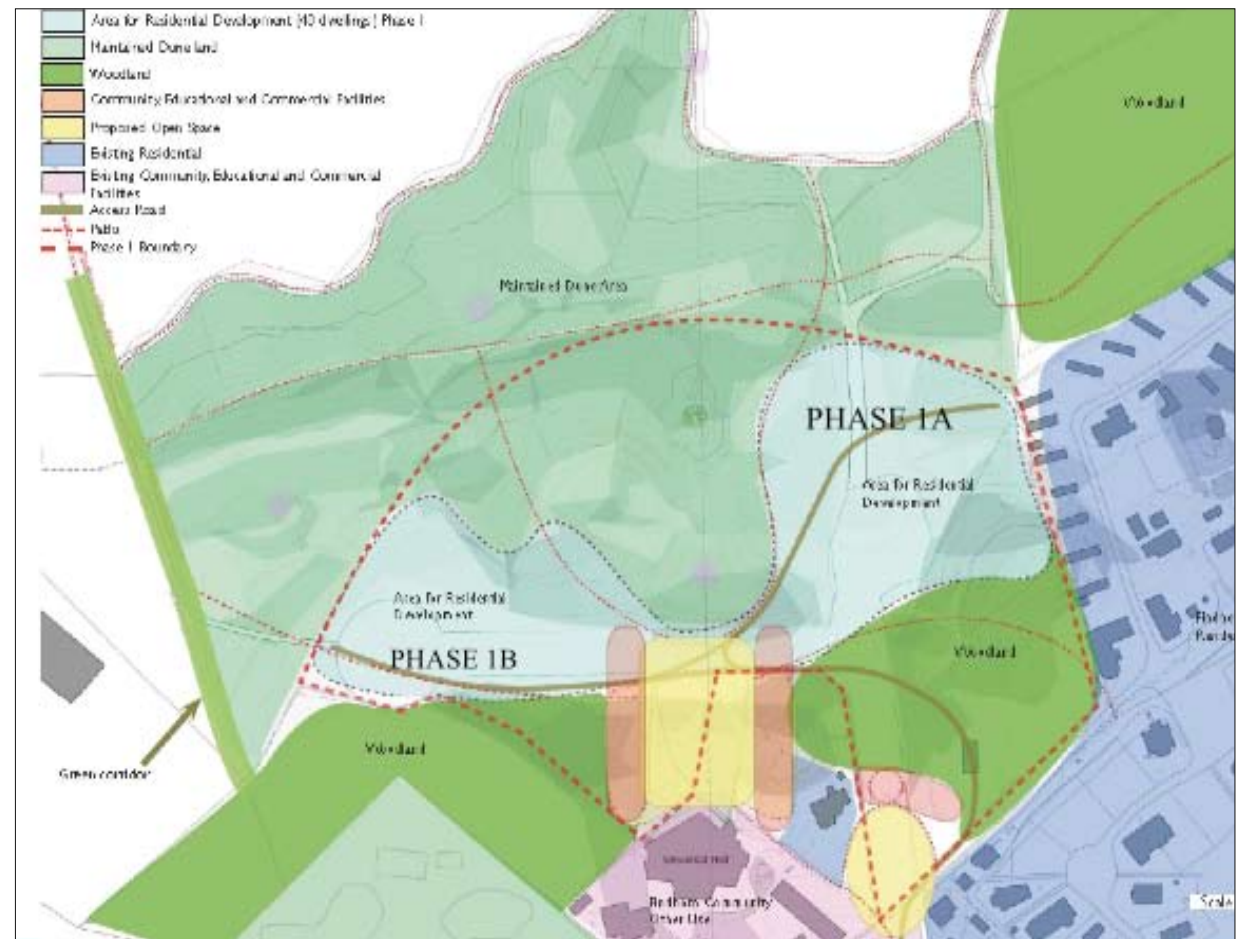
The proposals presented are based on this outline masterplan.



Far left: 'Listening to the Land' results

Left: Park Development Plan 2000

Below: Indicative masterplan with outline approval



Development Context

This development is in a distinctive location and demands a unique response. It is situated on the edge of the Findhorn Foundation Community at the Park, which has its own style and architectural language. It is also close to Findhorn Village which has evolved with its own character. It is on the threshold between the beach and both these villages. The photos illustrate some of the aspects of the site we have been influenced by whilst designing the project.



Findhorn Park - Housing



Existing mature trees close to site



Gables in Findhorn Village



National examples used as inspiration



The Process

In January 2009, John Gilbert Architects was commissioned to prepare detailed proposals for phase 1A. The process has involved:

- Site and information review
- Charette with 12 members of the Duneland Board plus invited guests
- Liaison with key critical friends including Sue Roaf (Herriott Watt University) and Chris Morgan (Locate Architects)
- Liaison with key members of an experienced professional team
- Duneland Shareholders meeting and feedback session
- Discussion with experts within the Findhorn Park
- Open community meeting and feedback session
- Onsite meetings and pegging out of key spaces

The open public meeting was advertised widely within the Foundation Community through the communities newsletter, personal invitation and a local newspaper for those interested in the Findhorn/Forres area. A report of the main points raised was circulated following the event. The Duneland managing director has an office on the site and has been available to answer drop in queries and comments.

Illustrations show initial ideas and meetings.



Shading/Sun Studies

Early in the design work, we undertook a sun study, with the initial sketch plan to ensure that all the houses have good access to light and to place solar panels effectively. We have continued to work within the areas identified as having good solar access. The diagrams show snapshots of the results:



January 10am



January 3pm



June 10am



June 3pm

Park+ Concept

Ecological

The project aims to be an exemplar of large scale ecological and low energy construction. It's design will pay particular attention to:

- conservation of biodiversity
- sensitive siting
- passive solar design
- ecological and healthy materials
- low energy use
- low carbon emissions
- planting and growing

Shared living

The project is a form of developer led co-housing that attempts to deliver appropriate housing stock for the present and long-term needs of key workers and others drawn to live in the Park EcoVillage at Findhorn.

