



Drainage Assessment Report

In relation to
A proposed development of 5 houses

At
Hatchgate Cottage
Hatchgate Lane
Cuckfield
West Sussex

For
Silver Homes (Cuckfield) Limited

Ref
P21126-HZL-00-RP-D-2100-S4-P2

Date
17 June 2025

Contents

1. Notes
2. Introduction
3. The Site
4. The Development
5. Flood Risk Assessment
6. Additional Considerations
7. Drainage Strategy
8. Summary & Conclusions

Appendix

1. Hazelind Consultant's surface water Drainage Calculations (existing and proposed) plus Long Sections.
2. Hazelind Consultant's Drawings Nod. P21126-HZL-DR-2201, 2221, 2222
3. Selected flood data mapping

References

- i. Architectural layouts via MJB Drawings
- ii. Geotechnical Investigation report by GES Limited ref. 13407
- iii. Geology of Britain online map
- iv. CIRIA Report C753 The SuDS Manual-V5
- v. Planning Practice Guidance – Flood Risk & Coastal Change
- vi. EA Guidance – Flood Risk Assessments: climate change allowances (April 2016)
- vii. CIRIA 635 – Designing for exceedance in urban drainage – good practice.

<u>Revision</u>	<u>Date</u>	<u>Description</u>
P1	25/03/2025	First issue for approval and planning submission.
P2	17/06/2025	Updated issue for approval and planning submission.

1. Notes

1.1. In General

This 'Report' is prepared for the sole use of the person, firm, or company to whom it is addressed (together with that of any other person, firm, or company whose interest was disclosed to and accepted by us prior to its preparation) and no responsibility is accepted by us to any other party whatsoever for the whole or part of its contents.

2. Introduction

- 2.1. We have been instructed by Silver Homes (Cuckfield) Limited to carry out a drainage assessment and detailed design for the proposed development at Hatchgate Cottage, Hatchgate Lane, Cuckfield, West Sussex.
- 2.2. The assessment has been undertaken in compliance with the Planning Practice Guidance and has followed the SuDS design process, from early consideration of the strategic objectives for a development of this nature.
- 2.3. We confirm that Hazelind Consultants are 'appropriately qualified professionals,' being a company composed of professional engineers with extensive knowledge and experience in using SuDS based solutions and hydraulic calculations.
- 2.4. The information used for the preparation of the assessment is attached within the Appendices.
- 2.5. We have visited site to carry out a visual inspection.

3. The Site

- 3.1. This is a brownfield site with a small cottage.
- 3.2. It is predominantly surrounded by farmland, light industrial/commercial units and residential areas.
- 3.3. The site is located to the south of Hatchgate Lane, Cuckfield, West Sussex RH17 5DN (national grid reference 531340 1246620).
- 3.4. The site area is approximately 4000m² (0.400ha) and the existing impermeable area around 60m² (0.006ha).
- 3.5. From a topographical survey of the site and OS data available, it should be noted that the site is fairly flat, but elevated approximately 1.0m above Hatchgate Lane.
- 3.6. Historically, the existing surface water drainage from the cottage appears to have headed via a pipe to the east, possibly to a soakaway or downslope to the south over farmland. This pipework was blocked and in poor condition. However, recent site clearance has confirmed a more modern connection of the existing roof drainage to the on-site foul pipework, effectively creating a combined system (via Ex. F2).
- 3.7. For the existing shared driveway, surface water flows to an open channel along its eastern edge, to a manhole adjacent to Hatchgate Lane – from there it appears to either flow under the road and onto open countryside, or to the west and the existing ditch.
- 3.8. A small, open ditch exists just outside and along the northern site boundary and, via a small pipe under the lane, flows off and downslope to the north. A high proportion of overland surface water from the site runs into this ditch, plus a small area of the highway. It is understood that the highway, verges and ditch are within land owned privately and are not adopted. The open countryside to the north of the lane are also believed to be owned by a separate, private, third party.
- 3.9. A foul sewer, of fairly modern construction, serves the site and is connected to a shared drain within the lane verge, in turn connected to the public foul sewer network to the west.
- 3.10. From Geological Survey of Great Britain online resource, it can be seen that the underlying substrata here should be of the Cuckfield Stone Beds (clays, sandstones and mudstones) or Lower Grinstead Clay (silty mudstones and sandstones).
- 3.11. This was confirmed following the geotechnical site investigation carried out by GES Limited (see ref. [ii]), and the subsequent report also states that soakage testing carried out indicates a reasonable infiltration rate in a single location. However, groundwater levels were recorded at levels up to 1m below GL.

