

Land at Drove Lane, Yapton
Surface Water Drainage Statement Addendum

(Document ref. 133647-SWDS-01C)

1. Surface Water Drainage

This updated addendum is to be read in conjunction with Document Reference: 133647-SWDS-01A and all relevant drawings to support the reserved matters application for the development site at Drove Lane, Yapton.

This hybrid scheme has been developed, in accordance with discussions with the Lead Local Flood Authority, in which it was agreed:

- ¿ We have provided a catchment areas plan which details the impermeable surfaces, including the permeable paving areas, that will be positively connected into our network. This has resulted in the total impermeable area for the site increasing to 5.331Ha instead of the 3.089Ha (now includes permeable paving) that was originally used for the QBAR greenfield run-off rate. This has now caused the discharge rate to increase to 18.2 l/s which is in line with the Arun District Councils guidance for proposed discharge rate. Updated Greenfield Run-off calculations are enclosed.
- ¿ Using the QBAR greenfield discharge restriction for the impermeable areas that are positively drained through the network (including permeable paving), it was concluded that there is 7.6m³ flooding across the site with a maximum of 6.5m³ flooding at one manhole up to and including the 1 in 100-year event.
- ¿ Calculations have a surcharged outfall applied.
- ¿ We have used FEH rainfall data in the calculations.
- ¿ We have provided a 10% urban creep factor.
- ¿ We have provided a constraints plan showing the recorded groundwater levels.
- ¿ Hydrobrake references have been added to all units on the plans.
- ¿ The drawings have been reviewed to remove inconsistencies between the plans and calculations.
- ¿ Orifice details have been added to the drainage construction details.
- ¿ Pond 2 is not lined. All features that are below the worst case ground water level from the winter monitoring have sufficient permeability to allow water to ingress and egress.
- ¿ The plot drainage is shown on the plans to show how the roofs and drives are connected to the system.
- ¿ An exceedance flows drainage has been provided.
- ¿ All soakaways have been amended to be 'invert to invert'. This has resulted in some of the features being sited below the winter monitored ground water level. But we have sufficient capacity in the network to cater for this eventuality. High

level overflows will also be provided which will be utilised when the groundwater is shallow.

- ¿ Catchpits are provided upstream of the storage features for all inlets.
- ¿ We have shown the open space that we intend to utilise to control the climate change event only.
- ¿ The connection to the water course is now shown.
- ¿ Chainages are shown on the sections for the SuDS features, we do indicate the berms, top and bottom of bank, maximum water level and freeboard. Please refer to the specific SuDS details for material and crates beneath the ponds. They are drafted at a clearer scale to show the increased level of detail.
- ¿ We include construction details of the swales with references to the swales on plan.
- ¿ We include details of all drainage features employed in the drainage network.
- ¿ Roofs will discharge directly into the permeable paving driveways which will then have overflows into the positive network. The site is modelled with all features invert to invert, as the groundwater rises it will migrate down the system to the outfall pond where the outfall rate and flood flows are controlled and contained.
- ¿ In the 1 in 100 plus climate change events, there is 14.41m³ flooding in the SW corner near the outfall into the Drove Road ditch and 36.59m³ for the whole site.
- ¿ An overflow weir from the ponds with a non-return valve outfall into the adjacent landscaped area is where this flooded volume can be contained on site. This would be the preferred method to manage the climate change event. This can be safely discharged at the QBAR rate, via the non-return valve as the water level in the functional main storage ponds fall.
- ¿ This should be compatible with Arun Policy for open space to be useable as the area would only pond during events which occur on average less than once every 100 years. In storms of this severity, it would be unlikely that there would be any demand for use of amenity space.
- ¿ Two cross sections in perpendicular directions through each SuDS pond have been issued with the updated application. The contractor will be provided with setting out coordinates and levels to ensure that the ponds are constructed with correct bed, bank and side slopes at the construction stage.
- ¿ With the swales and cellular storage being of the same construction, we agreed to provide one representative construction detail for the enhanced swales and one for the cells. We have also provided construction details for each SuDS feature scenario encountered on this site.
- ¿ A typical detail to show the connection of permeable paving into the drainage network has been provided with the updated application.

2. Summary

The proposed network has been designed using sustainable techniques while addressing all environmental considerations in conjunction with the landscaping proposals, to provide a robust, sustainable, compliant design. This network developed in agreement with the LLFA provides a betterment to the existing situation but ensures that no neighbouring properties will be affected by the runoff generated by the proposed development.

The only thing we have not integrated into our system was the requirement to have all structures located at or above the 1 in 10 year plus climate change event. This, together with the requirement to connect invert to invert would result in the site being raised above the levels already employed to achieve the overland flood flow routes. The suite levels are contentious point on this site, and the guidance from the LLFA states levels not to be raised unduly. Plus the hope is we have proved that a robust, improved solution has been provided.