



**GRAINGER PLC
PAVILION DEVELOPMENT, BERWOOD
WATERLOOVILLE PO7 3DG**

FLOOD RISK ASSESSMENT

OCTOBER 2020



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Grainger PLC
Pavilion Development, Berewood
Waterlooville PO7 3DG
Flood Risk Assessment

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Revision Status

Revision	Date	Description
01	13/07/20	First Issue
02	22/10/20	Issued for Planning
03	22/06/21	Revised to address HCC FRMT comments

1 Background

Introduction

- 1.1 Mayer Brown Ltd has been instructed to undertake a Flood Risk Assessment (FRA) for a proposed cricket pavilion and associated car park at Berewood, Waterlooville.

Site Location

- 1.2 The site is located in Waterlooville, approximately 300m to the west of the A3 London Road, within the administrative boundary of Winchester City Council and Hampshire County Council. The co-ordinates at the sites are X = 467380, Y = 108915. The site nearest postcode is PO7 3DG.
- 1.3 The location of the site is shown in **Figure 1.1**

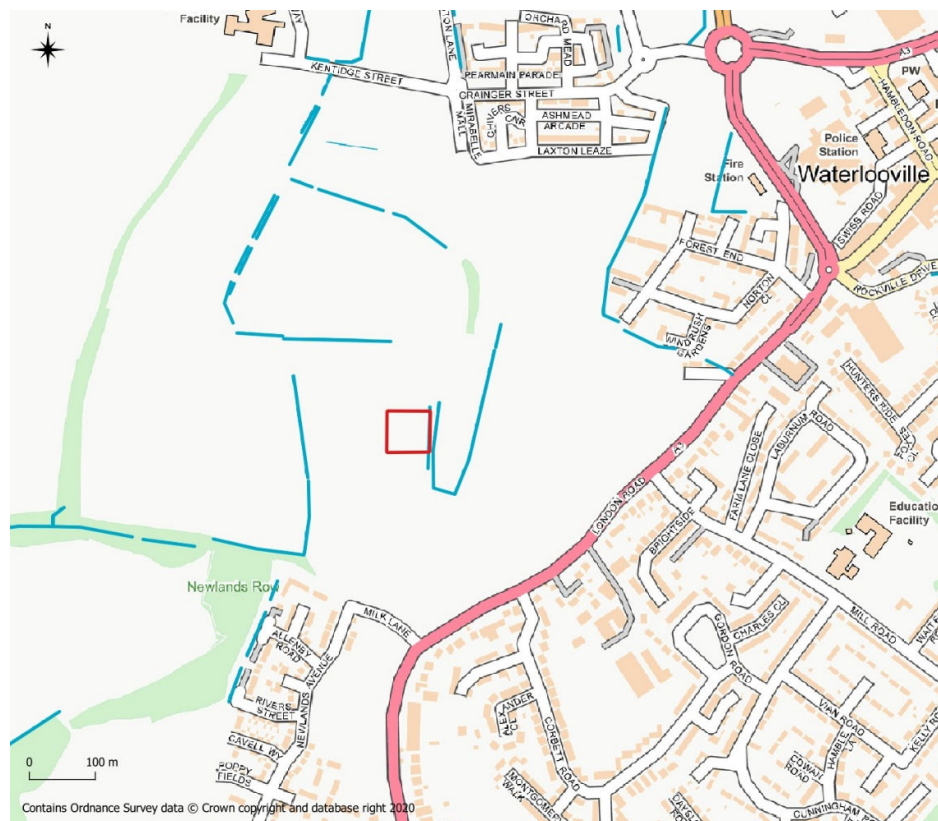


Figure 1.1 Site Location

Existing Site

- 1.4 The existing site was formerly agricultural farmland for arable and grazing but is now fallow awaiting development as a town park. The entire area is greenfield.

Development Proposals

- 1.5 The development proposals comprise the erection of a pavilion and associated car park, which is part of wider development for a town park including multi-use sports area and cricket field. Outline planning for the overall Berewood site including the provision of a pavilion was awarded in 2012. (Planning Application number: APP/18/01317). The proposed development covers an area of approximately 0.413 ha (4,130 sq.m). The general arrangement for the Pavilion and Car Park layout is provided in **Appendix A**.

National Planning Policy Framework

- 1.6 The National Planning Policy Framework (NPPF) was enacted in March 2012 and revised in July 2018. Paragraph 155 to 165 of the NPPF establishes the planning policy in relation to flood risk management. The Planning Practice Guidance to the NPP was published in March 2014 to provide additional guidance to ensure the effective implementation of the planning policy set out in the NPPF on development in areas at risk of flooding.
- 1.7 This report has been written with specific reference to the requirements of the National Planning Framework (NPPF) and the Planning Practice Guidance (July 2018).

2 Baseline Conditions

Topography

- 2.1 The site has been re-profiled as part of Town Park development. Surface contours indicate that the site falls from southwest to northeast with the ground levels ranging from 55.10 to 53.6mAOD, as shown in **Figure 2.1**.



Figure 2.1 Current Site Contours

Hydrology

- 2.2 The LiDAR data indicates that the site is situated relatively high up the catchment. Some surface water runoff from the higher ground would be passing through the site from the south. **Figure 2.2** shows the LiDAR data and contours.
- 2.3 There are two field drains running along the eastern site boundary. These drains form part of the existing field drainage network whereby the run-off eventually drains to the River Wallingford.

