Policy GP9: Sustainable Development

In summary, the sustainable development policy seeks to ensure a number of principals regarding new/refurbished buildings and their sustainable design/development.

It specifically refers to the wise use of natural resources, the use of appropriate sustainable techniques and mitigation/adaption/resilience to climate change.

It picks out **good design (A)** in not only the aesthetic and contextual qualities of a building but also in its **constructional efficiency (B)** and the quality and sustainability of **materials (A)**. It refers directly to **orientation and layout (C)** of buildings and the opportunities therein for harnessing sustainable principals. The policy also refers to **flooding (D)**, **renewable energy sources (E)**, the use of **stone (A)** locally, and the need for a **waste management plan (F)** where applicable.

All of these matters have been considered as part of our feasibility and concept design process so we are confident that we are in line with all of the above. We have addressed the above highlighted points in detail below:

A. <u>Design, materials and stone</u>

The overall design has already been addressed in the principal application document but in summary the design looks to sensitively extend the existing protected building to provide a much needed 'core' family space to the existing cottage's cramped and dark living conditions, improving the space, layout and circulation. They also seek to open up attractive views and connections to the landscape and external environment, improving our client's health and wellbeing. As a young family, they are hoping to enhance this Listed Building by extending it to a more appropriate size for the site, and for the future, via a considered and high quality architectural project.

The materials to be used externally are a combination of reclaimed granite which references the principal material of the existing building and of course is typical of this rural setting, with coloured corrugated cladding, a contrast with the granite which also has local references in modern agricultural buildings. The cladding material is to be confirmed but will either be metal, cementitious or bitumen. Research is being undertaken but it is hoped to source a suitable recycled product.

The design of the building takes into account the significant energy involved in the transport associated with the importation of stone through the specification of locally sourced reclaimed granite. Cladding of the types proposed are widely manufactured within the UK and will be sourced taking this into account, minimising long travel distances for materials wherever possible. The lightweight, uniform nature of the material is also beneficial logistically as a large area can be transported taking up minimal space.

B. <u>Constructional efficiency</u>

The scheme proposes an extension which 'wraps' around the west and north elevations of the existing building for its full height. Given the geometry of the extension and the proposed cladding material, the form of construction of the superstructure will be steel frame with highly insulated walls, serving to minimise the amount of heating required for the building. The fact that a substantial portion of the existing external walls will become internal means that the thermal efficiency of the building will be greatly improved by reducing the heat losses through the solid granite walls. The current rear (west) masonry wall will become the internal 'spine' wall, and will be a beneficial thermal mass in the control of the indoor temperature.

The use of a steel frame, panel infills and sheet cladding materials means that the bulk of the extension can be erected quickly, reducing time on site and the associated energy consumption. Equally, whilst the granite walls will be more labour intensive, this work is all by hand and requires little use of energy-consuming machinery.

The existing modern extension off the north gable of the main house is to be retained and extended rather than demolished and rebuilt, retaining the vast majority of its embodied energy.

C. Orientation and layout

The extension runs along the same roughly north-south axis of the existing building and is rectangular in shape, minimising north-facing elements and benefitting from early morning and afternoon solar gain. The existing building will shield the glazed elements of the new extension from solar gain during the middle part of the day and therefore potential overheating. The open plan ground floor of the extension establishes a 'core' and improves circulation in and around the existing building, whilst remaining subservient to it.

D. Flood risk management and surface water run-off

The topography of the site is such that the land falls away steadily from south-west to north east towards the valley, resulting in the existing split level arrangement. The southern end of the existing building is built into the bank adjacent the road and therefore this end of the proposed extension will also be partially below ground, incorporating tanking systems linked with the existing. Given that the land currently falls towards the west elevation of the building, it is proposed that the lawn on this side is partly re-graded to create a flat area as a more suitable amenity space but also to encourage ground and surface water away from the building. Whilst the site, due to its position, is not at risk of flooding, consideration needs to be given to the flow of water through it.

E. Renewable energy

An overall 'Fabric First' approach to the detailed design of the building is proposed. This will incorporate high specification insulated walls and roofs. Glazing will be highly insulated double or triple glazed LowE, with argon filled cavities and carefully detailed surrounds.

The building will be highly airtight but it is not yet clear whether passive or MVHR will be the main source of ventilation, which depends on user preference and is influenced by the permeability of the historic breathable wall structures and existing windows.

The fabric first approach will minimise the energy required to cool and heat the building.

The building is currently heated via an outdated domestic oil boiler. The proposal will incorporate a semi-sustainable, efficient heat source, whether this will be an ASHP or a modern efficient condensing boiler is to be confirmed once a full M&E design and heat loss calculations are undertaken. In conjunction with a full under floor heating arrangement and the 'fabric first' construction techniques it will certainly be an improvement on the existing. PV solar panels will also be considered at a later date, planning permission for which will be sought separately.

F. Waste management plan

The existing building is to remain largely unchanged and therefore the waste arising from any demolition work will be relatively minimal. Hand tools will be used where possible in preference to heavy plant, to preserve and protect the listed building. All waste will be separated on site and disposed of appropriately at the relevant recycling or waste disposal site on the island. Ground excavated for the new extension and land re-grading is to be re-used on site where possible. Materials will be re-used where possible, for example the slate from the roof of the existing modern extension will be carefully removed and re-fixed on the roof of this same element after the additional storey has been constructed. The Building Contract will be drafted in such a way to give surety to this approach. The Contractor will be required to keep a Waste Management Plan as an ongoing record of how all waste is dealt with, which will be checked periodically.