

VISTRY HOMES LTD

IMBERHORNE FARM, EAST GRINSTEAD

DRAINAGE STRATEGY

**REPORT REF.
2206781-ACE-XX-XX-RP-C-0301**

December 2025

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Document Control Sheet

REV	ISSUE PURPOSE	AUTHOR	CHECKED	APPROVED	DATE
-	DRAFT	AD	AMC		18-11-25
A	FINAL	AD	AMC	AD	18-12-25
					

Distribution

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1. Introduction

Preface

- 1.1 Ardent Consulting Engineers (hereafter referred to as Ardent) has been commissioned by Vistry Homes Ltd to prepare a Drainage Strategy for a proposed residential development at Imberhorne Farm, East Grinstead (hereafter referred to as the "Site").
- 1.2 The assessment has been prepared to accompany a planning application for the 550 unit development to Mid Sussex in its role of Local Planning Authority and West Sussex County Council (WSCC) as the Lead Local Flood Authority.
- 1.3 The Site benefits from approved hybrid planning application planning ref DM/23/2699 which establishes the agreed principles for the drainage strategy.
- 1.4 The contents of this report sets out how the drainage strategy complies with the outline planning permission DM/23/2699 and is also aligned to the **National Standards for Sustainable Drainage Systems (SuDS)** (published June 2025; updated July 2025) and best practice in **CIRIA C753 – The SuDS Manual**.

2. Baseline Parameters

Existing Site

- 2.1 The site is located in the southern extents of the town of East Grinstead. The site is located off Imberhorne Lane, covering an area of roughly 30.969 hectares. Refer to **Figure 2-1**.

