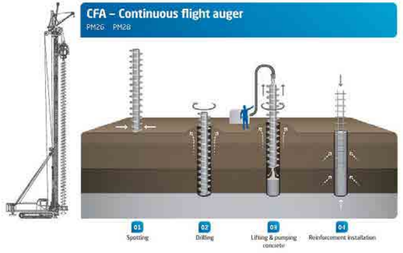
Structure



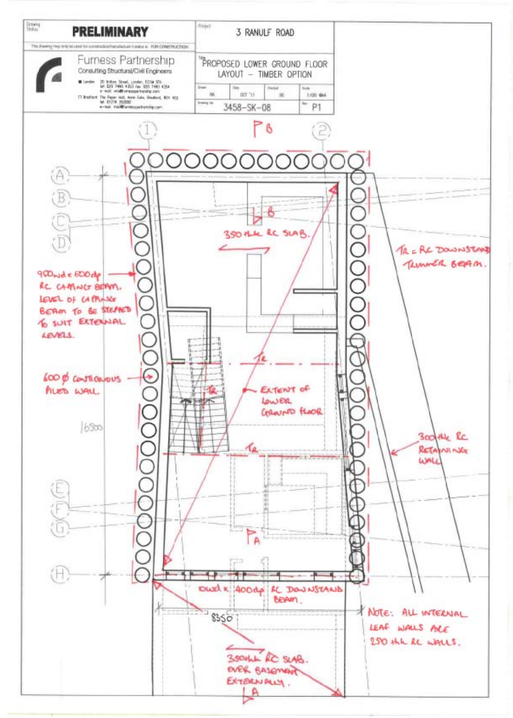
Furness Partnership
Consulting Structural/Civil Engineers

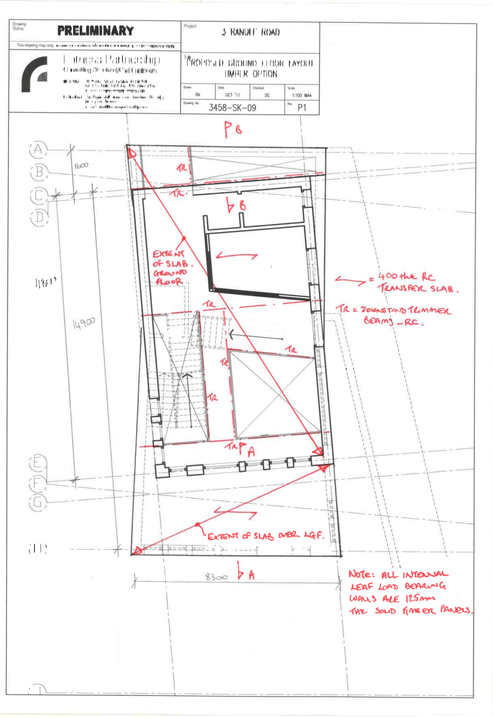
Ranulf Road Preliminary Structural Proposals:

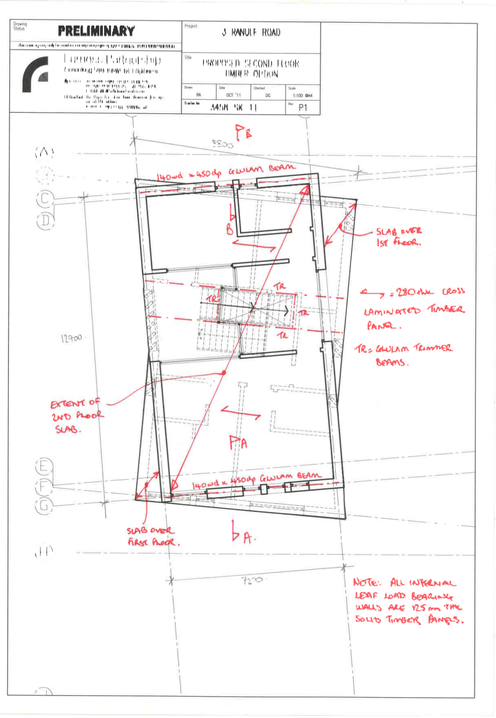
- **Demolition -** The existing detached property will be demolished with care in a sequence manner to ground level. This would be followed with preparing the piling matt for formation of the proposed basement.