Phase 1A incorporates a number of shared living ideas in particular:

- communal heating and hot water provision
- a shared laundry building
- garden and play spaces
- communal bike and bin stores
- shared work spaces and storage
- a common room for elderly residents

The plan has been formulated around the activity created by these shared facilities.

Scale and setting

The context of this development is highly distinctive. Not only must the design respond to its natural setting but it should also reflect the architectural qualities of the built environment of the Findhorn Foundation and Findhorn village. In particular:

- design vernacular (the local architectural language)
- the character of the social spaces
- a rural scale
- enclosed spaces
- a village green character
- modest house sizes
- landscape setting
- materials and construction process
- restricted vehicle access with parking away from houses

Mixed / Low cost

The brief for this project is for a range of house types, principally smaller units. This includes terraced houses and flats.

The mix includes:

- compact two-bedroom houses
- family three-bedroom houses
- accessible two-bedroom ground floor flats
- compact two-bedroom upper floor flats
- workspaces

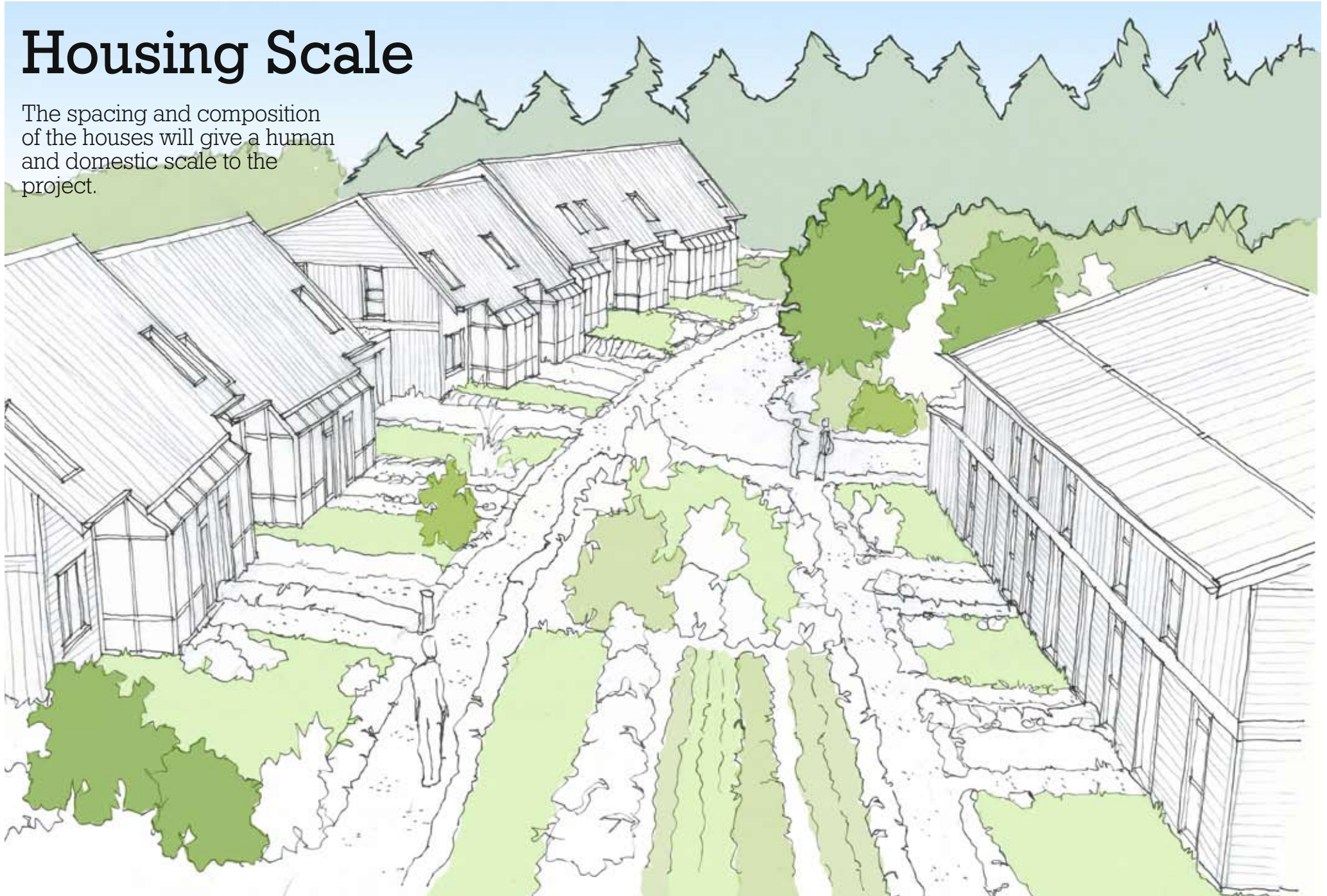
Cluster spaces



The houses are principally designed around two main cluster spaces, which offer the possibility of gardens, communal areas, allotments and shared buildings.

Housing Scale

The spacing and composition of the houses will give a human and domestic scale to the project.



Within the landscape



The clusters have views out to the forest, the rainbow tree, the dancing green and the dunes, and in to the courtyard and green space.

Phase 1A Layout

The topography of the site has influenced the layout of the development wherever possible, in keeping with the Foundation Community's policy of ecological responsibility. The most prominent result of this is where the row of houses to the north of the site will step up and down, following the levels of an existing dune, which will be retained. Two small mature trees adjacent to the development site to the west, will be protected and retained as part of the wider development.

The houses are laid out in terraces which are orientated towards the south to make most use of passive solar energy design. The density of the development aims to encourage good social cohesion, while still retaining a rural village character.

The orientation of the terraces also allows footpaths between the rows to flow towards the central open area of the Duneland development, containing the dancing green and the fire pit, which has a special status for the Foundation Community.

