

Flood Risk Assessment

Planning reference: DM/26/1930

Development: Extensions and alterations to an existing dwelling

1. Introduction

This Flood Risk Assessment accompanies the householder planning application for the demolition of the existing garage and workshop outbuildings; construction of a two-storey side extension and single-storey rear extension; roof extension and loft conversion; roof lights; fenestration changes; landscaping; and alterations to boundary fencing.

The site comprises an existing semi-detached dwelling and its residential curtilage. The proposal does not create a separate dwelling or introduce a more vulnerable use. A design life of at least 100 years has been considered.

The purpose of this assessment is to:

- Identify flood risk from all relevant sources.
- Consider the interaction between different sources of flooding.
- demonstrate that the development will remain safe throughout its lifetime.
- Show that the development will not increase flood risk elsewhere.
- Set out an appropriate surface-water and Sustainable Drainage Systems strategy.
- Consider climate change, safe access, the sequential and exception tests, and aerodrome birdstrike risk.

2. Information reviewed

The assessment has considered:

- Environment Agency Flood Map for Planning.
- Environment Agency Risk of Flooding from Surface Water mapping.
- Mid Sussex Strategic Flood Risk Assessment Level 1, 2024.
- Mid Sussex District Council flood-risk and drainage guidance.
- West Sussex Lead Local Flood Authority drainage policy.
- National planning and climate-change guidance.

3. Sources of flood risk

Rivers and sea

Assessment:

The property is within Flood Zone 1 and consequently has a less than 0.1% annual probability of flooding from rivers or the sea. There is no identified tidal flood risk in this part of Mid Sussex.

Residual risk: Very low

Surface water

Assessment:

Environment Agency mapping indicates that the dwelling and principal proposed extension area are outside the mapped high, medium and low surface-water flood-risk areas.

Mapped surface-water risk is nevertheless present in the immediate vicinity, particularly towards the frontage and highway and in areas to the north and east. Surface water is therefore the principal source of flood risk requiring consideration.

Residual risk: Low, subject to the proposed mitigation measures

Groundwater

Assessment:

The Mid Sussex Strategic Flood Risk Assessment identifies generally low groundwater-flooding potential around Burgess Hill.

Local perched groundwater may nevertheless occur following prolonged rainfall. Groundwater levels must therefore be considered when testing and designing any infiltration drainage system.

Residual risk: Low

Sewers and drainage systems

Assessment:

No site-specific records of sewer flooding have been identified.

During exceptionally intense rainfall, public or private drainage systems could become blocked, surcharged or exceed their capacity. This could interact with surface-water runoff and cause localised overland flow.

Residual risk: Low to moderate

Ordinary watercourses

Assessment:

No ordinary watercourse has been identified within or immediately adjoining the application site.

Residual risk: Very low

Reservoirs and other artificial sources

Assessment:

The property has not been identified within the mapped dry-day or wet-day reservoir flood extents. No canal or other significant artificial water body has been identified immediately adjoining the site.

Residual risk: Very low

Runoff generated by the development

Assessment:

Additional impermeable roof or paved areas could increase the rate or volume of surface-water runoff if they are not appropriately managed.

This risk will be controlled through rainwater reuse, infiltration, permeable paving or below-ground attenuation. The completed development will not discharge surface water at a greater rate or volume than the existing site.

Residual risk: Low following mitigation

Construction activities

Assessment:

Temporary excavation, soil stockpiles, construction materials, machinery or blocked drains could redirect surface water during the construction period.

Drains and existing overland flow routes will be kept clear. Materials and excavated soil will not be stored where they could obstruct drainage or direct runoff towards the dwelling, neighbouring properties or the highway.

Residual risk: Low following construction controls

4. Interaction between flood sources

During an exceptional rainfall event, surface-water runoff may exceed the capacity of highway gullies, private drains or public sewers. Blocked or surcharged drainage could then cause overland flow along the highway, driveway or garden.

High groundwater could temporarily reduce the effectiveness of an infiltration system. Infiltration testing and the establishment of seasonal groundwater levels are therefore required before final drainage construction.

The development will maintain safe overland flow routes and will not introduce walls, kerbs, fences or changes in ground level that divert floodwater towards the dwelling, neighbouring properties or the highway.

5. Climate change

The assessment allows for the predicted increase in peak rainfall intensity during the development's anticipated lifetime.

For the Adur and Ouse management catchment, the upper-end 2070s climate-change allowances are:

- 40% increase for the 3.3% annual-exceedance-probability rainfall event, equivalent to the 1-in-30-year event.
- 45% increase for the 1% annual-exceedance-probability rainfall event, equivalent to the 1-in-100-year event.

The final drainage system shall therefore be designed so that:

- The 1-in-30-year event plus 40% climate change does not cause surface flooding.
- The 1-in-100-year event plus 45% climate change does not flood the dwelling or neighbouring property.
- Any exceedance water is directed safely away from buildings and property boundaries.

These allowances follow the government's flood-risk climate-change guidance.

6. Surface-water and SuDS strategy

Surface water will be managed as close as practicable to its source and separately from foul drainage.

The proposed drainage hierarchy is:

1. Collection and reuse of roof water through a covered water butt or rainwater-harvesting system.
 2. Discharge to a suitably designed infiltration system, subject to successful infiltration testing.
 3. Where infiltration is not technically feasible, below-ground attenuation with a controlled discharge to an approved surface-water drainage system at a rate no greater than the existing runoff rate.
- New roof water should discharge through trapped gullies or silt-control features to a below-ground soakaway or infiltration system. Any soakaway must:
 - Be supported by infiltration testing undertaken in accordance with BRE 365.
 - Be positioned at least five metres from buildings.
 - Avoid the tree's root protection area.
 - Be located sufficiently far from boundaries, foundations and retaining structures.
 - Have adequate storage for the design rainfall events and climate-change allowances.
 - Have an inspection and maintenance point.

