

REPORT 2 — FLOOD RISK ASSESSMENT & SuDS DRAINAGE STRATEGY

Proposed Development:

Demolition of Existing Dwelling and Erection of Two Detached Dwellings with Associated Garaging, Parking, Landscaping and Access

Site:

Oranjeburg, Hornbury Hill, Minety, Wiltshire, SN16 9QH

Applicant:

Rugrat Developments Ltd

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1. Introduction

This Flood Risk Assessment and Sustainable Drainage Systems (SuDS) Strategy has been prepared in support of the planning application for the redevelopment of Oranjeburg, Hornbury Hill, Minety.

The proposed development comprises demolition of the existing bungalow and associated outbuildings and construction of two detached dwellings together with garaging/carport, parking, access and landscaping. The site area is approximately 905 m².

The purpose of this report is to demonstrate, at planning stage, that surface water arising from the proposed roofs, driveways and other areas of hardstanding can be managed sustainably within the site without increasing flood risk elsewhere.

This is a planning-stage drainage strategy rather than a detailed drainage design. The final dimensions, capacity and precise location of soakaway systems will be determined at the detailed design stage following appropriate ground investigation and infiltration testing.

2. Existing Site

The application site currently contains a detached bungalow together with a number of associated outbuildings and sheds. The overall plot measures approximately 905 m² and is described as relatively flat and readily accessible.

The proposal would replace the existing development with two detached dwellings positioned within separate plots, while retaining a relatively generous proportion of soft landscaping and garden area around the buildings.

The submitted Design and Access Statement confirms that the existing property is served by mains foul drainage and that other services are available nearby.

3. Development Proposals

The development comprises:

- one four-bedroom detached dwelling;
- one three-bedroom detached dwelling;
- associated garage/carport provision;
- access and turning areas;
- private driveways and parking spaces;
- landscaped gardens and retained boundary vegetation.

The four-bedroom dwelling is approximately 153 m² excluding the integral garage, while the three-bedroom dwelling is approximately 126 m² excluding its carport.

The proposed layout has also been developed to reduce unnecessary hardstanding, particularly in relation to the smaller three-bedroom dwelling.

4. Flood Risk Considerations

The primary flood-risk consideration arising from the proposed development is the management of additional surface-water runoff from:

- roofs;
- driveways;
- vehicle parking areas;
- paths; and
- other impermeable or semi-impermeable surfaces.

The development will therefore incorporate a Sustainable Drainage Systems approach designed to retain and manage surface water as close as practicable to the point at which rainfall occurs.

The objective will be to ensure that the proposed development does not increase the rate or volume of uncontrolled surface-water run-off leaving the site.

5. Sustainable Drainage Approach

Surface-water drainage will follow the general SuDS principle of managing rainfall at source wherever practicable.

The submitted AquaCell information explains that SuDS should seek to manage water quantity and quality while also having regard to amenity and biodiversity, and that runoff should be stored within the development before being infiltrated into the ground or otherwise released at a controlled rate.

For this development, the preferred strategy is to dispose of surface water by infiltration within the site, subject to confirmation that ground conditions are suitable.

This will principally be achieved through appropriately designed soakaway or geocellular infiltration systems serving the respective dwellings.

6. Roof Drainage

Rainwater from the roofs of both dwellings will be collected through conventional guttering and downpipe systems.

The submitted Design and Access Statement already establishes the intention for roof-water runoff to discharge to soakaways.

It is anticipated that each dwelling will be provided with its own appropriately located infiltration system so that roof runoff can be contained and dispersed within its respective plot.

The final drainage layout will be coordinated with:

- building foundations;
- plot boundaries;
- retained trees and Root Protection Areas;
- underground services;
- parking and turning areas; and
- garden layouts.

7. Driveways and Hardstanding

Surface water generated from the proposed driveways, parking areas and associated hard-standing will also be managed within the application site.

Where practical, the detailed design may incorporate permeable or semi-permeable surfacing to reduce the volume and speed of direct runoff.

Where impermeable surfacing is required, it will be laid to suitable falls so that runoff is directed towards an appropriate drainage feature rather than being allowed to discharge onto the public highway or neighbouring land.

Potential measures may include:

- permeable block paving;
- porous surfacing;
- gravel construction;
- infiltration trenches;
- linear drainage channels discharging to soakaway systems; or
- other suitable SuDS components.

The precise combination of measures will be confirmed through the detailed drainage design.

8. Soakaway / Infiltration Systems

It is proposed that surface water will primarily be discharged to soakaways or similar below-ground infiltration systems.

The applicant has submitted information relating to Wavin AquaCell geocellular systems, which are designed for the management of surface water and can be used as either infiltration structures or attenuation/storage systems depending on the final site-specific design.

At this planning stage it is not proposed to specify the final number, dimensions or storage capacity of the soakaways.

Those matters will be determined at the technical design stage following appropriate site testing.