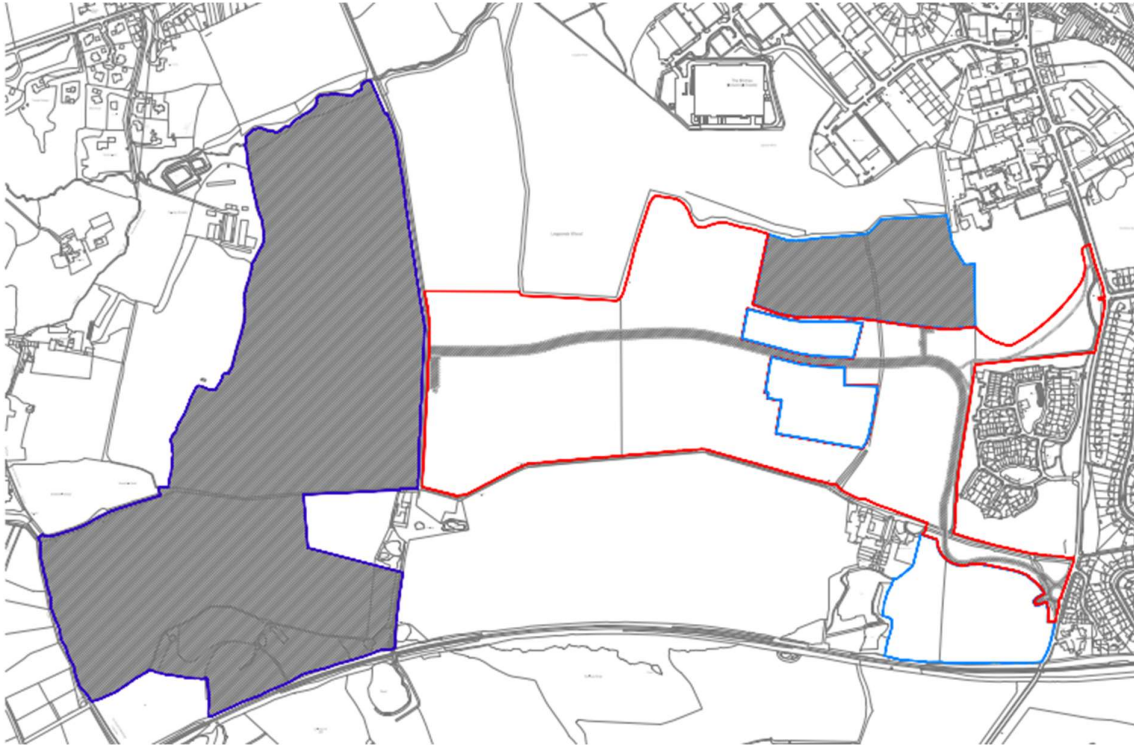


Figure 2-1: Location Plan

Development Proposals

- 2.2 The proposed development will comprise 550 residential and associated roads and landscaping, access has been approved under planning permission DM/23/2699.
- 2.3 Drainage headlines:
- Surface water: 125,050 m² impermeable (Including Urban Creep) attenuated to 1 in 100-year + 45% CC with primary treatment via attenuation basins with interception volume.
 - Foul: 2 pump stations within the site are linked and discharge to the existing public sewer within Imberhorne Lane to which capacity has been confirmed.
- 2.4 The proposed Site layout plans can be found at **Appendix A**, and an extract of the layout in **Figure 2-2** below.



Figure 2-2: Proposed Development

Topography

- 2.5 The site is currently mostly undeveloped farmland, with existing trees contained within hedges and on field boundaries. The site has varying topography but roughly falls from South to North.

Hydrology

- 2.6 There are several watercourses within the vicinity of the development. One watercourse crosses the access road and follows along the southern boundary of the site before flowing through the development from south to North. There is also an existing watercourse beyond the north western boundary of the site to which existing land drains are connected.

Ground Conditions

- 2.7 As set out in the approved FRA the ground conditions are not suitable for infiltration.

Existing Sewer Infrastructure

- 2.8 There is a Southern Water foul sewer running in Imberhorne Lane to which it is proposed to connect. Refer to **Appendix B** for the Southern Water Asset Plans.

3. Policy Context

National Planning policy Framework

- 3.1 The National Planning Policy Framework (NPPF) was introduced on 27 March 2012. This document was revised most recently in February 2025; where paragraphs 170 to 182 inclusive establish the Planning Policy relating to flood risk management.
- 3.2 It states all plans should apply a sequential, risk-based approach to the location of development – taking into account all sources of flood risk and the current and future impacts of climate change – to avoid where possible, flood risk to people and property. They should do this and manage residual risk, by:
- a) applying the sequential test, and if necessary, the exception test;
 - b) safeguarding land from development that is required for current and future flood management;
 - c) using opportunities provided by new development and improvements in green and other infrastructure to reduce the causes and impacts of flooding (making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management); and
 - d) where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to relocate development including housing, to more sustainable locations.
- 3.3 The NPPF states that a Flood Risk Assessment is required *"A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use."*
- 3.4 The Planning Practice Guidance (PPG) provides the methodology required to undertake the Sequential and Exception Tests.

Flood and Water Management Act (2010)

- 3.5 The Flood and Water Management Act places a duty on all flood risk management authorities to co-operate with each other. The act also provides lead local flood

authorities and the Environment Agency with a power to request information required in connection with their flood risk management functions.

Sustainable Drainage Systems - Non-statutory technical standards for sustainable drainage systems March 2015

- 3.6 The Non-statutory technical standards for sustainable drainage systems were published in March 2015. This document sets out non-statutory technical standards for sustainable drainage systems. They should be used in conjunction with the Planning Practice Guidance. In addition, the Best Practice Guidance for the Non statutory technical standards was published in July 2015 by the Local Authority SuDS Officer Organisation (LASOO).
- 3.7 The Local Planning Authority (LPA) may set local requirements for planning permission that have the effect of more stringent requirements than these non-statutory technical standards.
- 3.8 In addition, SuDS should be designed in accordance with CIRIA 753 "The SuDS Manual", which represents current best practice.

