

Our ref: A13394-PEF-240412-FRD-Response

For the attention of Eleanor Reed, West Sussex County Council

26th April 2024

Dear Eleanor

Response to the comments made by WSCC on planning application BC/11/22/OUT

This document aims to respond to each of the comments made by West Sussex County Council, dated 19th February regarding drainage serving the proposals at Barnham, Eastergate and Westergate.

Below are listed the *Comments*, with responses provided by Pell Frischmann in *Blue*.

- *Include appropriate climate change allowance for assessment of the lifetime of the development (including the 3.33% AEP design flood event.) (Up to date climate change allowance must be used (45%)).*

Calculations have been updated to include a 45% climate change allowance for analysis of the 1% and 3.33% AEP events.

- *Use up to date FEH2022 rainfall data for all design flood events*

Attenuation calculations have been updated to utilise FEH2022 data and methodology.

- *Identification is required of those structures which require consent for works on an ordinary watercourse*

Key watercourse crossings requiring ordinary watercourse consent have been identified on the Drainage Strategy Drawing presented in Appendix E of the resubmitted Sustainable Drainage Report. However, it should be noted that as this application is outline in nature, such crossing locations may be subject to change, when reserved matters applications bring forward detailed designs.

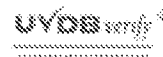
All outfalls made to the existing watercourses should be reviewed as part of detailed designs to determine whether land drainage consent is required and applications submitted accordingly.

- *Evidence required on ground conditions/BRE365 or similar infiltration testing/dissolution potential/seasonally high groundwater levels. (Further infiltration testing is needed, in locations where groundwater monitoring shows groundwater is deeper, which means infiltration might be viable in some areas of the site.)*

The shallowest seasonal groundwater, identified within sustainable drainage report 100148-PEF-ZZ-XX-RP-CD-000002-S2-P03 Table 3.1, is shown at 0.84m below ground level. If a freeboard of 500mm is provided above this level, there is an extremely limited potential for large scale infiltration. It is proposed that investigation into shallow infiltration features is conditioned into any outline permission and therefore use of such features can

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Form ref: BF164/L

be assessed on a parcel-by-parcel basis at greater detail to provide meaningful results where surface-based infiltration features will be located.

- ***Source control and interception has not been provided by the provision of vegetated SuDS***
 There is scope for a range of SuDS features to be included within proposals listed in Section 3.2.17 of the Sustainable Drainage Report. It is again proposed that inclusions of these is mandated within a condition attached to outline permission so inclusion can be considered at each parcel's design. This could include requirement to fulfill the CIRIA SuDS Manual simple index approach to rainfall runoff quality.
- ***Overarching proposals of how application must provide water quantity benefits in open, at the surface or above ground SuDS. Increased use of source control features required, to reduce reliance on end of pipe design (basins)***
 There is not currently the detail within the land use plan to consider significant sustainable drainage at any level of spatial detail. As outlined in Section 3.4 of the Sustainable Drainage Report, a requirement should be leveled on developers for plots within the overall scheme to provide significant SuDS measures within any drainage designs.
- ***Proposed discharge rates could increase flood risk elsewhere and need to be re-assessed. The proposed discharge rates exceed Qbar. This is not in accordance with policy***
 QBAR has been recalculated using FEH data within HR Wallingford's design tool. This gives an output value of 2.4l/s/ha. This has been taken forward as a design discharge rate for development going forward. Details of this are discussed within Section 2.2 of the Sustainable Drainage Report and outputs are presented in Appendix B.
- ***Include appropriate climate change allowance for the lifetime of the development (including 3.33% AEP design) for storage volumes.***
 Results for the 3.33% AEP storm event for each strategic attenuation feature have been shown with an included 45% climate change allowance.
- ***Outline drainage modelling calculations should be resubmitted and demonstrate how 10% urban creep has been included in the volume of SuDS storage required.***
 Calculations have been updated to include 10% urban creep, an increase on the 6% previously prescribed within Section 3.2.2 of the Sustainable Drainage Report.
- ***Outline drainage modelling calculations should be resubmitted using a CV value of 1***
 Calculations have been updated using a Cv value of 1 for all impermeable areas.
- ***Use up to date FEH2022 rainfall parameters in any modelling scenarios***
 Calculation have been updated to utilise FEH2022 data and methodology with attenuation assessments.
- ***Masterplan drawings need to show the high-level location of all SuDS and demonstrate that the volume of storage can be achieved in the layout. All watercourses must be clearly shown on the drainage layout***
 The Drainage Strategy drawing (attached as Appendix E within the Sustainable Drainage Report) has been updated to include the watercourses within and around the site.
- ***Indicative vehicular access route and off-road parking needs to be provided to ponds, basins and swales within the masterplan.***
 At this stage of the development of the scheme, there isn't detail within the land use plan to identify specific access points and parking for any strategic basins. The need for this provision is codified within the Sustainable Drainage Report (Section 3.2.14) and thus all planning applications and drainage networks should be held to this requirement through the development of the site.

As a minimum, a 3m wide buffer has been applied to each strategic basin to provide maintenance access around the entire feature and ensure there is suitable space within the prescribed basin areas, with detailed design showing how this access and parking will be achieved.

- ***Due to the likely long duration build out time (including phased development proposals), a construction management plan and supporting calculations and drawings are required to show a timeline of how temporary measures will be put in place to protect the water environment and any newly built SuDS features. This will include any temporary water quality and flow control devices***

It is agreed that a construction management plan will be required to demonstrate how temporary construction drainage will be implemented to protect the water environment, and ensure any later phases of development protect completed SuDS and drainage infrastructure. However, this level of detail is not available at outline stage and so it is recommended this is secured through appropriate condition.

The currently presented drainage strategy has developed volumetric storage for discrete residential parcels, so that a 'phase' or block of dwellings can be constructed alongside the attenuation required for those houses. Whilst the drainage strategy as a whole is strategic and will provide a solution for the entire site, these phases can be delivered in isolation to protect the quality and functioning of the drainage infrastructure whilst future phases are built out. It is recommended that this approach is continued as part of the reserved matters application.

- ***As it is a phased development, a surface water management and construction phasing plan is required. This must show how each phase can be provided independently (in terms of surface water drainage) and how any infrastructure which it relies on will be constructed prior to any housing or commercial development,***

As above, the currently presented drainage strategy has developed volumetric storage for discrete residential parcels, so that a 'phase' or block of dwellings can be constructed alongside the attenuation required for those houses. However, this is purely indicative at this stage, as although phasing plans are identified these are not approved plans would be subject to change. Therefore, suitable conditions should be imposed that ensure reserved matters applications detail the required drainage infrastructure. Where there is any combined features between phases, all relevant applications would have to demonstrate no detriment to any established drainage infrastructure, and earlier phases would need to demonstrate how future connections and adaptations had been considered.

- ***A high level assessment of how water quantity and water quality will be managed during the construction phase is required. Identifying high level assumptions such as the need to discharge to a sewer or watercourse with appropriate pollution measures***

The submitted Environmental Statement chapter on Water Resources includes a number of measures that are required as part of the CEMP to ensure suitable water quality of any runoff and dewatering is maintained prior to any discharge into the local watercourses. This could include formation of temporary (construction) phase drainage, additional measures such as hay bales, baffles or other sediment management and control measures.

- ***Catchment area plan and phasing plan required***

As above.

Yours sincerely
On behalf of **Pell Frischmann**

Henry McColi
Senior Engineer

Pell Frischmann

Cont'd./... 4