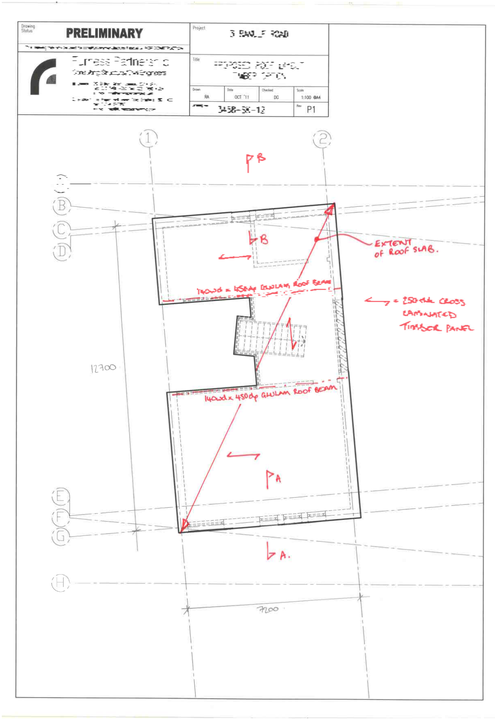
- **Sub-structure construction -** The formation of basement and the lower ground floor will be carried in such a way as not to compromise the foundation and structure of the neighbouring buildings. As the site level is sloping towards the garden the maximum ground retention is towards Ranulf Road. Contiguous piling using a Continuous Flight Augered (CFA) rig is currently considered the preferred construction method for the substructure. This method has the advantage of low noise / vibration against methods such as driven piles. Once the piles are in place the basement slab would be formed and a secondary wall is built to ensure the basement is suitably tanked for residential purpose. Reinforced concrete capping beams would be formed for the formation of the lower ground floor and the superstructure.

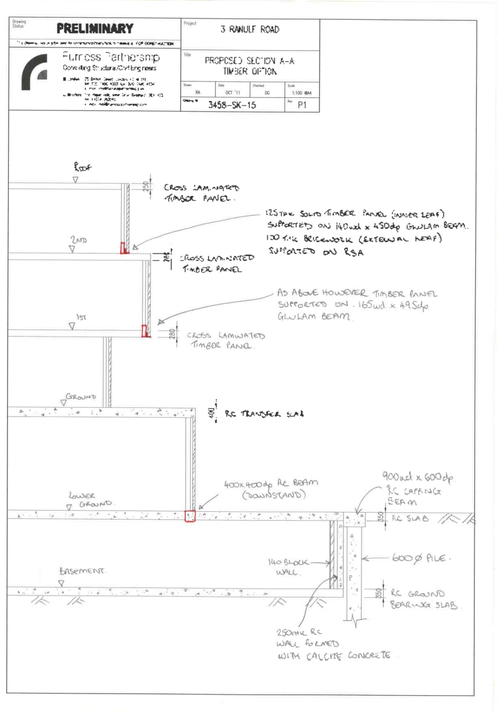
- **Super-structure construction -** The proposed buildings upper levels comprises of a number of cubical volumes mounted on top of each other with slight staggering of the footprint in order to achieve versatile internal / external spaces that are contemporary in design. However beyond ground floor the cubes have four locations in common where they are vertically aligned providing the opportunity to position the buildings columns. Therefore there is a need for a transfer slab at ground floor which can be achieved using reinforced concrete slab.
  The intention is to construct the superstructure using modularised construction methods such as precast concrete or solid cross laminated timber. These methods have the advantage of a better quality finish as well as a speedier erecting time on site that would Benefit the project in its entirety and minimise any disturbance to the neighbouring buildings.