Housing Mix

A total of 25 units are provided with the following mix:

- 10x two bed houses
- 3x three bed houses
- 6x two bed flats adapted for elderly living
- 6x two bed upper floor flats

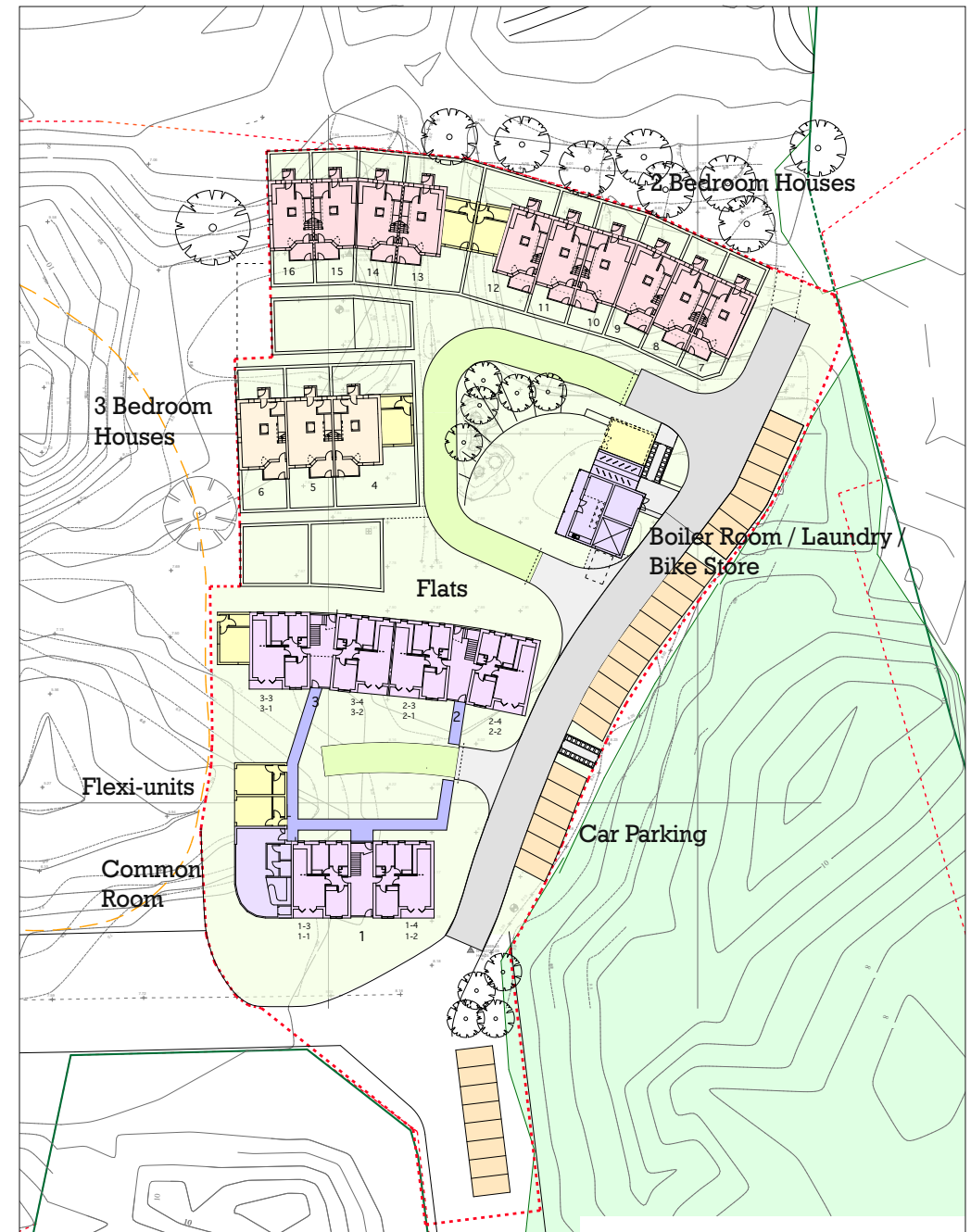
In addition the following facilities are provided:

- 7x 25m² work / storage spaces
- 1x 85m² communal lounge
- laundry room
- bike storage
- boiler house

Car parking will be provided at the ratio of:

- 2 bed units @ 1.1 spaces per house
- 3 bed units @ 1.5 spaces per house
- Total = 33 spaces

Undercover, secure bike parking for 32 bikes (128%).



Design

The design of the houses is influenced by the desire to create buildings which use little energy, produce low carbon emissions, and are products of simple and economic modern construction.

The houses are one and a half storey at the front to give a village scale and also to present a roof plane for the use of solar panels. The pitch of the front plane of roof is optimised for the spring and autumn equinox, when the use of solar energy is most beneficial.

The houses have a low roof pitch at the rear to reduce overshadowing by reducing the height of the ridge, and to keep the building volume as compact as possible.

The gable ends of the terraces face on to the road, this arrangement has a similar character to traditional fishing villages along the Moray coast. This configuration also maximises privacy to residents and reduces overlooking of the central open communal area.

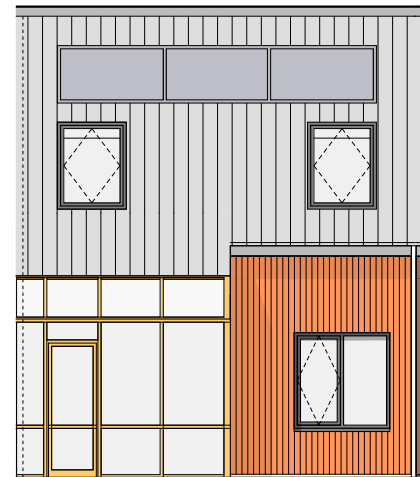
The character and identity of the development will be added to by the community, in the tradition of the existing Findhorn Foundation Community. The painted timber cladding in a palette of colours will give visual identity to the buildings.

