

PROJECT	DATE	BY	REFERENCE
5015416 – Pagham Phase 3 Reserved Matters – Planning	09 Feb 2022	TC	5015416 - TN-0001

TITLE

Response To Drainage Officer

1. INTRODUCTION

Ridge and Partners prepared a Drainage Strategy to accompany a planning application for Pagham Phase 3. This document looks to provide a technical response to the comments received from the Drainage Engineer working for Arun and Adur Councils.

Please refer to Section 2 for the listing of the issues raised and the subsequent resolution

2. PROBLEMS / RESPONSES

The issues raised by the above are listed and responded below

Issue: 1) Discharge Rate

Arun & Adur Comment:

The proposed discharge rate is too high. The calculation of discharge rates should be based upon the positively drained area. Revised greenfield runoff rate calculations should be supplied.

Response:

The overall site proposed discharged rate is set but the greenfield run off rate for the overall site area. As we are restricting all events to the QBAR greenfield run off rate this is industry accepted method. When sites are restricting to the greenfield run off rate for each storm event we would look to restrict to the positively drained area. The greenfield run off rate for the positively drained area of the site is 3.2l/s rather than the proposed 5.1l/s. This would increase the required volume of storage required during the extreme events across the site. However, as the calculations undertaken to date have been based on the worst case design parameters, from experience during detailed design the volumes required are greatly reduced. As the detailed drainage design is to be secured by condition 10, this information will be confirmed at that stage.

Issue: 2) Outfall and Culvert Consent

Arun & Adur Comment:

Ordinary watercourse land drainage consent is required for all new outfalls and for proposed culverts.

Response

There are not proposed culverts as part of the design. The consents will be obtained prior to issue of the detailed drainage submission for condition 10; however, it is understood that the ditches fall within the overall ownership of the client and as such have the right to discharge.

Issue: 3) Rainfall Data

Arun & Adur Comment:

FEH2013 rainfall data must be applied to calculations.

Response

FSR data has been utilised for the outline design. FEH data has been purchased and a comparison exercise undertaken which confirms similar storage volumes are required at the proposed flow rates discussed in response 1. The original required storage range was between 574 – 812 m³. The refined storage required using the FEH data was 605m³ which is well within the bounds of the earlier storage estimate and the storage currently provided within the outline design. The detailed design undertaken as part of condition 10 will provide full results to FEH data methodologies.

Issue: 4) Surcharged Outfall

Arun & Adur Comment:

Surcharged outfalls should be applied to calculations. The surcharged outfall levels should be set to adjacent top of bank level.

Response

At present the design has been worked up based on having a positive outfall to the ditches. Should the ditches be surcharged to above the outfall level the site would not be able to discharge and as such would have to be designed to contain the 1 in 100 yr + 40% climate change events during this period. This equates to an extra storage volume of 634 m³. This could be stored as 110mm depth of water over the entirety of the roads and parking and therefore within the kerb line. The storage volume required for the 1 in 30 yr event will still easily be stored within the proposed attenuation volumes. During the detailed design stage suitable overland flow routes will be designed to ensure this volume of water is kept away from buildings and emergency access and egress paths.

Issue: 5) Basin Design

Arun & Adur Comment:

A minimum of two perpendicular cross sections per basin must be supplied.

Response

This detail will be provided as part of the information to discharge condition 10.

Issue: 6) Tree Proximity

Arun & Adur Comment:

We note that a number of trees are proposed in close proximity to drainage features. Root potential areas must not conflict with surface water drainage features.

Response

Trees, vegetation and planting have been specified by the Landscape Architect and is shown on drawings 5068-DLA-L-02, 5068-DLA-L-03, and 5068-DLA-L-06 Proposed Soft Landscape Sheet 1 through 3. These have been specified to work in harmony with the proposed drainage features. Where necessary, trees will be designed to be enclosed within tree pits to ensure they does not affect the road make up or the geocellular tanks.

Issue: Floatation design

Arun & Adur Comment:

We would also like to highlight that a full winters groundwater monitoring will be required, even for an attenuation scheme. Peak groundwater level at attenuation features should be established and used in design to evidence that flotation is adequately accounted for in design.

Response

Floatation calculations would be undertaken as part of the detailed information submitted for condition 10. Should it be necessary concrete cover & surround will be provided to the geocellular storage to provide additional resistance for flotation. Winter Groundwater monitoring was undertaken in the period December 2018 – May 2019 with the relevant logs displayed below. This shows a maximum groundwater level of between 0.2 and 0.6m BGL. As a worst case situation, we will set the groundwater level at ground level for the floatation calculations.