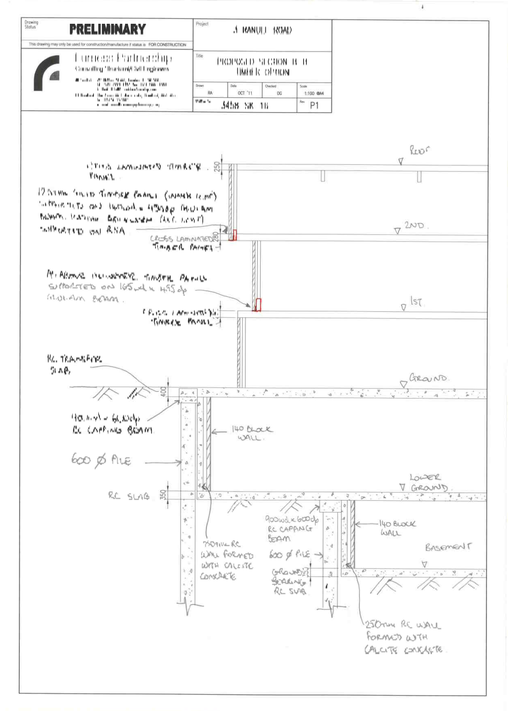

PRELIMINARY
3 RANULF ROAD
PROPOSED LOWER GROUND FLOOR LAYOUT – TIMBER OPTION
Furness Partnership
Consulting Structural/Civil Engineers
3458-SK-08
P1
350 thk RC SLAB.
TR = RC DOWNSTAND TRIMMER BEAM.
900wd x 600dp RC CAPPING BEAM. LEVEL OF CAPPING BEAM TO BE STEPPED TO SUIT EXTERNAL LEVELS.
600 ϕ CONTIGUOUS PILED WALL.
EXTENT OF LOWER GROUND FLOOR.
300 thk RC RETAINING WALL
TR
16900
6wd x 400dp RC DOWNSTAND BEAM.
8550
350 thk RC SLAB. OVER BASEMENT EXTERNALLY.
NOTE: ALL INTERNAL LEAF WALLS ARE 250 thk RC WALLS.


PRELIMINARY
3 RANULF ROAD
PROPOSED GROUND FLOOR LAYOUT TIMBER OPTION
3458-SK-09
P1
TR
EXTENT OF SLAB. GROUND FLOOR
= 400 thk RC TRANSFER SLAB.
TR = DOWNSTAND TRIMMER BEAMS – RC.
11900
16900
EXTENT OF SLAB OVER LGF.
8300
NOTE: ALL INTERNAL LEAF LOAD BEARING WALLS ARE 125mm THK SOLID TIMBER PANELS.


PRELIMINARY
3 RANULF ROAD
PROPOSED SECOND FLOOR LAYOUT TIMBER OPTION
3458-SK-11
P1
140wd x 450dp GLULAM BEAM.
SLAB OVER 1st FLOOR.
= 230 thk CROSS LAMINATED TIMBER PANEL.
TR = GLULAM TRIMMER BEAMS.
17900
EXTENT OF 2ND FLOOR SLAB.
SLAB OVER FIRST FLOOR.
NOTE: ALL INTERNAL LEAF LOAD BEARING WALLS ARE 125 mm THK SOLID TIMBER PANELS.


PRELIMINARY
3 RANULF ROAD
PROPOSED ROOF LAYOUT TIMBER OPTION
3458-SK-12
P1
EXTENT OF ROOF SLAB.
140wd x 450dp GLULAM ROOF BEAM.
= 230 thk CROSS LAMINATED TIMBER PANEL
17900
140wd x 450dp GLULAM ROOF BEAM.