4. The Development

4.1. The proposal is for residential development as follows:-

- 5No. detached houses
- Generally private parking on driveways and in garages
- A new access road
- Landscaping

Details of the illustrative site layout are indicated upon drawings included within ref. [i].

4.2. It is intended to generally follow the lie of the existing land for the housing areas of the development.

5. Flood Risk Assessment

- 5.1. According to the Environment Agency online Flood Map, the development site lies within Flood Zone 1 (Low Risk of flooding at the 1:1000 year level). Detailed flood level information for extreme flood events may be available for this area, but given that the site is small (<1ha) and resides within Zone 1, analysis of this information or a further flood risk assessment is not deemed necessary.
- 5.2. It is intended to provide a drainage system designed in accordance with the requirements of BS EN 752.
- 5.3. A detailed set of flood data has been obtained for the site and a selection is included with Appendix 3, in order to particularly demonstrate the overland flow within the area.

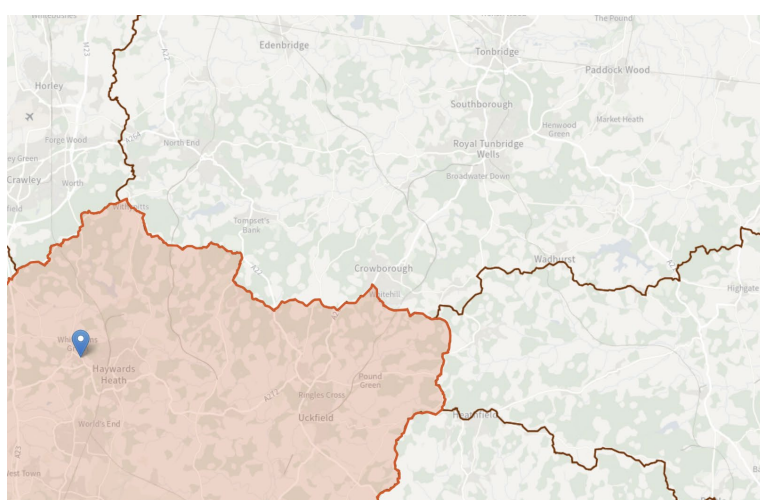
6. Additional Considerations

Sustainable Drainage Systems (SuDS)

- 6.1. With reference to the SuDS Manual (ref. [iv]), appropriately designed SuDS elements should be used to not only attenuate runoff but also provide a level of improvement to the quality of water discharged into the ground and/or into watercourses.

Climate Change

- 6.2. With reference to 2022 EA guidance, the design of the surface water drainage system will need to accommodate an allowance for climate change effects of 40% for 1 in 30 (3.3%) and 45% for 1 in 100 (1%).



Adur and Ouse Management Catchment peak rainfall allowances		
3.3% annual exceedance rainfall event		
Epoch	Central allowance	Upper end allowance
2050s	20%	35%
2070s	20%	40%
1% annual exceedance rainfall event		
Epoch	Central allowance	Upper end allowance
2050s	20%	45%
2070s	25%	45%

*Use '2050s' for development with a lifetime up to 2060 and use the 2070s epoch for development with a lifetime between 2061 and 2125.

Flood Mitigation

- 6.3. No flood mitigation will be required for this site.

Pollution Control

- 6.4. In general, pollution control can be achieved via:
- a. Prevention – stopping contaminants becoming mixed with runoff.
 - b. Interception – preventing runoff, e.g. via pervious surfaces or vegetated collection systems to help the retention of pollutants.
 - c. Treatment – implementing SuDS components to reduce contaminants to acceptable levels. Often these work as interceptors too.
 - d. Maintenance and remedial work – to remove captured pollutants and maintain system performance (covered within section 7 of this report).
- 6.5. For this development, the following SuDS features should be considered to address “interception” and “treatment” of surface water runoff in order to manage pollutants:
- Permeable paving systems, without infiltration, for all parking courts and access mews.

Off-site Impacts

- 6.6. Providing the proposed surface water and foul water strategies are followed, there will be no off site impacts as a result of this development.

Residual Risks

- 6.7. Providing the proposed surface water and foul water strategies are followed, in our opinion there would be no residual risks of flooding or pollution.

7. Drainage Strategy

Drainage Strategy:

7.1. Surface water strategy:

- a. With reference to (6.1) above, the post development peak rate of discharge and volume of run-off would be greater than existing, so mitigation will be required by the use of SuDS to limit both to lower levels.
- b. With reference to (6.2) above, the design of the surface water drainage system will need to accommodate an allowance increase of 45% for climate change (CC) such that no flooding occurs either on or off site. An additional allowance of 10% is also be included for urban creep (UC).
- c. Within an overall site area of 0.40Ha, the proposed impermeable area is approximately 0.20Ha, being 50% of the total.