National standards for sustainable drainage systems (SuDS)

- 3.9 The Government's National Standards for SuDS (2025) supersede the 2015 non-statutory standards and set out the principles for managing rainfall runoff from new development. The standards require designers to: (i) follow the destination hierarchy; (ii) manage peak flow and runoff volume to avoid increasing flood risk; (iii) provide appropriate water-quality treatment; and (iv) ensure systems are safe, maintainable and resilient over the lifetime of the development. The approach adopted for this scheme is summarised below and evidenced in Section 5 and the drainage drawings/calculations.
- 3.10 **Destination hierarchy.** According to the infiltration rate testing carried out, infiltration is not viable and therefore discharge will be an attenuated pond to the local ordinary watercourses.
- 3.11 **Peak flow management.** The site has four attenuation basins which have been sized according to the 100yr + 45% climate change (cc) event (see '3.19-Climate Change Allowances') and using FEH-22 rainfall data. It has been ensured that none of these SuDS features flood during the critical 100yr + 45% cc event, and flow discharge rates are restricted to greenfield Qbar rates, as evidenced by the FLOW calculations in **Appendix C.**

- 3.12 Runoff volume management & exceedance.** Attenuation storage is sized to accommodate design-event volumes. In the extremely unlikely event of exceedance flows, these will be routed safely within the site via finished levels and landscaped exceedance pathways, away from buildings and off-site receptors.
- 3.13 Water quality (Simple Index Approach).** Pollutants are mitigated and filtered via the attenuation basins (as shown in Tables 5.2-5.4).
- 3.14 Operation, maintenance and resilience.** The SuDS components are accessible for inspection and maintenance, with tasks and frequencies set out in the O&M plan (**Appendix D**) in accordance with best practice (e.g. CIRIA C753).
- 3.15 Health & safety / construction phase.** The design facilitates safe access for routine de-silting and inspection of the Polystorm (or agreed equivalent) crates, basins and chambers. During construction, temporary silt control and pollution prevention measures will protect the site and nearby infrastructure from flooding, with transition to the permanent SuDS prior to occupation.
- 3.16 Compliance statement.** On the basis of the above, and as demonstrated by the calculations and drawings, the proposed drainage strategy complies with the National Standards for SuDS (2025) in respect of destination, peak-flow/volume control, water quality, exceedance routing, maintainability and long-term operational resilience.

Climate Change Allowances

- 3.17** The Planning Practice Guidance states that to allow for the predicted impacts of climate change on surface water runoff within the Medway Management Catchment, the following increases detailed in **Table 3-1** below to rainfall intensity should be allowed for. For development with a lifetime of between 2061 and 2100, the central allowances should be used.

Table 3-1: Medway Management Catchment peak rainfall allowances

London Management Catchment	Central Allowance	Upper End Allowance
3.3% annual exceedance rainfall event		
Total potential change 2050s	20%	35%
Total potential change 2070s	20%	35%

1% annual exceedance rainfall event		
Total potential change 2050s	20%	45%
Total potential change 2070s	20%	40%

- 3.18 Therefore, in line with guidance from the NPPG, an allowance of 45% for the effects of climate change for the 1% annual exceedance rainfall event would achieve the policy requirements in designing the drainage elements the proposed redevelopment.

4. Sources of Flooding

- 4.1. The NPPF requires flood risk from the following sources to be assessed, each of which are assessed separately below:
- Fluvial sources (river flooding);
 - Tidal sources (flooding from the sea);
 - Groundwater sources;
 - Pluvial sources (flooding resulting from overland flows);
 - Sewer Flooding;
 - Artificial sources, canals, reservoirs etc.; and,
 - It also requires the risk from increases in surface water discharge to be assessed (surface water management).
- 4.2. The only source of flood risk identified during the outline planning application was pluvial flooding associated with the watercourse which passes through the site.
- 4.3. To accommodate this a landscaping strip is proposed along it's length with the a single road crossing point in the north of the site.
- 4.4. The principles of the road crossing were discussed with the LLFA and agreed in principle that this can be culverted, with a size set to at least one pipe size larger than the limiting existing culverts upstream of this point.