The flats have the same design characteristics as the houses, but with a full two storey structure. The communal stairs spaces will be glazed front and rear.

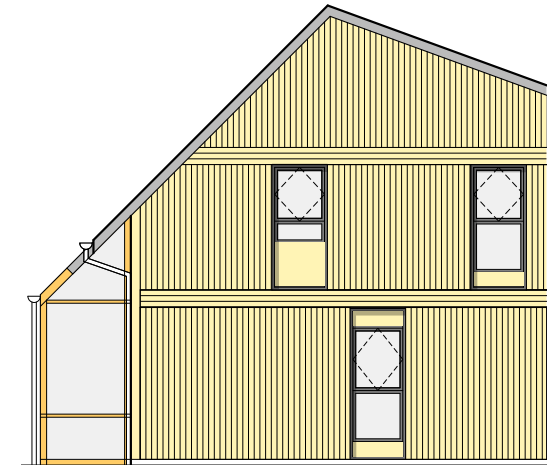
The sunspaces to the flats will use a 'Windoor' system, which creates a sliding/folding glass screen that allows the glass to be completely moved to one side to give an open balcony in good weather. At other times the additional layer of glass creates solar gain which benefits the internal spaces of the flat and reduces heating requirements.



2 Bedroom Houses and flexi-units



2 Bedroom Houses and flexi-units



Although simple, the houses have a distinctive asymmetrical roof pitch



The 'Windoor' balconies to the flats



Materials

Materials have been chosen for their low ecological impact. The structure of the buildings will be solid cross-laminated timber and straw panel composites. The buildings will be clad with Accoya (an acetylated timber material) The acetylation process gives a greatly increased life span to softwood timber cladding. The Accoya cladding will be factory painted in a limited palette of colours - these are shown on the drawings.

The roof will be timber I-joists with coated steel standing seam cladding, this has a rural agricultural character.

Windows will be timber low energy units, sunspaces for the houses will be framed in timber and double glazed

Guttering and rainwater goods will be Lindab galvanised steel. It is intended that there will be no uPVC materials on the site.

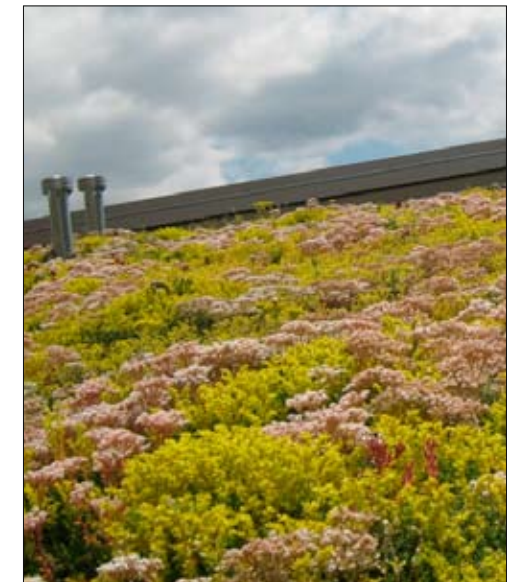
The roofs to the Flexi-units, Common Room, and central Boiler House / Laundry & Bike Store building will be very low pitched (5° or below) and will have sedum blanket roofing(a vegetation layer cultivated from moss) to further reduce the buildings ecological impact.



A timber framed, straw bale panel in manufacture



Factory coated Accoya Cladding



A fully grown Sedum Roof



Accoya: durable treated timber

House Types: A. Two Bed House

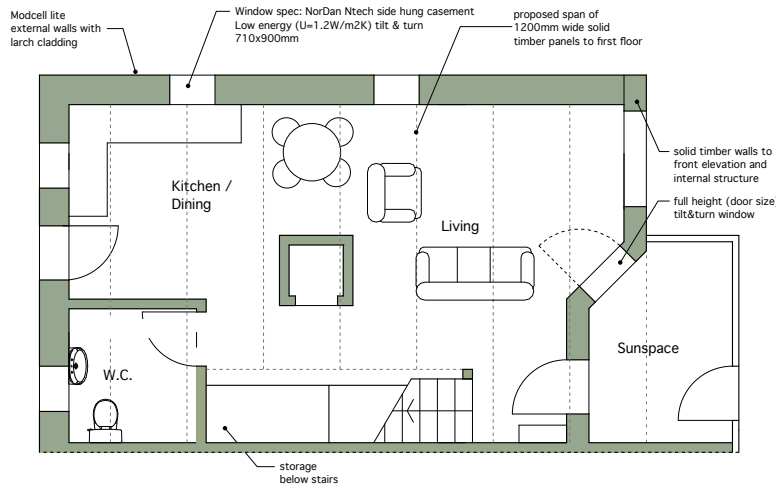
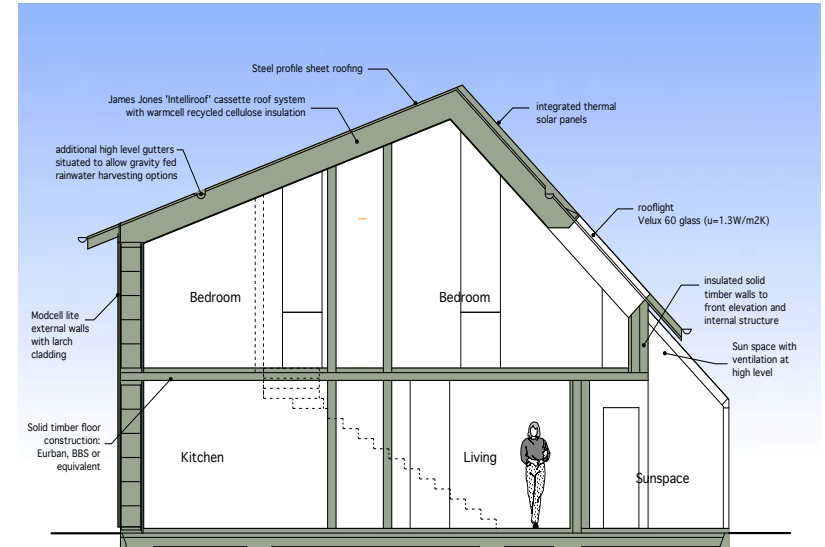
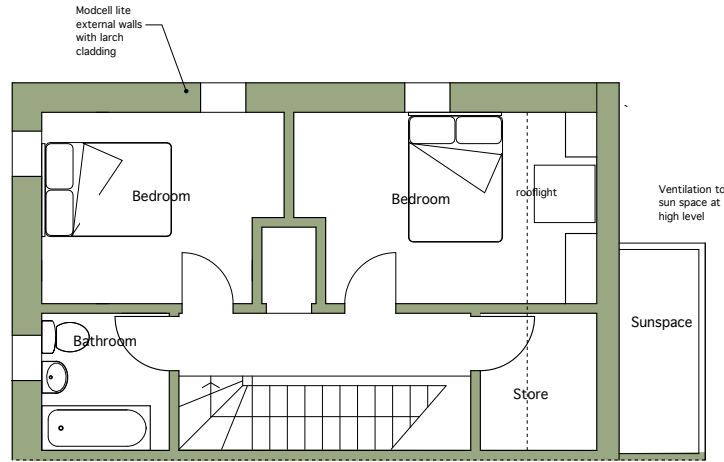
Flexible and spacious

