

Foul Water, Drainage and Sustainable Drainage Strategy

Report

Foul Water Drainage and Sustainable Drainage Strategy

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Project

Land west of Cockhaise Farm

Client

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Purpose of Issue

Planning

This document is designed to be read in conjunction with the drawings and documents also issued as part of this application for Full Planning Permission.

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1.0 Introduction

This Foul Water Drainage and Sustainable Drainage Strategy Statement has been prepared in support of a planning application for the erection of a single dwelling and associated landscape works at Cockhaise Farm, Lindfield, West Sussex.

This statement has been prepared by the architect on behalf of the applicant to set out the proposed foul water drainage and sustainable drainage strategy at planning validation stage. It is not a detailed drainage design, site investigation or specialist engineering report. It sets out the proposed drainage principles for a single dwelling, based on the submitted planning information, the rural site context and currently available information.

The purpose of this report is to demonstrate that appropriate planning-stage arrangements can be made for the disposal of foul sewage and surface water arising from the proposed development, and that the proposal can accord with national and local planning policy relating to sustainable drainage, flood risk and environmental protection.

Final sizing, specification, percolation testing, infiltration testing and detailed design will be undertaken by an appropriately competent contractor or specialist prior to construction, and can be secured by planning condition if required.

The proposed development comprises a single dwelling together with associated landscaping, orchard planting, woodland enhancement, access arrangements and ecological improvements.

2.0 Site Description

The application site comprises an undeveloped pasture field forming part of the wider Cockhaise Farm holding.

The site occupies a gently sloping area of land enclosed by established woodland belts, mature hedgerows and agricultural land. The proposed dwelling is positioned within a contained part of the site, within an existing landscape framework and with opportunities for further woodland, orchard and meadow planting.

The land is understood to rise gently from the public highway before falling gradually to the south and south-east across the proposed garden and wider landscape.

According to the Environment Agency Flood Map for Planning, the site lies wholly within Flood Zone 1 and is therefore at low risk of fluvial flooding.

There are currently no buildings within the application site and therefore no existing foul drainage infrastructure. The site is undeveloped grassland and surface water is understood to drain naturally through infiltration and overland flow, with no known formal surface water drainage infrastructure within the application site.

3.0 Existing Drainage Conditions

The site is currently undeveloped pasture. Rainfall is understood to be managed naturally through the existing soil profile, vegetation, evapotranspiration and overland flow.

Available British Geological Survey mapping indicates that the site lies principally over Upper Tunbridge Wells Sand Formation, comprising sandstone and siltstone deposits, with Upper Grinstead Clay deposits present in the wider surrounding area. Ground conditions across the locality are therefore likely to be variable.

The suitability of infiltration-based drainage will be confirmed through detailed site investigation and infiltration testing at the detailed design stage. If infiltration is found to be unsuitable or only partially suitable, the final drainage strategy will be adjusted accordingly.

There are no known public foul sewers within or immediately adjacent to the application site capable of serving the proposed development. The site is currently undeveloped and has no known existing foul water drainage infrastructure.

4.0 Drainage Strategy Principles

The drainage strategy is based on the following planning-stage principles:

- managing water as close as practicable to where it falls;
- maintaining the site's existing greenfield drainage characteristics as far as reasonably possible;
- using Sustainable Drainage Systems (SuDS);
- prioritising infiltration where ground conditions allow;
- integrating drainage features within the landscape strategy;
- supporting biodiversity, water quality and long-term landscape resilience;
- avoiding any increase in flood risk on or off site.

The strategy forms part of the wider environmental approach underpinning the proposal and has been developed alongside the landscape, ecological and architectural design of the scheme.

At detailed design stage, the final drainage arrangement will be confirmed following appropriate investigation and testing. If infiltration is found to be unsuitable or only partially suitable, the system will be adapted to provide an alternative compliant drainage solution.

5.0 Foul Water Drainage

5.1 Drainage Hierarchy

The foul drainage hierarchy has been considered as follows:

- connection to the public foul sewer;
- package sewage treatment plant;
- septic tank;
- cesspool.

