



Imberhorne Farm, East Grinstead

Flood Risk and Drainage Strategy - Non-Technical Summary

On behalf of **Welbeck Strategic Land (II) LLP**

Project Ref: 49426/002 | Rev: 00 | Date: 8th July 2020

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For and on behalf of Stantec UK Limited				

Revision	Date	Description	Prepared	Reviewed	Approved

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Executive Summary

Stantec UK Ltd (Stantec) has prepared a Non-Technical Summary of the preliminary Flood Risk Surface and Drainage Strategy on behalf of Welbeck Strategic Land (II) LLP (WL) for a housing allocation with Local Centre, and Care Community (C2), early years and primary school (2FE), Strategic SANG, public open space and children's equipped playspace and provision of land for playing fields associated with Imberhorne School on land at Imberhorne Farm, East Grinstead

The land is currently defined as greenfield and due to the underlying ground conditions; it is unlikely that relying on surface water to soak away into the ground will be a sufficient means of draining it. Therefore, it is assumed that the site is not served by any drainage infrastructure other than that provided by the existing ditches crossing the site.

It is proposed that surface water flow from the site is restricted to less than the current rate at which it leaves the site (Mean Annual Greenfield Run-off Rate). This will ensure that there is no increased risk downstream from the proposed development.

It is proposed that storage for surface water will be provided in ponds and swales incorporated within the site that will provide amenity and a biodiversity benefits along with removing any pollutants arising from local traffic from the water before it gets discharged to the wider surface water network.

The size of the ponds will be calculated to take into account an additional 40% allowance for any increase in rainfall caused by climate change.

In conclusion, the proposed scheme complies with the local and national planning guidance and it has been demonstrated that surface water can be appropriately managed in accordance with both.

1 Introduction

1.1 Background and Development Proposals

- 1.1.1 Stantec UK Ltd (Stantec) has prepared a Non-Technical Summary of the preliminary Flood Risk Surface and Drainage Strategy on behalf of Welbeck Strategic Land (II) LLP (WL) for a housing allocation with Local Centre, and Care Community (C2), early years and primary school (2FE), Strategic SANG, public open space and children's equipped playspace and provision of land for playing fields associated with Imberhorne School on land at Imberhorne Farm, East Grinstead.
- 1.1.2 The Flood Risk and Drainage Strategy has been prepared in accordance with local and national the following policy and guidance. In particular West Sussex County Council's Lead Local Flood Authority (LLFA) Policy for the management of Surface Water, November 2018.

1.2 Development Proposals

- 1.2.1 Development proposals for the site comprise a mixed-use development for circa 550 residential dwellings, an extension to the Imberhorne Upper School (providing a net increase of 4ha of land) enabling the relocation of the Lower School, a 2 form entry Primary School including early years provision, a care village, public open space, a strategic SANG, a local centre and associated infrastructure.
- 1.2.2 Surface Water Drainage proposals are set out on Barton Wilmore drawing - Concept Drainage Layout, is presented in **Appendix A**.

2.3 Existing Watercourses and Flood Risk

- 2.3.1 There is an open ditch flowing northwards within the site boundary, the head of which is located directly north of Imberhorne Farm. When it leave the site, it flows west immediately adjacent to the northern boundary of the site through The Birches woodland area to the north before flowing north again and discharging into Felbridge Water (designated Ordinary Watercourse), approximately 450m from the northern boundary. WSCC are responsible for this watercourse as their roll as Lead Local Flood Authority.
- 2.3.2 A review of the EA's Online Flood Map for Planning indicates that the site is located within Flood Zone 1. This is defined as having a 'Low Probability' of flooding from the rivers and sea and is defined as having less than a 1 in 1000 annual probability (<0.1%).

2.4 Ground Conditions

- 2.4.1 A review of British Geological Survey (BGS) online digital viewer indicates that geology across the allocated development is variable:
- The area to the north of the access track and Bridleway where the majority of the site lies is underlain by 'Upper Tunbridge Wells Sand' comprising Sandstone and Siltstone.
 - The geology to the south of the access track underlying the proposed Care Community, is underlain by the 'Grinstead Clay Member' comprising Mudstone.
 - No superficial deposits have been recorded by the BGS at this site.