This house type has been designed to Scottish social housing space standards and has an open plan ground floor for flexibility of layout. Sunspaces and generous storage are key features. Designed to be adaptable for wood stove installation.

Internal floor area = 90m²

Energy = 110kWh/m²/yr

Carbon = 0.42 T/yr



House Types: B. Three Bed House

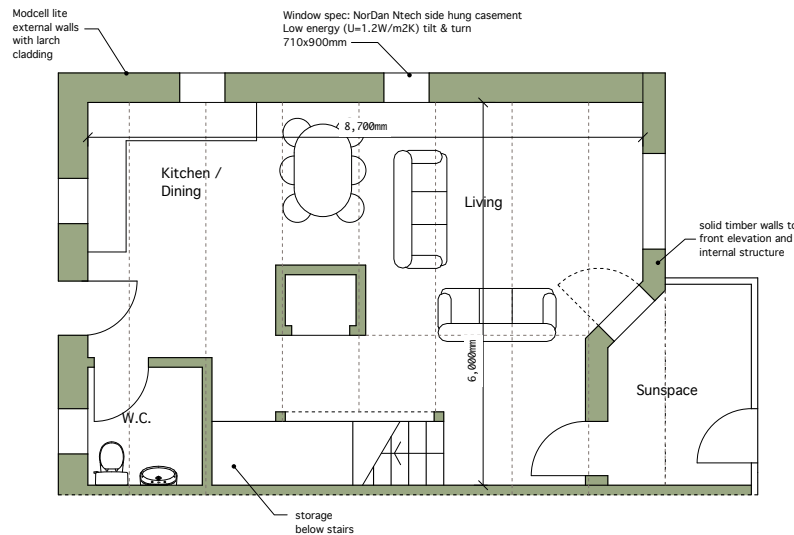
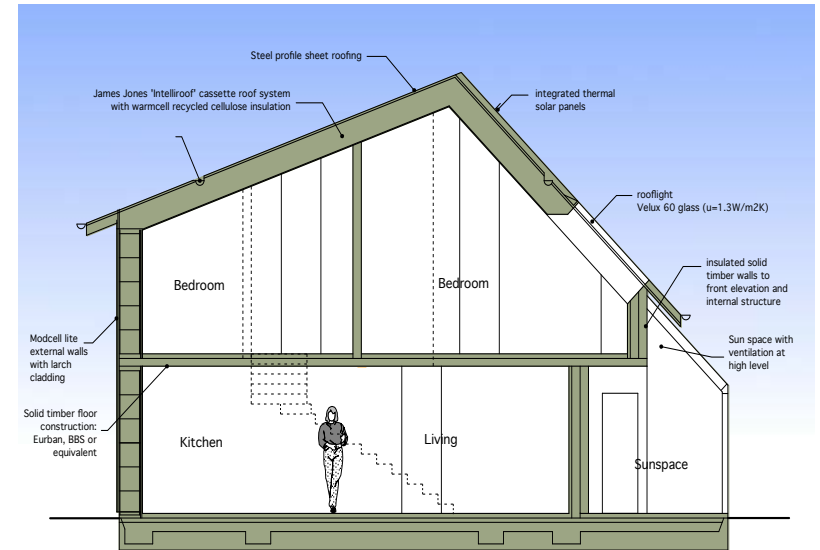
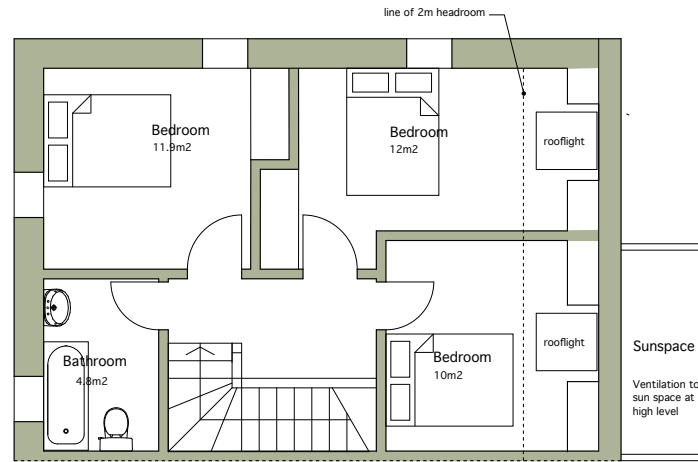
Family house

This is a generous house for up to six people. The ground floor open plan layout offers good flexibility. Sunspaces and large south facing windows give good natural light through the house. Can be adapted for wood stove installation.

