

FLOOD RISK ASSESSMENT

Forest Barn

Forest Lane, Castle Goring
Worthing, West Sussex BN13 3FD

Replacement extension to existing dwelling

1. Introduction

This Flood Risk Assessment (FRA) has been prepared for Forest Barn, Forest Lane, Castle Goring, Worthing, West Sussex BN13 3FD. It supports a householder proposal for a replacement extension to the existing dwelling, located on the footprint of the former extension.

The site is stated to lie within Flood Zone 3. The assessment is therefore prepared in accordance with the Environment Agency's current "Preparing a flood risk assessment: standing advice", and specifically its advice for minor extensions. A minor extension is a householder or non-domestic extension with a floor area no greater than 250 m².

The assessment is proportionate to the scale and nature of the proposal. It considers flood risk from all relevant sources, the implications of the deliberately lower finished floor level and measures to avoid increasing flood risk elsewhere.

2. Site and proposal

2.1 Site description

Forest Barn lies in the Castle Goring area, north of central Worthing, within a semi-rural setting. The application relates to an established dwelling and its domestic curtilage. The proposal neither introduces a new dwelling nor increases the number of occupants or the vulnerability classification of the land use.

2.2 Proposed works

The development comprises a replacement extension to the existing dwelling on the footprint of the previous extension. The replacement location limits the additional intervention within the floodplain and avoids extending development onto a materially different part of the site.

To keep the roof of the extension beneath the eaves of the existing building, its finished floor level will be one step below the finished floor level of the existing dwelling. This lower level is a design constraint and is not relied upon as flood mitigation.

3. Policy and standing-advice context

The Environment Agency advises that minor extensions in Flood Zones 2 and 3 should be assessed through its standing advice. The FRA must be appropriate and proportionate, identify the estimated design-flood level where available, give finished floor levels, and set out flood-resistance and resilience measures.

The standing advice recommends setting floors at least 600 mm above the estimated flood level, potentially reducible to 300 mm where there is a high degree of certainty. Where this cannot be achieved, floor levels should be raised as much as practicable and additional passive flood-resistance and resilience measures included. The design should prioritise exclusion of floodwater while also enabling rapid recovery if water enters.

As a householder residential extension, the proposal is exempt from the sequential test. It does not create a separate residential unit or place a new population at risk. The exception test is likewise not required for this householder extension. This does not remove the need for the development to be safe and not increase flood risk elsewhere.

4. Data sources and limitations

No topographic survey tied to Ordnance Datum, modelled design-flood level, flood-depth/velocity data has been supplied. Before construction, the extension finished floor, existing dwelling floor, adjoining ground and threshold levels must be surveyed and shown in metres Above Ordnance Datum.

5. Assessment of flood risk from all sources

5.1 Rivers and sea

The application information identifies the site within Flood Zone 3, land with a high probability of flooding from rivers or the sea. Flood Zone mapping is precautionary and does not distinguish the actual depth or hazard at the extension footprint. The proposal remains an extension to an existing dwelling, on a previously developed footprint, and does not create a new dwelling or sleeping accommodation independent of the main house.

The design-flood benchmark for river flooding is the 1% annual-probability event with an appropriate climate-change allowance; for tidal flooding it is the 0.5% annual-probability event with climate change. The precise controlling source and level must be confirmed from available Environment Agency product data if required by the decision-maker.

5.2 Surface water

Intense rainfall can generate runoff from roofs, paved areas and surrounding ground. The principal site-specific risk created by the proposed level change is that local runoff could collect at the lowered external threshold or flow into the extension. This will be addressed through positive falls away from the building, a drained threshold/channel where necessary, and disposal of roof water to the existing lawful drainage system or a suitable infiltration feature, subject to ground conditions and Building Regulations.

5.3 Groundwater

Groundwater emergence cannot be excluded from strategic mapping alone. The below-existing-floor construction increases the importance of a continuous damp-proof and water-resistant floor/wall junction. The floor slab, damp-proof membrane and wall damp-proof course must be detailed as a continuous system, with sealed service penetrations. If excavation identifies persistent groundwater, the designer must obtain specialist waterproofing advice before completing the floor build-up.

5.4 Sewers and drainage infrastructure

Sewer surcharge is a residual risk during extreme rainfall. Any new low-level drainage connections serving the extension should incorporate appropriately specified non-return protection where there is a credible backflow route. Foul and surface-water systems should remain separate unless the existing lawful system requires otherwise.

5.5 Reservoirs, canals and artificial sources

No specific artificial-source mechanism has been identified from the supplied information. Reservoir flooding is a residual, low-probability risk managed principally through operator emergency planning. The minor extension does not materially alter that risk.

5.6 Climate change and residual risk

Climate change may increase peak river flows and rainfall intensity over the lifetime of the dwelling. The proposal responds through passive measures that do not rely on occupant deployment, retention of internal access to the higher existing dwelling, and drainage detailing that prevents the lower threshold from acting as a collection point. Residual risk remains if an event exceeds the design standard or defences fail or overtop; the resilience measures below reduce the consequences of such an event.

6. Finished floor level: specific justification

The Environment Agency's preferred approach is a floor at least 600 mm above the estimated flood level. That relationship cannot presently be achieved for the reasons stated above as matching or exceeding the existing dwelling floor would cause the replacement extension roof to conflict with the existing eaves. The floor is consequently proposed one step below the existing floor as the minimum practicable reduction necessary to achieve the architectural junction.