5. Surface & Foul Water Drainage Strategy

- 5.1. DEFRA's Non-statutory technical guidance for Sustainable Drainage Systems and CIRIA Guidance C753 "The SuDS Manual" have been used to determine the appropriate SuDS Strategy, which considers the spatial and environmental constraints of the Site.
- 5.2. In accordance with the NPPF, an allowance of 45% for the effects of climate change will achieve the policy requirements for the proposed development.

Proposed Sustainable Drainage Systems (SuDS)

- 5.3. With regards to Sustainable Drainage, surface water runoff should be disposed of according to the following hierarchy:
- Store rainwater for later use;
 - Use infiltration techniques, such as porous surfaces in non-clay areas;
 - Attenuate rainwater in ponds or open water features for gradual release;
 - Attenuate rainwater by storing in tanks or sealed water features for gradual release;
 - Discharge rainwater direct to a watercourse;
 - Discharge rainwater to a surface water sewer/drain; and
 - Discharge rainwater to the combined sewer.
- 5.4. Whilst stormwater reuse could be applied to the site in the form of water butts or greywater harvesting, there is no guarantee regarding the amount of available storage at the time of a storm and therefore has not been put forward as a drainage solution for the scheme.
- 5.5. As set out in the original FRA, infiltration is not a suitable means of disposing of surface water runoff.
- 5.6. The next means of discharge is therefore direct to a watercourse/surface water sewer/drain, which is the means by which disposal is proposed.
- 5.7. The constraints and opportunities for the use of SuDS techniques are appraised using the Management Train approach outlined in CIRIA C753 'The SuDS Manual' in **Table 5-1** below.

Table 5-1: SuDS Opportunities & Constraints

Type:	Infiltration Devices (Source Control)
Constraints:	Ground not suitable for infiltration.
Opportunities:	None
Type:	Permeable Paving (Source Control)
Constraints:	It is not possible to provide infiltrating permeable paving due to Site characteristics.
Opportunities:	Potential for water quality benefits within parking courts
Type:	Rainwater Harvesting (Source Control)
Constraints:	The benefits of rainwater harvesting on a specific design storm event cannot be quantified, due to the seasonal availability of storage within the structure.
Opportunities:	Water butts could be provided to individual properties
Type:	Swales, etc. (Permeable Conveyance)
Constraints:	In order to provide practicable attenuation benefits 1:3 side-slope swales tend to require a significant land requirement.
Opportunities:	Swales are to be provided on the approach to ponds where possible
Type:	Tree Pits/Rain gardens
Constraints:	Subject to Landscape Architect's design.
Opportunities:	Unlikely to be suitable in terms of adoption requirements on main roads. However opportunities exist within parking courtyards etc.
Type:	Green Roofs
Constraints:	Subject to Architect's design.
Opportunities:	None due to sloped roofs being proposed
Type:	Attenuation Tanks
Constraints:	Does not provide treatment to surface water.
Opportunities:	We propose to utilise other forms of SuDS treatment first and maximise their use, after which the remaining volume can be stored via attenuation tanks.

- 5.8. After consideration of the CIRIA C753 SuDS Management Train approach, the most viable SuDS options for the Site is a solution combining attenuation basins and a small area of crates. This will ensure that significant biodiversity, amenity and surface water treatment is provided, whilst also keeping high up the SuDS discharge hierarchy. Refer to Drawings **2206781-ACE-XX-XX-DR-C-0621-626 Proposed Drainage Layouts** in **Appendix C** for the proposed surface water drainage strategy.

Proposed Development

- 5.9. Three independent attenuation basins and swales have been implemented across the site's outfalls to deal with rainfall up to and including the 1 in 100 yr storm event + 45% climate change, prior to discharging to the adjacent watercourses or land drains immediately upstream of a watercourse. This has been modelling in FLOW which shows no flooding and enough freeboard within the basins. Please see the drainage strategy and FLOW results within **Appendix C**.