Based on the available information, there is no known public foul sewer within or immediately adjacent to the site capable of serving the proposed development. Connection to the public sewer network is therefore not considered feasible without disproportionate off-site infrastructure works.

Accordingly, foul water is proposed to be managed by a private package sewage treatment plant serving the proposed dwelling.

5.2 Proposed Foul Drainage Solution

Foul sewage arising from the proposed dwelling will be treated by a package sewage treatment plant designed and sized for the proposed single dwelling.

The treatment plant will be installed and maintained in accordance with Building Regulations Approved Document H, BS 6297:2007+A1:2008, Environment Agency General Binding Rules, any necessary consent or permit requirements, and the manufacturer's recommendations.

A package sewage treatment plant is proposed in preference to a conventional septic tank, as it provides a higher level of treatment and is considered the most appropriate planning-stage foul drainage solution for the site.

5.3 Drainage Field

Treated effluent is proposed to discharge to a subsurface drainage field located within the site.

The preferred location is within the open landscaped land to the north of the dwelling, where sufficient land is available for a compliant drainage field layout. The final position will be coordinated with the proposed orchard, tree planting, woodland edge, access and landscape strategy.

The drainage field will be located clear of buildings, watercourses, retained trees, new tree planting and any woodland root protection area.

The final size, specification and configuration of the drainage field will be determined at detailed design stage, following percolation testing and any other necessary site investigation.

No discharge to any watercourse is proposed at this stage.

6.0 Surface Water Drainage Strategy

6.1 Drainage Hierarchy

Surface water disposal has been considered in accordance with the drainage hierarchy:

- infiltration to ground;
- discharge to watercourse;
- discharge to surface water sewer;
- discharge to combined sewer.

The preferred planning-stage solution is an infiltration-led drainage strategy, supported by attenuation and source-control SuDS measures where required. The final approach will be confirmed through detailed design and infiltration testing.

6.2 Design Philosophy

The surface water strategy seeks to maintain the site's existing greenfield drainage characteristics as far as reasonably practicable. The site is currently undeveloped pasture, with rainfall understood to be managed naturally through vegetation, soil absorption, evapotranspiration and overland flow.

Surface water from roofs, terraces, access surfaces and other hardstanding will be managed through a combination of source control, rainwater harvesting, permeable surfaces and landscape-based SuDS features integrated within the development.

The drainage design will prioritise infiltration where ground conditions allow. If detailed testing demonstrates that infiltration is unsuitable or only partially suitable, the system will be adapted to provide a compliant alternative, such as attenuation with controlled discharge, subject to any necessary approvals.

The approach reflects the wider landscape-led design philosophy of the proposal and contributes to ecological enhancement, water quality and environmental stewardship objectives.

7.0 Rainwater Oculus and Rainwater Harvesting

A central rainwater oculus forms part of the architectural and environmental strategy for the dwelling.

Rainwater collected from selected roof surfaces is proposed to be directed towards the oculus, where rainfall will be visibly expressed within the courtyard environment before being captured for storage, reuse or onward discharge to the wider surface water drainage strategy.

The oculus has been conceived not only as an architectural feature, but as part of the site's wider approach to making water management visible, legible and integrated with the experience of the dwelling.

Stored rainwater may be used for non-potable external uses, including:

- landscape irrigation;
- orchard management;
- garden watering.

Any overflow from the rainwater harvesting system will be directed into the wider surface water drainage strategy, subject to detailed design.

This approach supports water reuse, reduces potable water demand for external irrigation and allows rainfall to become an active and visible part of the environmental character of the site.

8.0 Sustainable Drainage Systems (SuDS)

8.1 Permeable Surfaces

The access drive, courtyard areas and pathways will use permeable construction wherever practicable.

Permeable gravel, reinforced gravel systems and permeable paving may allow rainfall to pass into underlying sub-base layers, reducing surface water runoff and providing a degree of source control and attenuation, subject to detailed design and ground conditions.

8.2 Landscape-Based SuDS

The landscape strategy incorporates extensive areas of woodland planting, orchard planting, wildflower meadow, flower gardens, productive gardens and permeable green space.