This is an acknowledged departure from the preferred floor-level approach and must be compensated for by design. The following hierarchy applies:

- The step down must be kept to the minimum practicable height and accurately dimensioned on construction drawings.
- The external ground immediately around the extension must not be raised and must fall away from the walls and openings, without directing water to neighbouring land.
- The extension must retain direct internal access to the existing dwelling, which provides immediate refuge at the higher existing floor level and, where available, access to upper-floor accommodation.
- No independent sleeping unit or separate dwelling is created within the extension.
- The opening between the extension and existing dwelling must be detailed so that the extension does not provide an uncontrolled low-level route for water into the main building. A passive raised threshold/upstand or equivalent sealed detail should be provided where compatible with access and Building Regulations.

7. Flood-resistance and resilience measures

The following measures are integral to the development and should be shown or specified in the detailed construction package. Their vertical extent must be set by reference to the best available estimated flood level. In the absence of a confirmed level, they should extend at least 600 mm above the extension finished floor and, where reasonably practicable, 600 mm above the subsequently confirmed estimated flood level, subject to structural advice.

Element	Required measure
Walls and floor	Dense, low-permeability construction; waterproof concrete or equivalent floor build-up; continuous sealed damp-proof membrane; sealed wall/floor junctions and service penetrations.
Openings	Passive flood-resistant external doors/thresholds and sealed frames. Avoid reliance on temporary demountable barriers for the new extension.
Internal finishes	Closed-cell insulation; cementitious or lime-based plaster/render as appropriate; moisture-resistant wall boards only where compatible; ceramic/stone/tiled floor finishes with water-resistant adhesive and grout.
Joinery and fittings	Use water-resistant or replaceable components at low level. Raise kitchen/utility carcasses and vulnerable fixed equipment on masonry, metal or water-resistant supports where practicable.
Electrical services	Locate consumer equipment, controls, sockets and vulnerable wiring above the resilience datum, subject to Part P and accessibility requirements. Route cables down from above where practicable.
Drainage	Non-return valves to low-level foul connections where backflow is possible; trapped gullies; drained threshold/channel at vulnerable external doors where needed; safe discharge that does not increase risk elsewhere.
Drying and recovery	Accessible voids and removable access panels; finishes capable of cleaning and drying; floor arrangement permitting drainage toward an accessible low point where feasible.
Existing-house interface	Provide a passive water-resistant threshold/upstand or equivalently robust sealed junction between the lower extension and higher existing dwelling, coordinated with inclusive access and Building Regulations.
Structure	If resistance measures would exclude more than 600 mm depth, a structural engineer must verify stability under hydrostatic and hydrodynamic loading.

8. Surface-water management and impact elsewhere

The replacement extension occupies the footprint of the former extension. On that basis, it should not create a material net increase in impermeable area or displace materially more flood storage than the previous structure. No land raising is proposed.

Roof runoff should be connected to the existing lawful system where capacity and condition are adequate. If a new infiltration feature is proposed, suitability must be demonstrated through ground investigation/infiltration testing and positioned to avoid risk to foundations, the lower floor and neighbouring property. Rainwater must not discharge onto the highway or adjoining land.

External levels should provide positive drainage away from all openings, with exceedance flows routed around rather than through the extension. The channel drain, gullies and rainwater system must be kept accessible for inspection and maintenance. These measures ensure the works do not increase flood risk elsewhere.

9. Occupant safety and flood response

The proposal is physically connected to the existing dwelling. In a flood warning or observed rising-water event, occupants should move from the lower extension into the higher existing accommodation and, if necessary, to the upper floor. Occupants should not attempt to walk or drive through floodwater.

- Register for Environment Agency flood warnings where the service covers the relevant source.
- Keep a simple household flood plan, emergency contacts, medication and essential documents accessible above ground-floor level.
- Switch off electricity only if safe to do so and follow emergency-service instructions.
- Inspect and maintain drains, non-return valves, seals and flood-resistant doors at least annually and after any flood event.

Because the extension does not create a separate unit and maintains internal access to higher accommodation, the proposal does not worsen the existing dwelling's evacuation or refuge arrangements. Any final access strategy should be checked against the confirmed design-flood information if that shows the external access route to be below the estimated flood level.

10. Implementation and maintenance

Stage	Action
Before construction	Complete level survey in mAOD; confirm the internal step; obtain available design-flood information; coordinate passive resistance datum and structural design.
Detailed design	Show external falls, drained thresholds, wall/floor waterproofing, sealed service entries, non-return drainage protection, raised electrical services and the protected junction to the existing dwelling.
Construction	Inspect waterproofing before it is covered; photograph key details; test drains and non-return devices; ensure ground levels are not raised.
Occupation	Annual inspection of seals, drainage channels, gullies and valves; clear debris; update household flood plan; review after any flooding or material change to flood-warning arrangements.

11. Conclusions

Forest Barn is stated to lie within Flood Zone 3. The proposal is a minor householder replacement extension on the footprint of a former extension. It does not create a new dwelling, increase occupancy, alter vulnerability or require the sequential test.

The extension floor must sit one step below the existing dwelling floor to retain the roof beneath the existing eaves. That constraint is specifically acknowledged. The precise step and all relevant levels must be surveyed rather than assumed. The lower level is made acceptable through a package of passive resistance, resilient construction, controlled surface-water routing, backflow protection, a protected junction to the main dwelling and direct refuge within the higher existing accommodation.

Subject to those measures being secured through the approved drawings, construction specification or an appropriately worded condition, the replacement extension can be made appropriately flood resistant and resilient for its lifetime and will not increase flood risk elsewhere.