

Planning Department
Arun District Council
Civic Centre
Maltravers Road
Littlehampton
West Sussex
BN17 5LF



8 Pride Point Drive
Pride Park
Derby
DE24 8BX

Our Ref: MPW/MPW/JDI01497
Date: 1st November 2018

Dear Sir/Madam

PROPOSED QUERCUS NURSERY, FERRING

We have been requested by Dave Baldwin of Quercus Nursery to undertake a review and design of the drainage in response to comments from the Lead Local Flood Authority in relation to the application Ref: FG/52/18/PL.

The site consists of an access road and car park area constructed from compacted hardcore, a large Polytunnel with concrete paths surrounding it and large permeable areas for storing plants.

Although the compacted hardcore will, to a degree, allow water to permeate through, for our assessment we have conservatively assumed it is completely impermeable. The combined area of the car park and access road is 1553m² and this has been used within the enclosed quick storage estimate as the rainfall catchment. The required attenuation volume, assuming no discharge, for a 1:100 year + 20% storm event is 186m³.

We have reviewed the existing levels and assessed whether the required volume could be accommodated on the surface of the car park. Currently there is a low spot within the gated entrance to the east of the site which would allow water to flow out. We are proposing to raise this low spot to a level of 5.800 to match the current levels either side of the gate. This would allow water to be stored on the surface of the car park but does not provide the full required volume.

It is therefore proposed to construct two depressions, one either side of the access road, to provide additional attenuation volume. This proposal results in a total attenuation volume provided of 195m³, above the required 186m³.

The Polytunnels are surrounded by a concrete footpath which falls inwards towards the gravel margin surrounding the Polytunnels. There are also three internal concrete paths which fall towards the internal permeable plant storage areas. The roof drainage discharges into the gravel margin surrounding the Polytunnels and this gravel margin is in continuity with a 300mm thick stone blanket under the internal area.

As the Polytunnel roof is directly discharging to the ground underneath it, via the stone blanket, we have ignored the roof catchment in our assessment as it replicates the same area of permeable greenfield below. As such, we have calculated the catchment of the concrete footpaths surrounding and inside the Polytunnels and used this area of 426m² within our enclosed quick storage estimate, resulting in a required 52m³ of attenuation for a 1:100 year + 20% storm event and no discharge.

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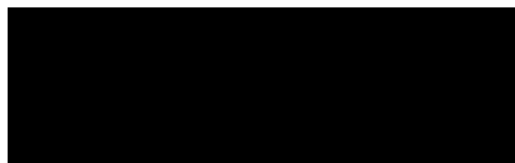
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The area of permeable plant storage within the Polytunnels, excluding the concrete footpaths, equates to 615m². Based on this area, the required attenuation volume and a 30% void ratio a thickness of 282mm of single size stone would be required, below the constructed 300mm.

The above and enclosed calculations indicated that sufficient attenuation volume can be, via the construction of the two depressions, and is provided, via the stone blanket, for the external areas and the Polytunnels respectively.

We trust the above and enclosed is clear and sufficient for you to discharge any conditions. However, if you require any further clarifications please do not hesitate to contact me.

Yours faithfully,



Mark Wren
Senior Engineer

Enc
Proposed Drainage Layout Drawing
Quick Storage Estimations

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The screenshot shows the 'Storage Settings' window in Windows 10. The window is titled 'Storage Settings' and has a sidebar on the left with various storage-related options. The main area is divided into two sections: 'Storage Spaces' and 'Storage Spaces (Beta)'. The 'Storage Spaces' section is currently active, showing a list of storage spaces. The list is empty, with columns for 'Name', 'Capacity', and 'Free Space'. The 'Storage Spaces (Beta)' section is also visible, showing a list of storage spaces. The list contains one entry: 'Storage Spaces (Beta)' with a capacity of 1 TB and 0 GB free space. The window also includes a 'Storage Spaces (Beta)' button and a 'Storage Spaces (Beta)' link.

External Footpath = 322m²

Storage Volume required = Available Area x Height

$$52\text{m}^3 = 615\text{m}^2 \times H$$

30% Porosity Factor applied $\rightarrow 0.085 / 0.3 = 0.282\text{m}$

Therefore, a depth of 282mm of stone with 30% void factor would provide enough storage.

Area – 1553m² (Car Park and Road + Workshop)