The existing greenfield run-off rates have been calculated and are summarised as follows (refer to calculations included within the Appendix 1):-

Event	0.40Ha (l/s)
1 in 2 year	1.9
1 in 30 year	5.2
1 in 100 year	6.9
QBar	2.2

These all exclude any allowance for climate change, as an added factor of safety.

- d. Infiltration has been discounted as a suitable means of dealing with surface water discharge, due to the expected high ground water levels.
- e. It would be possible to design a cascade of SuDS features to ultimately mimic the existing path of overland surface water flow into the off-site ditch, restricted to a rate of 2.0l/s, for all events. However, this mode of discharge would require consent from two separate third parties, and this consent is not forthcoming. It has now been discounted.

- f. There are no public surface water sewers in close proximity to the site and it therefore concluded that the only practical discharge route would be via the existing combined system, connected to the public foul sewer. Southern Water have previously consented to this approach and have latterly confirmed that they would stand by their decision, providing that the surface water rate is limited to no more than existing (refer to planning correspondence from Earlswood Homes via email dated 8 February 2024).
- g. We have determined the 2 year discharge rate for an impermeable area of approximately 60m² to be 0.9l/s. Therefore, network models have been simulated for this for all events, and none flood on site. Calculations for both existing and proposed are included within Appendix 1.
- h. Outline proposals for surface water drainage are shown on the Hazelind Consultant's Drawing/s included within Appendix 2.

7.2. Foul water strategy:

- a. It is preferable that all new foul drainage should discharge to an existing public sewer, and there is potential to do so on this site.
- b. Connection to the network is feasible.
- c. Outline proposals for foul water drainage are shown on the Hazelind Consultant's Drawing/s included within Appendix 2.

Design for Exceedance:

- 7.3. All storm events up to and including 100 year plus 45% CC +10% UC are safely accommodated without flooding on or off site.
- 7.4. Exceedance of this event has been considered carefully (noting ref (vii)), via network calculations for the 1 in 1000 year event, and still no flooding occurs on or off site.

On site Construction:

- 7.5. Both foul and surface water drainage systems shall be constructed strictly in accordance with Hazelind Consultant's Drawings and to current Building Regulations.
- 7.6. The Contractor shall provide evidence, including photographs, to show that the drainage systems have been constructed as such. Records shall be incorporated within the Health & Safety File.

Maintenance and management:-

- 7.7. It is intended at this stage that both foul and surface water on site networks may be offered for adoption. However, storage units would usually be excluded.
- 7.8. Hence a schedule of ongoing maintenance will be required, and the implementation of such would be the responsibility of a Management Company. We have formulated the following table to be used in developing the schedule, to identify key areas. Recommendations and more detailed operations will need to be added via drainage product/equipment suppliers and specialists as and when these are chosen and implemented during construction.

Maintenance Schedule for Main Drainage		
Activity	Indicative Frequency	Typical Tasks
Routine/regular maintenance	Monthly	- Litter picking. - Removal of any vegetation growth to permeable paving. - Verge grass cutting (seasonal).
	Every six months	- Highway sweeping. - Inspect flow control chambers and orifice plates for damage and blockages.
Occasional maintenance	Annually	- Suction sweep permeable paving. - Inspect and clean out silt traps. - CCTV inspection of cellular storage units. - Jet wash surface water drainage, including cellular storage units. - Inspect foul chambers and jet wash foul drainage system. - Inspection and maintenance of flow control units. - Vegetation management throughout all drainage components.
Remedial Maintenance	As required	- Road re-surfacing. - Reinstatement of damaged highway edgings/kerbs. - Inlet and outlet repairs. - Erosion repairs. - Clean up and reinstatement following pollution and/or flooding.

- 7.9. Ultimately this information should be incorporated within the Health & Safety File and Site Maintenance Manual.

8. Summary & Conclusions

Summary

- 8.1. The site, at present, is located within flood zone 1 (low risk), i.e. having a less than 1 in 1,000 annual probability of river or sea flooding (ref. table 1 of the PPG).
- 8.2. The overall flood risk rating for the proposed development has been assessed as “low.”
- 8.3. Providing the proposed surface water and foul water strategies are followed, there will be no off site impacts as a result of this development.

Conclusion

- 8.4. The risk of flooding on and off the site will remain unchanged post development and means of both surface water and foul drainage disposal are achievable.

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