Internal floor area = 105m²

Energy = 106 kWh/m²/yr

Estimated annual carbon emissions = 0.47 T/yr

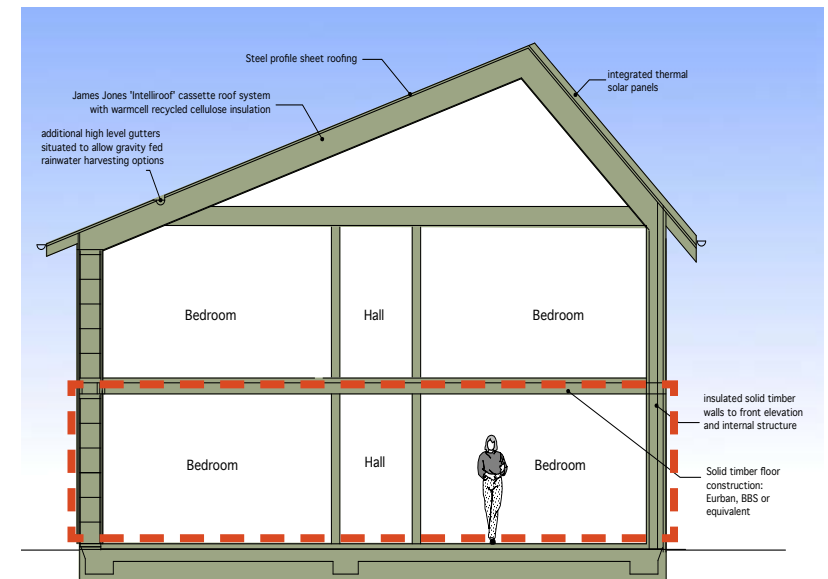
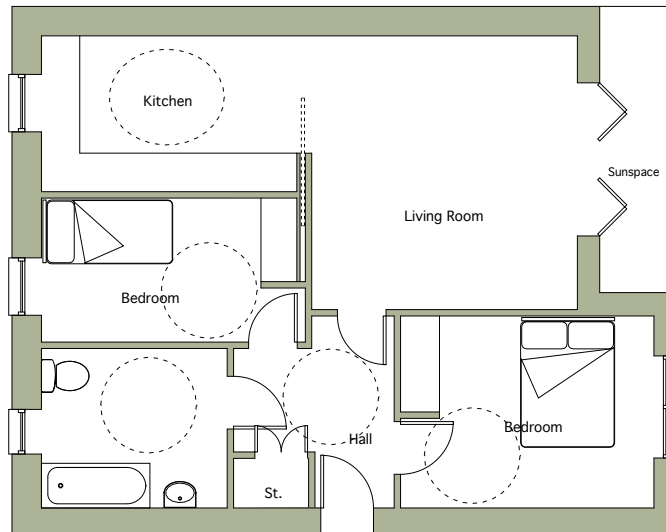


House Types: C1. Accessible Flats

Lifetime community

A series of six flats set around a single cluster are suitable for people with a variety of needs including more senior members of the community. They have plenty of space for wheelchair use. The flats have a sunspace and covered external walkways to allow access to a common lounge.

Internal floor area = 70m²
 Energy = 126 kWh/m²/yr
 Estimated annual carbon emissions = 0.35 T/yr

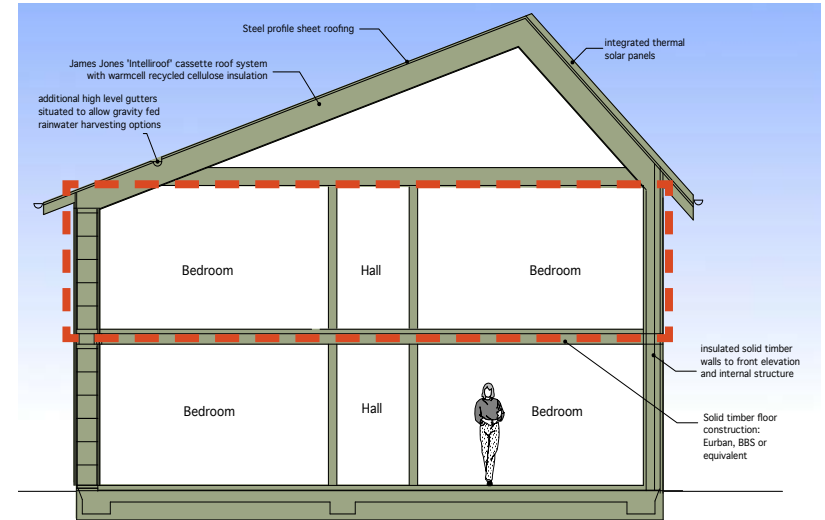
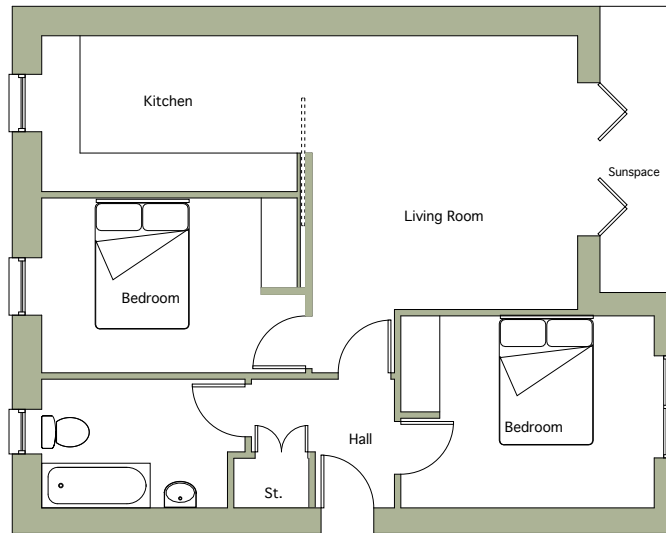


House Types: C2. Upper Flats

Compact living

Close access to each of these flats gives a warm internal environment and shared access with neighbours. The flats are designed to allow future accessibility adaptations and have a sunspace / balcony off the living room.