The final drainage design will take account of:

- impermeable catchment areas;
- local rainfall data;
- measured soil infiltration rates;
- required storage volume;
- groundwater levels where relevant;
- the position of building foundations;
- retained trees and root protection zones;

- site boundaries; and
- maintenance access.

9. Infiltration Testing

Prior to finalisation of the detailed drainage design, infiltration testing will be undertaken where necessary to establish the suitability of the underlying ground for soakaway drainage.

Testing will be carried out in appropriate locations and to the standard required by the relevant drainage authority and Building Regulations guidance.

The results will then be used to determine the final dimensions and configuration of the infiltration system.

Accordingly, this planning submission establishes the principle and method of drainage, while the technical calculations will follow once the relevant site-specific infiltration characteristics are known.

10. Drainage Hierarchy

The proposed strategy will follow the recognised drainage hierarchy by seeking to dispose of surface water as high in the hierarchy as reasonably practicable.

For this site, infiltration is proposed as the preferred option because it allows rainfall to be dealt with close to where it falls and avoids unnecessary discharge to the public sewer network.

Only if detailed ground investigations demonstrate that infiltration is not reasonably practicable would an alternative controlled means of discharge need to be considered.

11. Foul and Surface Water Separation

Foul drainage and surface-water drainage will be kept entirely separate.

The existing property is stated to be served by a mains sewer connection, and the proposed dwellings will utilise an appropriate foul drainage connection subject to the normal technical approvals.

No surface-water runoff from roofs or hard-standing will intentionally discharge into the foul drainage system.

This will avoid placing unnecessary hydraulic loading on the foul sewer network.

12. Exceedance and Extreme Rainfall

The detailed drainage layout will also consider exceedance routes in the event of rainfall greater than the design capacity of the infiltration system.

Finished levels, landscaping and external gradients will be designed so that any temporary surface-water exceedance is directed away from the buildings and away from neighbouring property.

Run-off will not be deliberately directed towards the public highway or adjacent land.

13. Relationship with Trees and Landscaping

The submitted arboricultural survey records a number of mature trees and hedgerows around the site, including significant Root Protection Areas.

The location of the final drainage infrastructure will therefore be coordinated with the arboricultural constraints so that soakaways, drainage runs and excavation works do not unnecessarily compromise retained trees or their root systems.

The existing front hedgerow and planting are also intended to be retained and reinforced where appropriate.

Soft landscaping will remain an important part of the overall site drainage response because planted and permeable areas assist in reducing and slowing run-off.

14. Water Quality

The drainage strategy will also seek to manage water quality in accordance with normal SuDS principles.

Roof run-off is generally relatively clean and is suitable for infiltration subject to appropriate detailing.

Run-off from driveways and parking areas may pass through permeable construction or suitable drainage features before entering any infiltration system.

The SuDS information submitted with the application recognises water quality as one of the key objectives of sustainable drainage design.

15. Maintenance

The final drainage installation will be designed so that it can be adequately inspected and maintained.

Typical maintenance may include:

- periodic inspection and cleaning of gutters and downpipes;
- removal of leaves and debris;
- cleaning of drainage channels and gullies;
- inspection of silt traps where provided;
- maintenance of permeable paving;
- inspection of access chambers; and
- maintenance of the soakaway or geocellular system in accordance with the manufacturer's recommendations.

Responsibility for the drainage serving each dwelling will ultimately rest with the respective property owner unless an alternative management arrangement is agreed.

16. Planning-Stage Nature of the Strategy

This report is intentionally proportionate to the planning stage of the development.

The applicant is not seeking through this document to provide a fully engineered drainage design or to commit to a particular soakaway size before site-specific infiltration information is available.

Instead, the strategy demonstrates that:

- there is adequate space within the overall development to accommodate drainage infrastructure;
- surface water from both roofs and hard-standing can be managed within the site;
- infiltration will be the preferred method of disposal;
- SuDS principles will be incorporated;
- surface water will be kept separate from foul drainage;
- drainage infrastructure will be coordinated with retained trees and landscaping; and
- detailed calculations and final soakaway sizing can reasonably be undertaken at the technical design stage.

17. Conclusion

The proposed development can be served by a sustainable and proportionate surface-water drainage system.

Rainfall from the roofs of the two new dwellings and associated driveways, parking and hardstanding will be collected and managed within the application site using a combination of source-control measures and infiltration drainage.

The preferred drainage solution is the use of individual soakaway or geocellular infiltration systems, potentially including AquaCell-type units or an equivalent approved system.

The submitted SuDS information confirms that this form of drainage is capable of storing and managing runoff close to its source and can form part of a sustainable drainage strategy.

Final soakaway dimensions and capacities are not required to be fixed at this planning stage and will instead be calculated following appropriate infiltration testing and detailed design.

Subject to those normal technical investigations, there is no reason in principle why surface water from the proposed development cannot be satisfactorily managed within the site without increasing flood risk to neighbouring property, the public highway or the wider drainage network.

The proposed drainage strategy therefore represents an appropriate and sustainable approach for the planning application stage.