2.5 Existing Drainage

- 2.5.1 As the site is currently undeveloped greenfield land, there are no public surface water sewers within the site boundary, it is assumed that the site is not currently served by any drainage infrastructure apart from the existing system of open ditches.
- 2.5.2 The nearest foul water sewers that could be used to serve the site are located within Imberhorne Lane and Hills Road. Any connection has to be approved by Southern Water who will undertake the necessary checks to ensure the existing system will cope with additional flow.

3 Surface Water Management Strategy

3.1 Principles for the management of Surface Water

- 3.1.1 As set out in national guidance, there is a requirement to consider the impact of development on the flood risk of the proposed development itself and the surrounding area. This includes the consideration and allowance of future climate change on peak rainfall intensities which may result in increased risk in the future, which for this report an additional 40% has been allowed for.
- 3.1.2 A suitable strategy for the management of surface water runoff from the proposed development has been prepared, which takes account of the information above (site topography, existing watercourses and flood risk, ground conditions and existing drainage) to ensure flood risk to the site and wider area is not increased.
- 3.1.3 In addition to this, SuDS (Sustainable urban Drainage Systems) principles are also incorporated into the strategy. These include water quality, water quantity, amenity and biodiversity which requires all surface water to be dealt with on site before being discharged to the wider network at a controlled rate, normally stored on site within features such as swales and ponds which naturally remove pollutants from the water arising from such things such as domestic vehicles whilst also providing habitats for wildlife (both flora and fauna) and pleasant outdoor spaces.

3.2 Proposed Surface Water Drainage Strategy

- 3.2.1 The most appropriate method of surface water discharge has been determined based on the 'hierarchy of surface water disposal' as set out within WSCC's Policy for the Management of Surface Water (November 2018), SuDS Policy 1: Discharge Hierarchy, as described below:
- to ground (soakaway into the ground),
 - to a surface water body (in this case, the open ditch located within the site boundary),
 - to a surface water sewer, highway drain, or another drainage system, or
 - to a combined sewer where there are absolutely no other options, and only where agreed in advance with the relevant sewerage undertaker.
- 3.2.2 Based on the information given above regarding ground conditions and existing drainage, it is unlikely that relying on surface water to soakaway into the ground will be sufficient and there are no existing points of connection to a formal sewer or piped drainage system.
- 3.2.3 Therefore, the most appropriate means of surface water management would be to store surface water on site within a network of swales and ponds to be released at a controlled rate of flow to the existing open ditches located within the site, ultimately making it way to Felbridge Water.

Controlled Flow of Surface Water from the Site

- 3.2.4 The rate at which water leaves the site is based on the current rate at which water leaves the site, known as the Mean Annual Greenfield Run-off Rate. This is worked out using statistical methods set out by the Institute of Hydrology. The Mean Annual Greenfield Run-off Rate will always be less than the current conditions, meaning that less surface water is entering the wider network. This in turn means that any flood risk that may have been present before development will be improved once the new development takes place.

Exceedance Flows

- 3.2.5 In the event that rainfall conditions exceed the capacity of the proposed drainage network, all surface flow will be directed away from buildings and to areas designed to accommodate excess flows, whilst maintaining safe access to the development and to individual residential properties.

