



Design & Access Statement

In Support of the Planning Application for:

**Proposed dwelling and Detached Garage
on Land Adjacent to Ballogie Estate Office, Ballogie, Aboyne, Aberdeenshire, AB34 5DS
(Plot 3)**

Planning applicant: Alison and Paul Middleton

Prepared by MAKAR September 2021

SUSTAINABLE DESIGN STATEMENT

1. Site Appraisal
2. Access, Parking and Turning
3. Proposals: Site Strategy, Landscaping and Drainage
4. House Design: Materials, Building Design, Energy & Heating Strategy and services
5. Off-site Construction

1. Site appraisal: Opportunities and Constraints

The site for this proposed dwelling is one of three plots adjacent to Ballogie Estate Office, Ballogie, Aboyne, with Planning in Principle consent (ref: M/APP/2017/2054). The site is directly west of the B796, and extends to 1530m².

There are no trees on the site, and the site is more or less level – please refer to the approved Arboricultural Assessment by Astell Associates for the Ballogie Estate Office application (ref: M/APP/2017/2054).

2. Access, Parking and Turning:

The proposed site access will be taken off the existing road, which has an established junction with the B796.

A vehicle turning area will be provided, as per the proposed site plan, within the application site, and in accordance with Aberdeenshire Council requirements; with maximum gradient of the first 5m of the access not exceeding 1:20.

The access will be internally drained and formed in such a way to prevent any flow of surface water either onto or from the public road. The turning area proposed, 6 x 11m shall be in accordance with the Scottish Building Standards; sufficient for vehicles to enter and turn adequately on site, without the need to reverse onto the public road.

3. Site strategy, Landscaping and Drainage

The site, with the access from the south rises very slightly to the east. The attached topographical survey shows levels ranging between 99 and 100, with a proposed finished floor level (FFL) of 99.85 (250mm above the site level of 99.60). These site levels contrast to the

approved site section drawing, where proposed finished floor levels are between 10.45 and 10.95.

The proposed dwelling will be optimally orientated to maximize the benefits of passive solar gains, whilst roof overhangs will help to protect from summer overheating.

Waste water will go to a shared sewage treatment tank and will discharge to an existing culvert, subject to SEPA approval.

Surface water, likewise, will be piped to a shared network and discharged to the existing culvert, south of Bridgend.

4. House Design

Materials:

The proposed dwelling will be net-zero carbon through a careful choice of materials, construction, and delivery methods.

MAKAR makes use of innovative off-site methods of construction which have been proven to significantly reduce embodied energy during the delivery of house projects.

The proposed dwelling will be constructed (off-site) and delivered by MAKAR Ltd.

The house will make use of a limited palette of locally available, natural and locally appropriate materials. Metal profile roofing is an efficient, readily available material with many references locally in agricultural buildings.

The timber frame and larch cladding will be locally or Scottish-grown, and are environmentally sustainable choices. The larch, which is naturally durable, will be untreated, and will be detailed carefully so that chemical treatment can be avoided. It will also be left to weather naturally over time and the gradual silvering of the wood will further help integrate the house with its rural context. Likewise, areas of post and beam supporting overhanging roofs will be constructed of larch or Douglas fir, which will weather in a similar manner. External doors and windows will be factory-painted timber frame in a complementary colour.

Other components will be manufactured of highly durable, low maintenance materials, for example, sinusoidal profile dark grey metal roofing and Lindab painted, galvanised steel for gutters and downpipes (in colour to match roofing).

This palette of materials, and the contemporary construction method is offered as a sustainable and considered response to the challenges we are facing with the Climate Emergency.

The house is designed to sit on a ground supported concrete slab. This allows for the 'bedding down' of the house into the landscape - makes transitions from the house into the garden

more fluid (without numerous steps), and the mass of the concrete provides a valuable thermal store for passive and internal heat gains.

At the same time, carbon is locked up in the Scottish-grown timber. The benefits of this approach to design and construction include:

- Durability over an extended period for low maintenance and long life;
- Cost, affordability and functionality; Local materials are used as far as possible to reduce embodied energy and to the advantage of the local economy;
- Aesthetics - the natural colours and texture harmonise with the rural landscape.

Building Design:

The proposed house is 1½ storeys in height, with windows all with a strong vertical emphasis. The roof is symmetrically pitched at 30°.

The dwelling has a central core, which widens in the middle to provide for service and access space to the rear (north) and widens to the front to allow for an open (nearly double height) glazed space.

Bedrooms are located to the east and west of the central spaces, on the first floor. The kitchen is located to the west of the living space, which extends south, onto a covered deck.

Energy and Heating Strategy

Large triple glazed windows will enable passive solar gains to be captured within the house, and the (nearly) double height living space will allow heat gains (from the lounge and the largely glazed south facing wall) to rise up into the first floor.

A mechanical heat recovery ventilation system (MVHR) will be installed.

Space and water heating will be by way of an air source heat pump, with photo-voltaic panels installed on the south-facing roof to contribute to the household electricity demand.

Secondary space heating will be provided by an efficient wood burning stove.

Services:

- Connection to mains electricity, fibre optic cable, and the public water supply are anticipated as per the attached site plan.
- The construction of the driveway over the Scottish Water main will be in strict accordance with Scottish Water requirements.

Low water use:

- The following will be utilised in order to reduce the use of water in the house:
- Low dual flush low water WC's.
- Flow reduced/aerating taps fitted throughout.
- Showers rated at no more than 6 litres / minute.
- Low water use white goods; dishwasher and washing machines.

5. Off-site Construction:

The house will be constructed with 305mm Natural Structural Insulated panels, within which breathable cellulose insulation is installed. An external layer of 60mm 'Steico' wood fibre insulation is wrapped around the outside of the panels, in order to reduce thermal bridging through the timber frame. This highly insulated envelope will be sealed at all joints and corners resulting in an overall air tightness-below 2 m³/h.m² @ 50 Pa. The MVHR system will ensure adequate ventilation and air quality internally, whilst not losing heat through the introduction of fresh air.

The large structural components of wall and roof panels will be prefabricated off-site, incorporating cladding, doors, windows and roof covering.

These components will be delivered by road and erected by a small team on site.

This method allows greater certainty over timescale and quality, and reduce site works, which can be significantly affected by the Scottish climate. There are also benefits to neighbours, due to the reduced site time needed to erect the house ready for internal trades, and to the environment due to the fewer journeys required from workshop to site.



MAKAR Workshop, Torbreck, Inverness (above)

Typical off-site constructed wall panel being craned into place on site (below)



Waste reduction:

Construction activities can be particularly wasteful of natural, manufactured and human resources. MAKAR employs *Lean* construction methods and looks to reduce waste in the following ways:

- Reduction of transport of components and personnel by concentrating the manufacture in a local factory environment;
- Materials waste - the house design responds to standard timber panel sizes, which goes on to reduce the amount of material wasted during the manufacture process;
- All existing materials; soil, sub soil and aggregates will be retained on site for use.