Internal floor area = 70m²
Energy = 114 kWh/m²/yr
Estimated annual carbon emissions = 0.31 T/yr

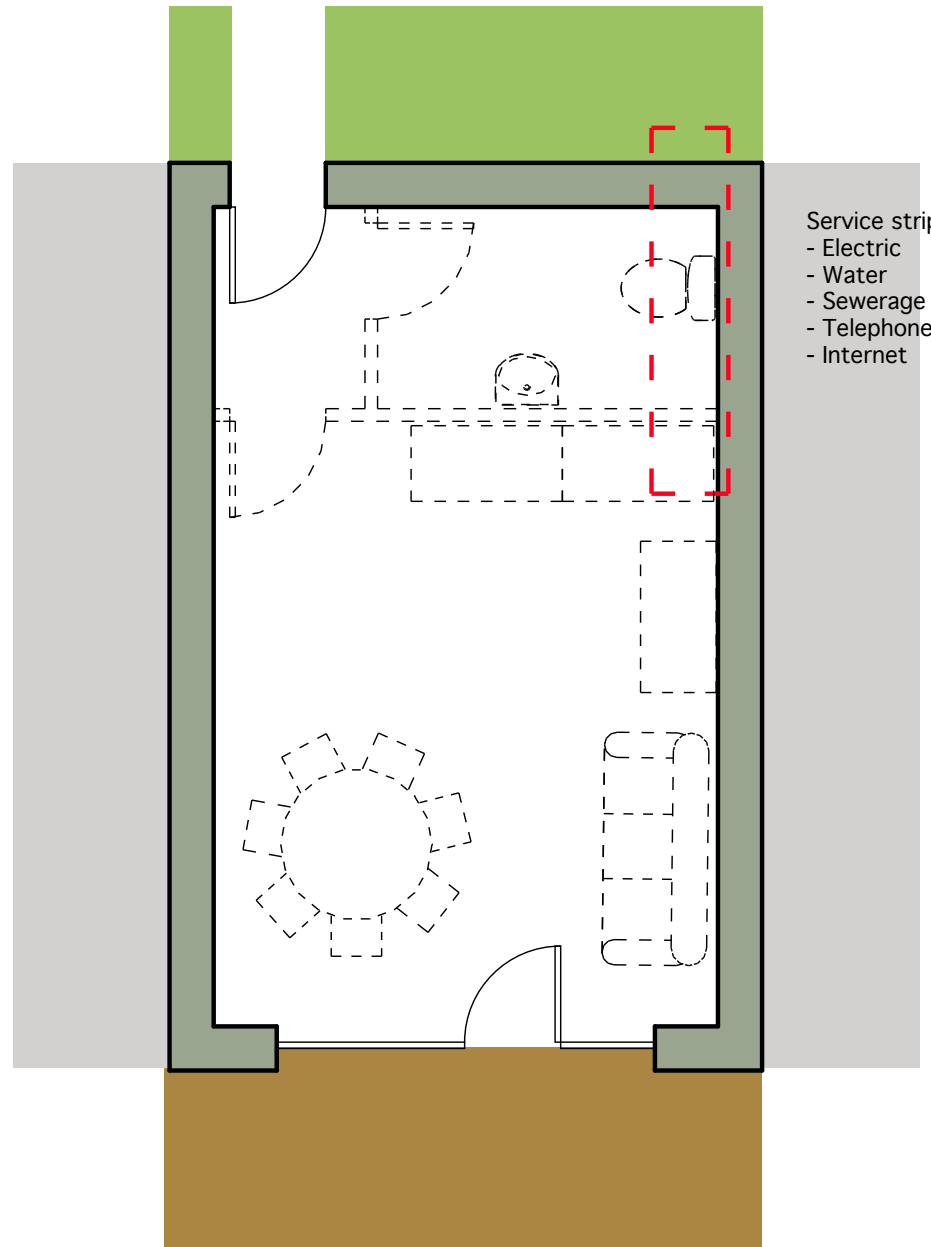


Flexi Units

Work/Play/Store

Multi-purpose unit with flexible layout. An ancillary building with insulation, electricity, water, phone, internet and sewer connections. Could be used as an additional studio space, office or store room.