PRELIMINARY
3 RANULF ROAD
PROPOSED SECTION A-A
TIMBER OPTION
3458-SK-15
P1
Eurcss Partnership
Roof
2nd
1st
Ground
Lower Ground
Basement
CROSS LAMINATED TIMBER PANEL
125thk SOLID TIMBER PANEL (UNDER LEAD) SUPPORTED ON 140wd x 450dp GLULAM BEAM. 100 thk BRICKWORK (EXTERNAL LEAF) SUPPORTED ON RSA
AS ABOVE HOWEVER TIMBER PANEL SUPPORTED ON 165wd x 495dp GLULAM BEAM
RC TRANSFER SLAB
400thk RC BEAM (SOUTH/EAST)
900wd x 600dp RC CAPPING BEAM
RC SLAB
140 BLOCK WALL
600 Ø PILE
RC GROUND BEARING SLAB
250thk RC WALL FORMED WITH CALCITE CONCRETE


PRELIMINARY
3 RANULF ROAD
PROPOSED SECTION A-A
TIMBER OPTION
3458-SK-16
P1
Eurcss Partnership
Roof
2nd
1st
Ground
Lower Ground
Basement
CROSS LAMINATED TIMBER PANEL
RC TRANSFER SLAB
140 BLOCK WALL
600 Ø PILE
RC SLAB
900wd x 600dp RC CAPPING BEAM
250mm RC WALL FORMED WITH CALCITE CONCRETE

04

Architectural Design

The design takes into consideration the impact on the local environment and the need for the building to enhance its surroundings. The massing for this development has led to work within the heights of the existing context and to enrich the urban environment. The material choices are sympathetic to the native palette of Jersey and achieves cohesion with the urban fabric.

Advances in design have meant that Brick has gained much more freedom of expression.
Previous used has a structural elements today in regards to structural efficiency it can be a lot more expressive.
The simple material can be used in a veer more interesting ways.

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Visualisation- North East

Visualisation- South West

Visualisation- North East

Visualisation- North West

05

Sustainability

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OUTLINE DESIGN REQUIREMENTS

FOR

MECHANICAL AND ELECTRICAL

ENGINEERING SERVICES CODE FOR SUSTAINABLE HOMES

AT

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Specification No: 1963-3
Issue No: 1
Date: 29th September 2011

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1.0. INTRODUCTION

This outline specification defines the principles to be adopted for the provision of mechanical and electrical services to achieve the Code for Sustainable Homes Levels as indicated.

This is an initial assessment and further advanced / additional services may be required subject to a SAP / SBEM Calculation. The assumptions have been made from previous projects with similar requirements.

Other aspects of the building, its design and operation such as local amenities, transport, health and wellbeing, land use, ecology and pollution will need to be assed with the entire design team to ensure the appropriate code is achieved

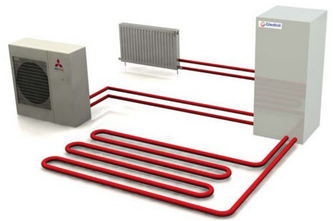
2.0. LEVEL CODE 3

2.1. General

Code for Sustainable Homes level 3 requires a minimum 25% improvement over the TER CO_2 emissions calculated in a SAP / SBEM model to achieve this it is likely the following systems will need to be installed.

2.2. Mechanical Services

2.2.1 Heating – It is unlikely that a gas fired boiler with a tradition heating system will achieve a code 3, so therefore alternative options such as an air source heat pump providing LTHW at around 45°C will be required. This will also provide the primary heating for the domestic hot water system.



2.2.2 Hot & Cold Water – The home will need to be designed to use no more than 105 litres per person per day. This can be achieved by installing items such as

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i. 6/4 dual flush WC
ii. Flow reducing taps
iii. 6-9 l/m shower heads
iv. Smaller shaped bath
v. 18 litre max volume dishwasher
vi. 60 litre max volume washing machine

Solar panels may have to be introduced to provide an LTHW circuit to the hot water cylinder, ensuring that immersion heaters are for back up purposes only and not an primary / secondary heat source for the hot water system.