Surface Water Quality

- 5.10. The recommended stage of treatment in terms of water quality would be provided through the attenuation basins which incorporate interception volumes for to intercept the first 5mm of runoff from the site. In line with the SuDS Manual C753, Tables 26.2 and 26.3, the pollution hazard and mitigation indices associated with sites with heavy pollution are mitigated by the provision of SuDS features, as shown in **tables 5.2, 5.3 and 5.4** below.

Table 5.2: Pollution hazard indices for different land use classifications

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/industrial roofs)	Low	0.3	0.2	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, home zones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (e.g. hospitals, retail), all roads except low traffic roads and trunk roads/motorways	Medium	0.7	0.6	0.7
Sites with heavy pollution (e.g. haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways	High	0.8	0.8	0.9

Table 5.3: Indicative SuDS mitigation indices for discharges to surface waters
(bold text is applicable to this development).

	Mitigation indices		
Type of SuDS component	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4	0.4	0.4
Swale	0.5	0.6	0.6
Bio retention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond	0.7	0.7	0.5
Wetland	0.8	0.8	0.8
Proprietary treatment systems	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

Table 5.4: SuDS mitigation indices provided

For surface water discharge from Residential Parking Areas and Low Traffic Roads <300 traffic movements/day			
	Required mitigation indices		
Source	TSS	Metals	Hydrocarbons
Low	0.5	0.4	0.4
Type of SuDS component provided			
Detention basin	0.5	0.5	0.6
Total	0.5	0.5	0.6
Check	+0.0	+0.1	+0.2

Urban Creep and Volume Discharge

- 5.11. Urban creep has been added at 10% to each dwelling that is not a flat.
- 5.12. Discharge rates from the site will be limited to Q_{bar} and as such is deemed to balance the volume discharging from the development to greenfield volumes.

Exceedance Flows

- 5.13. In times of heavy or extreme storm events the capacity of sewers and other drainage systems can become exceeded. This will occur when the rate of surface water runoff exceeds the inlet capacity of the drainage system, when the receiving water or piped system becomes overloaded, blocked or when the outfall becomes restricted due to flood levels in the receiving outfall.
- 5.14. The development highways fall from north to south with flows falling towards the POS areas to the north of the development

Future Maintenance

- 5.15. A management company will be appointed, on behalf of the building owners, to maintain communal areas, landscaping, and shared SuDS throughout the development.
- 5.16. All maintenance will be in accordance with the best practices and the CIRIA Manual C753. Please refer to **Appendix D** for an overview of the maintenance tasks required.

Proposed Foul Water Drainage Strategy

- 5.17. The proposed development will drain to two linked foul pumping stations. The second pump station will discharge flows to the existing public sewer within Imberhorne Lane, to which Southern Water have confirmed capacity.

6. Summary & Conclusions

- 6.1. Ardent Consulting Engineers has been commissioned by Vistry Homes Ltd to prepare a Drainage Strategy for a proposed residential development at Imberhorne Farm, East Grinstead.
- 6.2. This Drainage Strategy considers the current approved outline drainage strategy and technical guidance relating to flood risk, including the National Planning Policy Framework and local policy.
- 6.3. The local foul drainage network is provided by Southern Water. The proposed foul water drainage strategy will connect into this network.
- 6.4. The Surface water drainage strategy discharges all surface water across the site at greenfield rates to the local watercourses up to and including the 1 in 100 yr + 45% CC storm event.
- 6.5. The attenuation basins, including interception volumes, will ensure that significant biodiversity, amenity and surface water treatment is provided.
- 6.6. Storm events in excess of the 1 in 100-year event would be managed on-site through overland flow routing away from buildings and access point, subject to a site levels assessment.
- 6.7. In conclusion, this document demonstrates that the proposals are consistent with the aims of the NPPF, the Planning Practice Guidance to the NPPF and local planning guidance. The Site will not be at significant risk of flooding or increase the flood risk potential to others.

Appendix A - Proposed Development Layout