Internal floor area = 25m²



- Service strip
- Electric
- Water
- Sewerage
- Telephone
- Internet

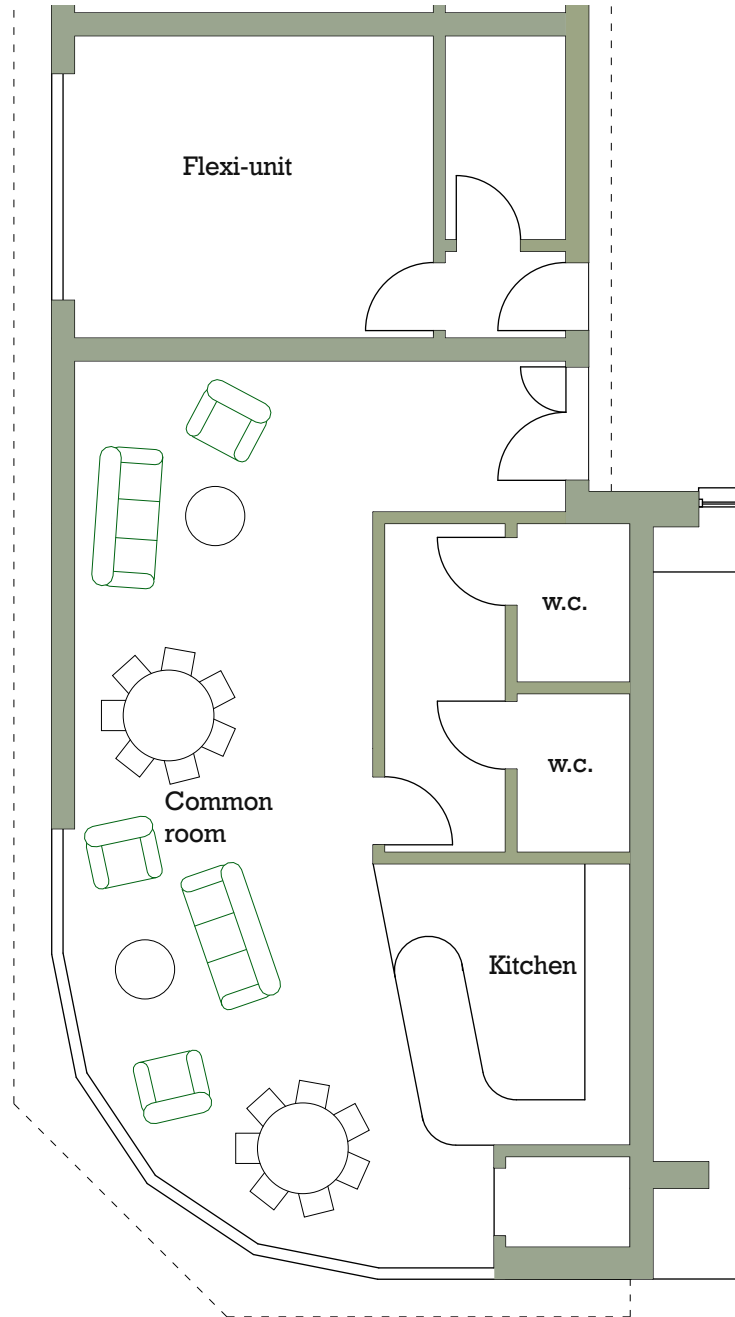


Lounge

Common room

Linked with the accessible flats, this is a common meeting room with a small kitchen, toilet, electricity and BT connection.

Internal floor area = 85m²



Outline Specification: 1

Landscape

Landscape works include:

- Import topsoil as base for growing a range of plants and, potentially, vegetables
- Tarmac access road, porous paving parking bays and self bonded gravel paths.
- Landscaped with mixture of native shrubs, trees, grass seed, post and wire fencing and bunding.
- Existing trees are protected and retained.
- Local timber to be used for sundry landscape items
- Subsoil membranes to retain water – improving the growing conditions of the sandy soil.

Superstructure

We propose a highly insulated building fabric made from natural, healthy materials.

- A timber, straw and lime render composite wall system: highly insulated, breathable construction. Straw is locally sourced.
- A massive timber internal wall system offering flexible spaces, thermal mass and breathing walls.
- A cassette roof system with recycled cellulose insulation.
- Low energy external doors and windows (1.2 w/m²K).
- Locally produced internal doors and stairs with FSC approved timber.
- Steel profile sheet roofing with Accoya cladding for walls
- Sedum roofing to flexi-units, common room and boiler house.

Heating

Heating of rooms and hot water is the primary use of energy in the home. We are promoting a communal heating system with a low carbon source to supplement free energy from the sun.

- District heating system powered by a central biomass boiler
- Opening windows and passive stack ventilation systems provide fresh air to the house. Single glazed sunspace to all dwellings capable of opening out in summer to form a balcony.
- Suitable ducting to distribute warm air
- Individual solar thermal panels to top up domestic cylinders..

Fittings

The fittings for a house make a significant difference to the use and comfort of the houses, we have concentrated on providing fittings that have low ecological impact.

- Kitchens made from 100% recycled timber with built in naturally cooled larder.
- Low water use taps, toilets and showers.
- Designed for the installation of a wood burning stove (exc. ground floor flats).
- Kitchens to have built in electric cooker and space for a fridge
- Space for a washing machine in all houses if required
- Water meter, heat meter and electricity meters. Smart meter display in kitchen.

Performance

We aspire to produce buildings that have the following construction performance.

- U-values to be equivalent to the requirements of AECB Silver Standard e.g. maximum U-value for roofs of 0.15 W/m²K
- Construction air tightness levels of ≤ 3m³/m²hr
- Noise reduction between dwellings of 57 db.
- Noise reduction between rooms of 49 db
- The construction will be designed to reduce aircraft noise in according with planning requirements.

Outline Specification: 2

Services

Utilising the Findhorn micro-grid of services is desirable for this proposal:

- Electricity to be largely supplied by the Findhorn Wind Park using the NFD grid
- Water to be supplied via Findhorn Grid from Scottish Water connection
- Sewerage to go to main foul sewer (as per Planning Condition)
- BT connection to be made to each house capable of broadband and digital connections.
- Living Machine outflow to have UV filter (in Laundry / plant room) and feed garden tap in each house - subject to NFD approval

Substructure

The foundations of the project should minimise concrete use through:

- Using 40% GGBS and recycled hardcore within any concrete
- Use of an innovative insulated and power-floated raft design.

Construction

We propose that these houses are constructed in a single phase. The contractor will be required to:

- Achieve site working standards equivalent to those required under Considerate Constructors accreditation
- Propose ways to minimise impact on surrounding wildlife and habitats
- Prepare and stick to a Site Waste Management Plan.
- Use NFD supplied green electricity for site works

Feedback

As part of this development there is an opportunity to learn more about modern construction techniques and reduction of carbon emissions. To fulfill this there should be a full post occupancy evaluation of the project (2 years) programmed. This would involve both monitoring of the houses, feedback from residents and longer term training for residents on efficient use of their homes.

It is anticipated that the construction process and feedback could be documented and published for wider dissemination.

Timescales

Key dates

Indicative programme at
June 2010.

September 2009
**Cost plan and Business
Plan**

May 2010
**Reserved Matters Planning
Submission**

September 2010
**Building Warrant
Submission**

December 2010
Tender issue

February 2011
Site start

February 2012
**Target completion for
phase 1A**

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