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Flood risk assessment for proposed plastic clad tunnel structures at Norfolk House Farm, Gedney Marsh, Spalding PE12 9PB.



1. Background

The proposed development comprises a block of plastic clad greenhouses in a field currently in continuous arable production.

Due to the nature of the structure and use there is no concern of flood risk consequences to the structure or cropping, thus the only issue is avoiding increased discharge to the IDB drainage system.

Although the tunnels will have the cladding removed for the winter no consideration of the offset value due to reduction in existing surface water flows has been taken into account, although in reality this will offset some of the tunnel roof water drainage. The scheme is therefore over-conservative in its design approach.

The EA site data shows it as low risk, as below.

2. Site data (EA)

2.1 Classification

The site is EA zone 3.

Standard Average Annual Rainfall (SAAR) is 574mm.

2.2 Flood risk from sea or rivers

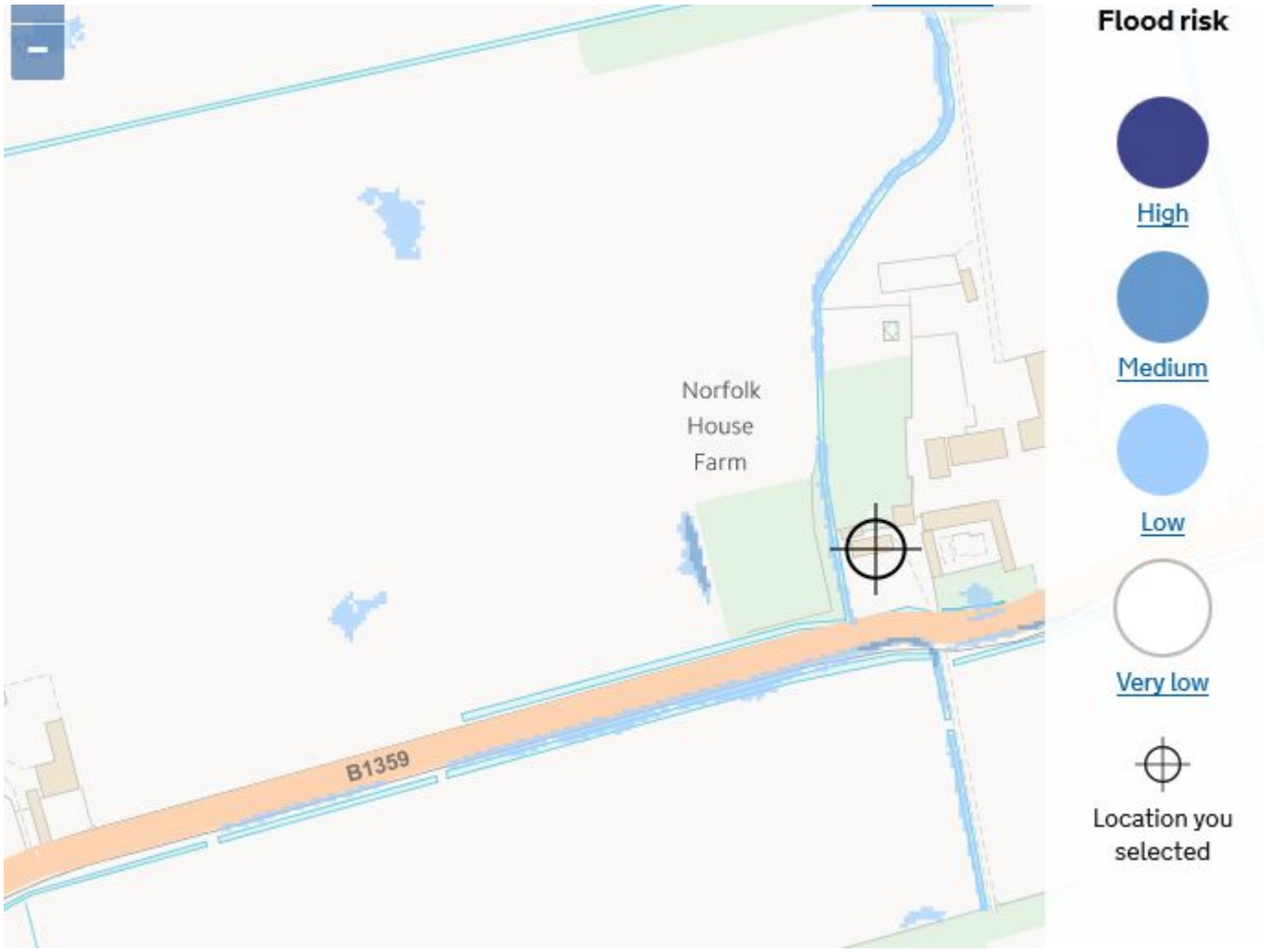
The risk of flooding from sea or river is categorised as LOW, see map below.