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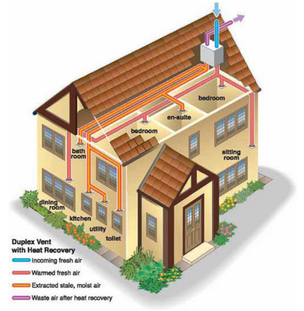
2.2.3 Ventilation – the use of a supply and extract heat recovery 'whole house' ventilation unit will almost certainly be required to satisfy code 3.



2.3. Electrical Services

2.3.1 Mains and Small Power – additional sub metering may be required, with the possibility of warning devises to ensure 'out of range values' are not occurring on site.

2.3.2 Lighting – 40% of the fixed internal lighting will need to be low energy fittings

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2.4. Additional Requirements

- Provide dry space heating (to avoid the use of tumble driers)
- Provide a 'home office'
- Provide dedicated cycle storage
- Reducing the amount of water that runs off the site into storm drains
- Using environmental friendly materials
- Provide recycling capacity either inside or outside the home
- Enhancing the security of the home
- Small rain water harvesting systems may be required such as water butts etc.

3.0. LEVEL CODE 4

To Achieve Code 4, all of the criteria set out in section 2 will need to be met along with some of the items listed in section three. As a comparison:

Code 3 requires 25% improvement over the TER CO2 emissions calculated in a SAP / SBEM model and a further 46.7 points from the Code for Sustainable Homes document

Code 4 requires 44% improvement over the TER CO2 emissions calculated in a SAP / SBEM model and a further 54.1 points from the Code for Sustainable Homes document

Code 5 requires 100% improvement over the TER CO2 emissions calculated in a SAP / SBEM model and a further 60.1 points from the Code for Sustainable Homes document

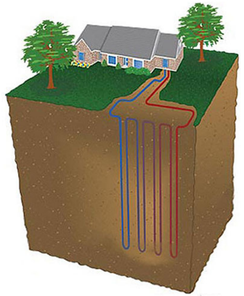
4.0. LEVEL CODE 5

4.1. General

Code for Sustainable Homes level 5 requires a minimum 100% improvement over the TER CO2 emissions calculated in a SAP / SBEM model to achieve this it is likely the following systems will need to be installed.

4.2. Mechanical Services

2.2.1 Heating – either a high efficient air source heat pump (possibly gas fired) or failing that, ground source heat pump will be required to provide the space heating throughout the dwelling. This can be either by oversized radiators or underfloor heating.



2.2.2 Hot & Cold Water – The home will need to be designed to use no more than 80 litres per person per day. This can be achieved by installing items such as

vii. 6/4 dual flush WC
viii. Flow reducing taps
ix. 6-9 l/m shower heads
x. Smaller shaped bath
xi. 18 litre max volume dishwasher
xii. 60 litre max volume washing machine

Solar panels will have to be introduced to provide an LTHW circuit to the hot water cylinder, ensuring that immersion heaters are for back up purposes only and not an primary / secondary heat source for the hot water system.

2.2.3 Ventilation – the use of a supply and extract heat recovery 'whole house' ventilation unit will be required to satisfy code 5.

2.2.4 Rain Water Harvesting – a rain water harvesting system will need to be provided. This is usually stored and utilised for gardening and irrigation purposes.

2.2.5 Grey Water Harvesting – a grey water harvesting system with appropriate treatment plant and filters will need to be provided. This is usually stored and used for the non-potable sanitary ware items within the house.

4.3. Electrical Services

2.3.1 Mains and Small Power – additional sub metering may be required, with the possibility of warning devises to ensure 'out of range values' are not occurring on site.