These landscape areas will assist with interception, evapotranspiration, infiltration where ground conditions allow, and the slowing of surface water movement across the site.

The proposed landscape therefore forms part of the planning-stage surface water drainage strategy, rather than being treated as a separate element.

8.3 Infiltration and Attenuation Features

The preferred planning-stage drainage strategy is disposal through infiltration-based SuDS measures, subject to site-specific infiltration testing.

Potential measures may include:

- soakaways;
- infiltration trenches;
- permeable sub-base storage;
- rain gardens;
- shallow swales;
- landscape attenuation features.

The final selection, sizing and location of these measures will be confirmed at detailed design stage.

9.0 Greenfield Runoff

The site currently operates as undeveloped agricultural pastureland.

The proposed drainage strategy seeks to maintain the site's existing greenfield drainage characteristics as far as reasonably practicable, by managing surface water close to where it falls and limiting the extent of impermeable surfacing.

Rainwater harvesting, permeable surfaces, landscape planting and infiltration-based SuDS will be used to manage runoff from the proposed dwelling, access and hardstanding areas.

The final drainage design will be developed to ensure that surface water is managed within the site and that the proposal does not increase flood risk elsewhere. Final runoff rates, storage requirements and any necessary discharge controls will be confirmed at detailed design stage following site-specific testing and design.

10.0 Water Quality

The proposed drainage strategy will support water quality through the use of source-control and landscape-based SuDS measures.

Surface water runoff from roofs, access areas and hardstanding will be managed through a combination of permeable surfaces, filtration, settlement, biological uptake and infiltration where ground conditions allow.

These measures are intended to improve the quality of surface water before it is returned to the ground or discharged onward through any approved drainage route.

The final drainage design will confirm the appropriate treatment train for each surface water source, having regard to the nature of the surface, likely pollutant load and the receiving environment.

11.0 Exceedance Events

The site topography falls gently towards the south and south-east.

In the event of rainfall exceeding the design capacity of the drainage system, exceedance flows will be considered at detailed design stage and managed so that water is directed away from the proposed dwelling and towards lower landscaped areas within the site.

The final drainage design will identify appropriate exceedance routes and levels to reduce the risk of flooding to the dwelling, access and neighbouring land.

The landscape-led approach to the site provides space for surface water to be slowed, dispersed and managed within planted areas during more extreme rainfall events.

12.0 Maintenance

The package treatment plant, drainage field, rainwater harvesting system and SuDS features will remain in private ownership and will be maintained by the occupiers of the dwelling.

Regular inspection and maintenance will be undertaken in accordance with manufacturer guidance, statutory requirements, Environment Agency General Binding Rules where applicable, and good drainage practice.

The package treatment plant will be serviced at appropriate intervals by a competent contractor. The drainage field will be kept clear of buildings, hard surfacing, tree planting and activities that could compromise its function.

Permeable surfaces, rainwater harvesting elements and landscape-based SuDS features will be inspected and maintained to ensure that they remain free-draining and effective over time.

Landscape-based drainage features will be incorporated into the wider long-term landscape management and stewardship strategy for the site.

A final drainage maintenance schedule will be confirmed at detailed design stage once the drainage layout, specification and SuDS measures have been finalised.

13.0 Conclusion

The application site is a rural site with no known access to a public foul sewer within or immediately adjacent to the site.

Foul water is proposed to be managed through a package sewage treatment plant discharging to a subsurface drainage field located within the site, subject to detailed design, percolation testing and any necessary approvals.

Surface water is proposed to be managed through an integrated SuDS strategy comprising rainwater harvesting, a central rainwater oculus, permeable surfaces, soft landscaping and infiltration and/or attenuation-based drainage measures.

The strategy follows the drainage hierarchy, responds to the site's existing greenfield characteristics and forms part of the wider landscape-led environmental approach underpinning the proposal.

Subject to detailed design and site investigation, the proposed drainage strategy demonstrates that appropriate arrangements can be made for foul water and surface water drainage without increasing flood risk on or off the site.

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