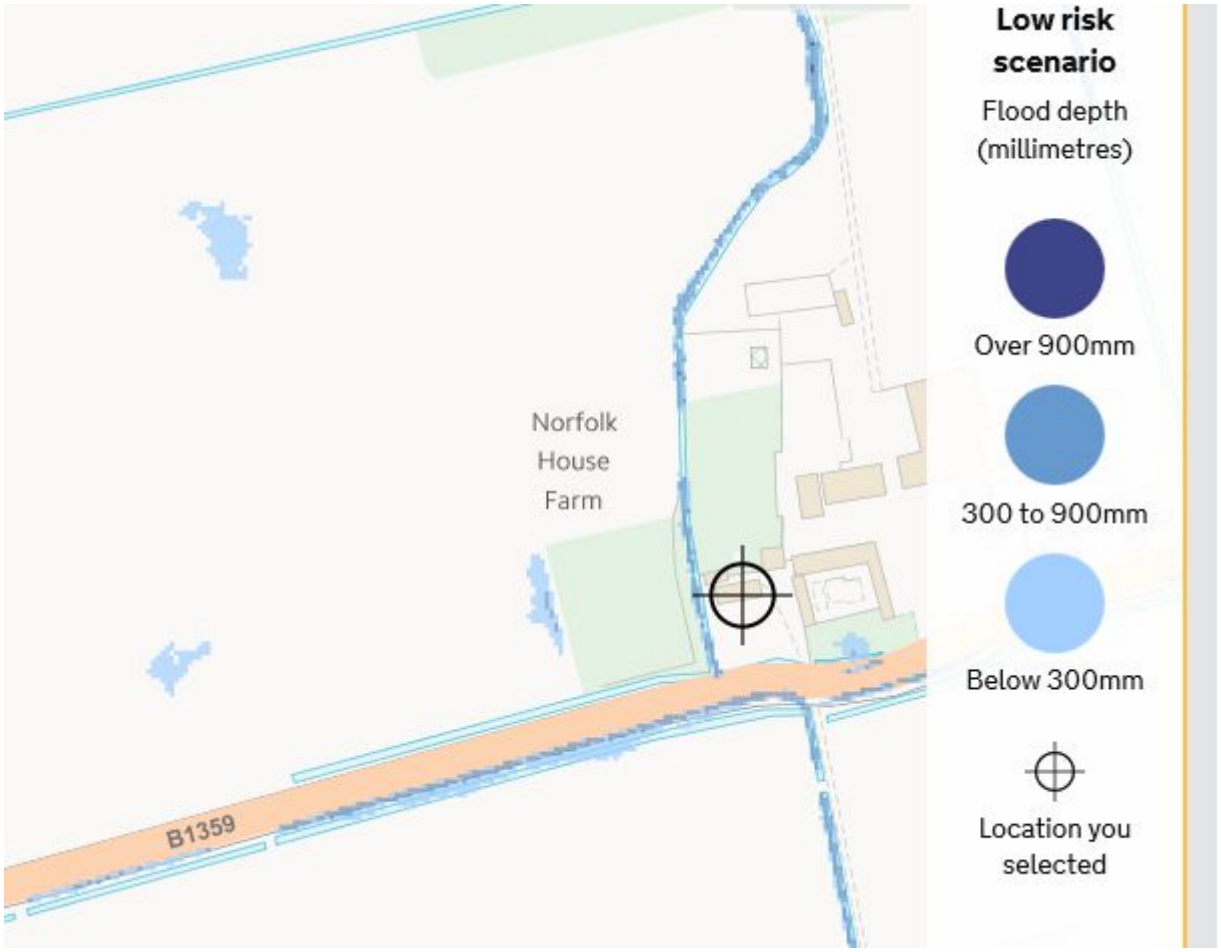
Risk of flooding from sea or rivers:- category LOW risk