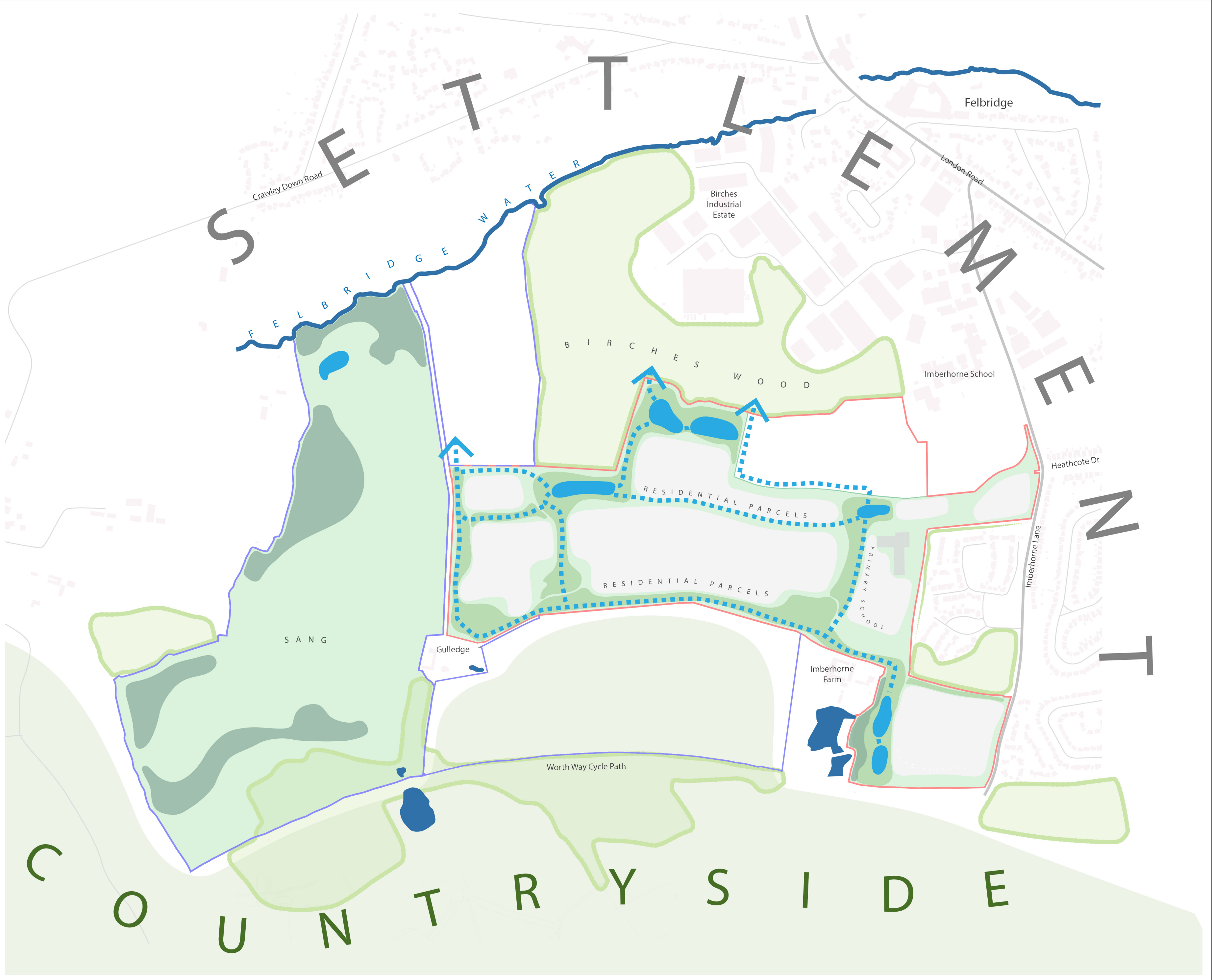
4 Proposed Foul Water Drainage Strategy

4.1 Method of Foul Water Discharge

- 4.1.1 Due to the prevailing topography across the allocated site and locations of existing foul water drainage infrastructure, foul water drainage will be provided using a conventional piped network directing flows to a foul water pumping station which will pump flows to an existing Southern Water sewer.

Appendix A

Barton Wilmore drawing - Concept Drainage Plan



- Site boundary
- Additional Land
- Existing Components**
 - Settlement
 - Countryside
 - Main Roads
 - Contours
 - Existing hedgerow pattern
 - Existing Woodland
- Proposed Components**
 - Public Green Space network
 - Linear Park
 - Strategic landscape (Woodland)
 - Residential parcels (Including areas of permeable paving, and rain gardens)
- Existing Components - Blue Infrastructure**
 - Felbridge Water
 - Existing standing water (Basins, Ponds)
- Proposed Components - Blue Infrastructure**
 - Sustainable Urban Drainage network (Ponds, Basins)
 - Open Ditch/ Swales in Green Corridors

PROJECT
Imberhorne

DRAWING TITLE
Blue Infrastructure

DATE 17.07.2020	SCALE	DRAWN BY PC	CHECK BY RMcW
PROJECT NO 23687	DRAWING NO BR-L-PL001	REVISION -	

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