2.3.2 Lighting – 75% of the fixed internal lighting will need to be low energy fittings.

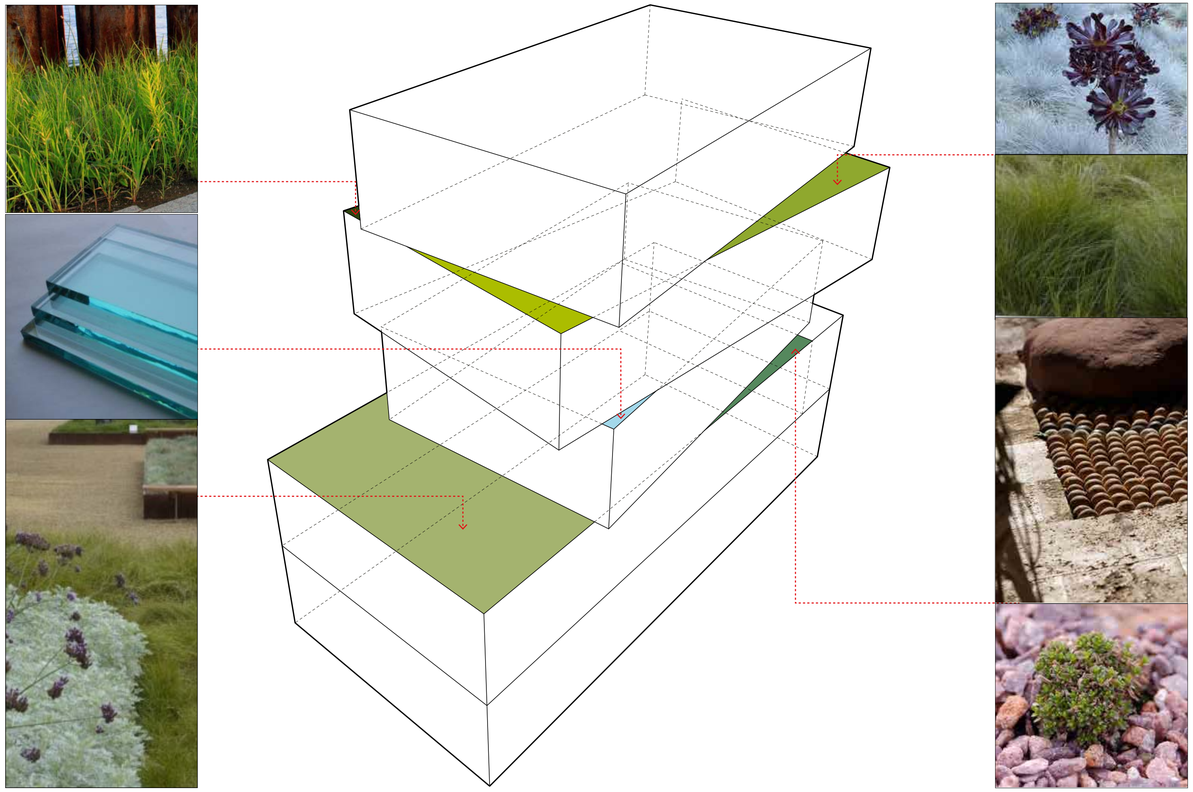
External / security luminaires will need to have maximum combined output of 150W and fitted with movement detectors and daylight shut off devices.

2.3.3 Photo Voltaic System – a PV system will almost certainly be required to provide supplementary dedicated electrical supply and a feed in tariff meter if not all of the generated electricity is consumed.

4.4. Additional Requirements

- Provide dry space heating (to avoid the use of tumble driers)
- Provide a 'home office'
- Provide dedicated cycle storage
- Reducing the amount of water that runs off the site into storm drains
- Using highly environmental friendly materials
- Provide recycling capacity either inside or outside the home

Landscaping



Landscape Strategy

The current property has extensive landscape and garden to its rear. This has over a number of year of neglect become overgrown to the extent where the garden is not usable in its current condition.
Our intention is to improve the spatial qualities of this by creating usable space.
The intention is to use the Arboriculture report and expertises to minimise the effect of our landscaping strategy and to maintain and sustain as much as possible from the original garden.
The design leads to an inevitable loss of tree on the site but the loss is minimised by insuring that the tress will be replaces by similar species.
The landscaping insure that when land needs to be excavated for structures that this soil is recycled and soil reduction is kept to a minimum insuring the survival of the current fauna in the garden.

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