2.3 Risk of flooding from surface water.

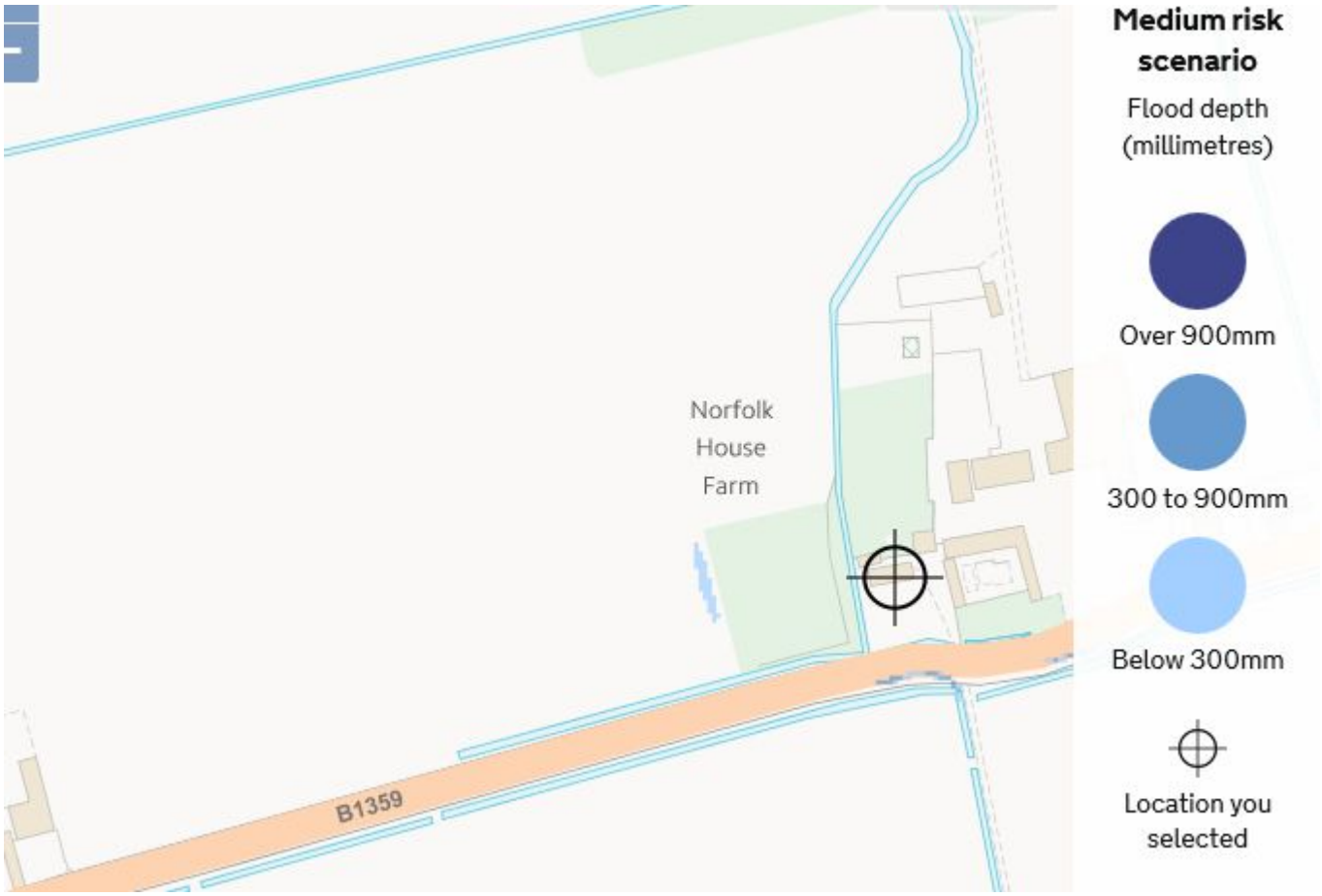
The majority of the site is classified as VERY LOW risk, with a few small pockets of LOW risk outside of the proposed development area, see map below.