If infiltration is unsuitable for any new areas of hardstanding, a sealed below-ground attenuation system should be used. Any connection or restricted discharge must be agreed with the relevant drainage authority. Surface water must not be connected to the foul sewer.

- Before construction, a drainage layout and calculation should confirm:
- Existing and proposed impermeable areas.
- The results of infiltration testing.
- Required storage volume.
- Proposed discharge location and rate.
- Finished ground and threshold levels.
- The route taken by water during events exceeding the drainage-system capacity.

The post-development runoff rate and volume must not exceed the existing situation. Any increase in impermeable area must be fully accommodated by infiltration, reuse or attenuation.

7. Flood-resilient design

The following measures will be incorporated:

- Existing finished-floor levels will not be lowered.
- New thresholds will be raised above adjoining external levels where practicable.
- External ground levels will fall away from the dwelling.
- Airbricks, vents and service penetrations will be positioned or protected to reduce entry of shallow surface water.
- Landscaping and boundary works will retain routes for exceedance water and will not create an obstruction or direct runoff towards neighbouring land.
- Water-resistant finishes and raised electrical fittings should be considered at the lowest level where reasonably practicable.
- No basement or other below-ground habitable accommodation is proposed.
- Construction materials and excavated soil will not be stored in locations where they could block drains or overland flow routes.

8. Safe access and escape

Access will remain from Inholmes Park Road in its existing position. The proposal does not create a separate dwelling, and the extensions will not obstruct the existing route between the house and the public highway.

The entrance threshold and pedestrian route should be maintained at or above the existing level and should not be locally lowered. During an exceptional surface-water event, occupants should avoid entering moving or standing floodwater and, if necessary, remain within the dwelling at upper-floor level until conditions subside.

Emergency access arrangements remain substantially unchanged from the existing residential situation. The drainage and landscaping design will ensure that runoff from the development is not directed across the access route.

9. Sequential and exception tests

The proposal is householder development comprising extensions and alterations within the curtilage of an existing dwelling. National policy identifies householder development as minor development that should not normally be subject to the Sequential Test or Exception Test. However:

- The principal building and proposed extension area are outside the mapped surface-water flood bands.
- Finished-floor levels will not be lowered.
- Drainage infrastructure and exceedance routes will be positioned to avoid the most vulnerable parts of the development.
- The development will not obstruct existing overland flows.

The Exception Test is not required because this is minor householder development in Flood Zone 1 and the proposal does not create a new dwelling or introduce a more vulnerable land use. This accords with the National Planning Policy Framework flood-risk guidance.

10. Opportunities to reduce flood risk

The development provides the following opportunities to reduce the probability or consequences of flooding:

Removal of redundant outbuildings and associated impermeable surfaces where these are not replaced by new building or paving.

- Rainwater reuse.
- Permeable replacement hardstanding.
- Infiltration or controlled attenuation of new roof water.
- Improved inspection and maintenance access to the private drainage system.
- Defined exceedance routes away from buildings and adjoining properties.
- Avoidance of combined or foul-sewer connections.
- Retention of soft landscaping where practicable.

The final impermeable-area schedule should demonstrate the overall change in impermeable coverage. Where an increase occurs, sufficient SuDS storage must be provided to prevent any increase in off-site runoff.

11. Birdstrike-risk statement

The proposed SuDS strategy will not create a permanent pond, wetland, open-water basin or other habitat likely to attract flocking birds.

Rainwater storage will comprise covered water butts, subsurface infiltration, permeable paving or sealed below-ground attenuation. Any temporary surface ponding will be designed to drain promptly and will not provide a permanent feeding, roosting or nesting habitat.

The scheme will not include exposed food sources or planting specifically attractive to large flocking birds. On this basis, the drainage proposals will not result in a net increase in birdstrike risk to any safeguarded aerodrome. The approach follows the Civil Aviation Authority's safeguarding guidance.

12. Maintenance

The homeowner will remain responsible for the private drainage system. The minimum maintenance regime will include:

- Cleaning gutters, downpipes and gullies at least twice annually and following significant storms.
- Inspecting water-butt filters and overflows twice annually.
- Inspecting silt traps and attenuation-system chambers every six months.
- Removing accumulated silt and debris as required.
- Inspecting permeable paving annually and vacuum-sweeping if blocked.
- Inspecting soakaway or infiltration-system performance annually and after significant storms.
- Keeping exceedance routes and drainage outlets free from obstructions.

13. Conclusion

The site is within Flood Zone 1 and is at very low risk from rivers, the sea, reservoirs and other artificial sources. The principal consideration is surface-water flooding associated with exceptional rainfall and possible drainage-system exceedance.

Subject to the measures in this assessment and confirmation of the detailed drainage design, the development will:

- Remain safe throughout its anticipated lifetime.
- Incorporate the appropriate climate-change allowances.
- Avoid increasing runoff rates or volumes.
- Avoid displacement of surface water onto neighbouring land or the highway.
- Maintain suitable access and escape arrangements.
- Use proportionate SuDS measures.
- Not increase birdstrike risk.

The residual flood risk is therefore considered low and acceptable for the proposed householder development.

Kind Regards,

Michael Pirrie

Senior Architect