W420 WEST DURRINGTON

COMMUNITY PARK DRAINAGE STRATEGY

TECHNICAL NOTE

Document Control

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1. Introduction

1.1. This technical Note has been prepared on behalf of the West Durrington Consortium in connection with proposals for a development comprising a Community Park on land at West Durrington Southern Sector in Worthing.

1.2. West Durrington Southern Sector (WDSS) gained Outline Planning Permission (OPP) for 700 dwellings and other associated facilities on 27 April 2012 under ref WB/11/0275/OUT. The Community Park comprises around 2.30 hectares and is located on the eastern boundary of the WDSS, north of Tasman Way.

1.3. The primary objective of this Technical Note is to define the drainage strategy for the Community Park Land and its integration within the broader drainage framework.

2. Background

2.1. The original Flood Risk Assessment (FRA, October 2017) reproduced in **Appendix A**, proposed the use of flow balancing features, including swales, to manage surface water runoff. These swales are located to the western boundary of the development site and form part of the wider drainage network for the West Durrington Southern Sector, which ultimately discharges to an existing watercourse to the west.

2.2. A copy of the S104 Drawing, which is reproduced in **Appendix B**, illustrates the outfall from the Community Park Swales discharges to a private network maintained by a management company. Therefore, Southern Water have no maintenance liability for the proposed drainage networks downstream of the Community Park point of discharge.

2.3. The drainage swales, which run north to south along the western boundary that form part of the Community Park drainage network, have been constructed, and an as-built survey by Tetra Tech Leeds has been provided and is reproduced in **Appendix C**.

3. Drainage Strategy

3.1. The drainage strategy has been updated to reflect current best practice, refinements to the site layout and levels and the as-built swales. A summary of these updates is listed below:

- The MicroDrainage modelling has been revised to incorporate updated climate change allowances; the previous strategy was based on a +40% allowance, which was the suggested allowance at the time. The updated +45% CC reflects the current design requirement.
- The CV values have been adjusted to 1, in line with updated modelling standards.

- The swales within the network have been updated to reflect the as-built information provided.
- A unit hydrograph approach has been adopted to model runoff from the semi-permeable football pitch and 30% of the semi-permeable area associated with play equipment. This method provides a more accurate representation of the site's hydrological response.

3.2. In accordance with the original FRA, Post-development runoff rates remain below the practical minimum discharge rate of 5 l/s for all events, including climate change.

3.3. The attenuation storage volumes of the swales proposed in the original FRA were approximately 369m³. The available storage within the as-built swales is approximately 288m³. With a reduced storage capacity, increases in climate change allowances and updates to standards, it is necessary to update the flow controls in the form of HydroBrakes to ensure that the storage within each feature is utilised and discharges from the site to the original rates. The surface water drainage strategy is shown on the Drainage Layout Plan, Drawing Number W420/51 Rev D, reproduced in **Appendix D**, alongside the Swale 5 flow control chamber details (Drawing No. W420/380 Rev B), Swale 3 & 4 HydroBrake Headwall details (Drawing No. W2420/255 Rev B) and West Sussex County Council's Concrete Bagwork Headwall Detail (Drawing No. S278/38/23 Rev A) all reproduced in **Appendix E**.

3.4. The updated supporting MicroDrainage Calculations are reproduced in **Appendix F**.

3.5. The above plans and calculations demonstrate that a suitable means of drainage can be provided to drain the developed site in terms of surface water runoff. The updated drainage strategy remains consistent with the design principles set out in the original FRA and is now aligned with current modelling practices and climate change standards.

4. Flood Risk within the Development

4.1. Standard S9 states:

> *The design of the site must ensure that, so far as is reasonably practicable, flows resulting from rainfall in excess of 1 in 100 year rainfall event are managed in exceedance routes that minimise the risk to people or property.*

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4.3. The level design of the development is shown of the Proposed Levels Drawing, Drawing Number W420/53, reproduced in **Appendix G**. The fall direction arrows on the proposed levels drawing show that the pre-development overland flow routes are retained. The development of the community building and healthcare facility to the south would need to take account of overland flows from the upstream catchments, whether or not the allotments/football pitches are in place.

4.4. Additionally, it is important to note that the majority of the community play areas in this development are designed with permeable or semi-permeable surfaces, significantly reducing surface water runoff compared to large-scale impermeable finishes.