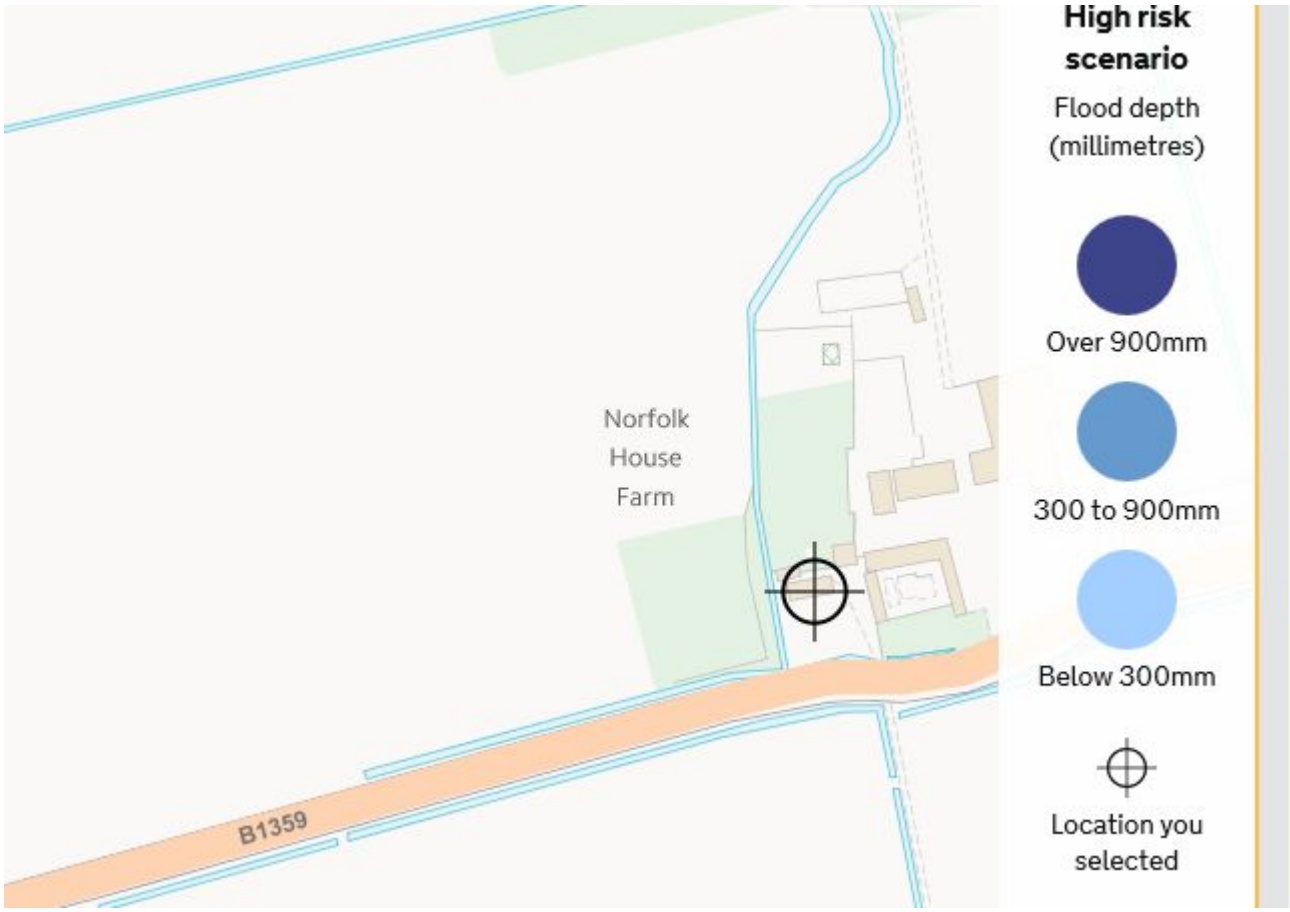
Risk of flooding from surface water:- risk LOW with very small area outside of proposed development classed as Medium, and none as High risk.



Depth of flooding for low risk areas



Depth of flooding for medium risk areas



Depth of flooding for high risk areas

2.4 Conclusion

There is a low risk from surface water of minor ponding in the vicinity, however these small pockets are outside of the envelope of the structure

3. Stormwater event volumes.

	Storm duration hours									
Event (yrs)	**5.25**	**10.25**	**15.25**	**20.25**	**25.25**	**30.25**	**40.25**	**50.25**	**70.25**	**90.25**
MAE	213	264	297	322	342	360	391	414	442	464
5	337	446	451	484	511	534	573	603	635	661
10	414	501	552	589	619	645	689	722	757	784
20	516	609	666	707	741	770	819	855	891	919
50	653	761	826	873	911	944	998	1037	1074	1103

100	761	880	951	1001	1042	1077	1134	1176	1213	1242

Table 1: Roofwater run-off volumes for different storm events

Proposed drainage storage volume is for 2,800m3, which caters for all the above events and also the M5 100 year event with addition for climate change of 105mm.

Conclusion

The design as laid out in the associated document “Drainage” can contain all the above scenarios.

According to the EA assessments there is low risk of flooding within the proposed area, which is only shallow surface water ponding. This is not a significant issue for the development proposed.

The proposed development has been designed such that it will not merely not increase the risk of surface water flooding, but will actually reduce it.

Dr Andrew Marchant, *CEng, FIAgrE, FCIoH*
6.11.17