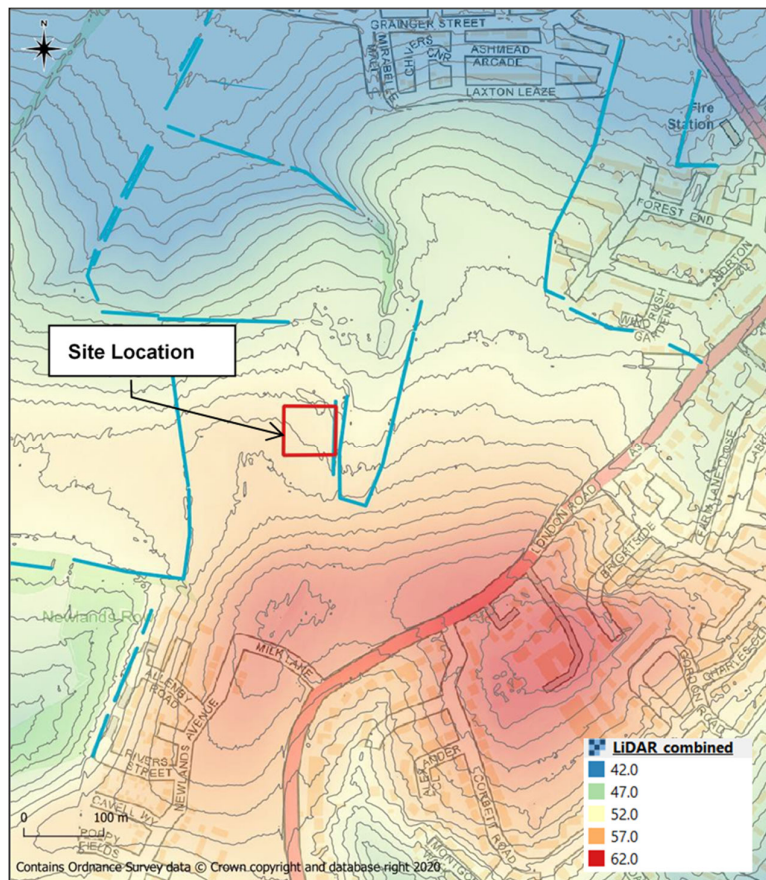


Figure 2.2 LIDAR and Contours

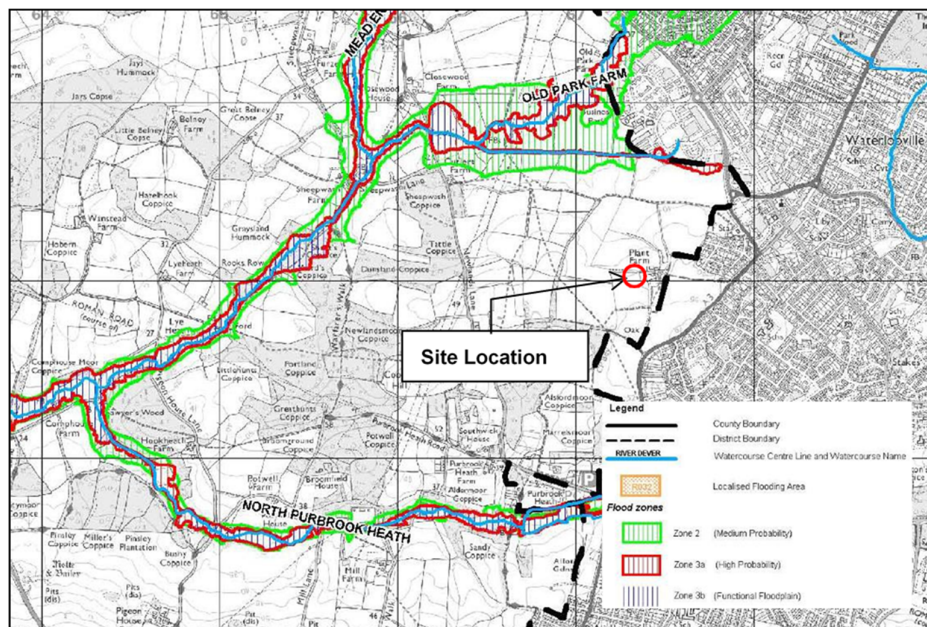


Figure 2.3 River Catchment

2.4 The site is within the Potwell Trib catchment, contributing flows to the Old Park Farm, a Main River to the north of the site. Refer to **Figure 2.3**.

Ground Conditions

- 2.5 According to the British Geological Survey (BGS) online datasets, the bedrock geology is identified as London Clay comprising clay, silt and sand.
- 2.6 Soilsclapes describe the soil characters at the site as slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils.
- 2.7 The site is within Source Protection Zone 1c (Inner zone - subsurface activity only) which extends Zone 1 (50 day travel time from any point below the water table to the source) where the aquifer is confined and may be impacted by deep drilling activities.

Ground Investigation

- 2.8 A ground investigation was carried out for the wider development in October 2019 by T & P Regeneration Ltd. Within the site boundary, there are two trial pits (TP01 and Tp02) of which the results indicate soft to firm light brown gravelly occasionally sandy clay. No groundwater was encountered during the survey.
- 2.9 Infiltration testing at TP02 indicates that the soils have poor infiltration characters, which is reflective of the London Clay Formation. An extract of the ground investigation report is provided in **Appendix B**.

3 Source of Flood Risk

Fluvial/Tidal

- 3.1 The EA Flood Maps indicate that the site is within Flood Zone 1, as shown in Figure 3.1. Flood Zone 1 comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).
- 3.2 This suggests that fluvial flooding is not a risk to the site, therefore, flood mitigation measures are not required.

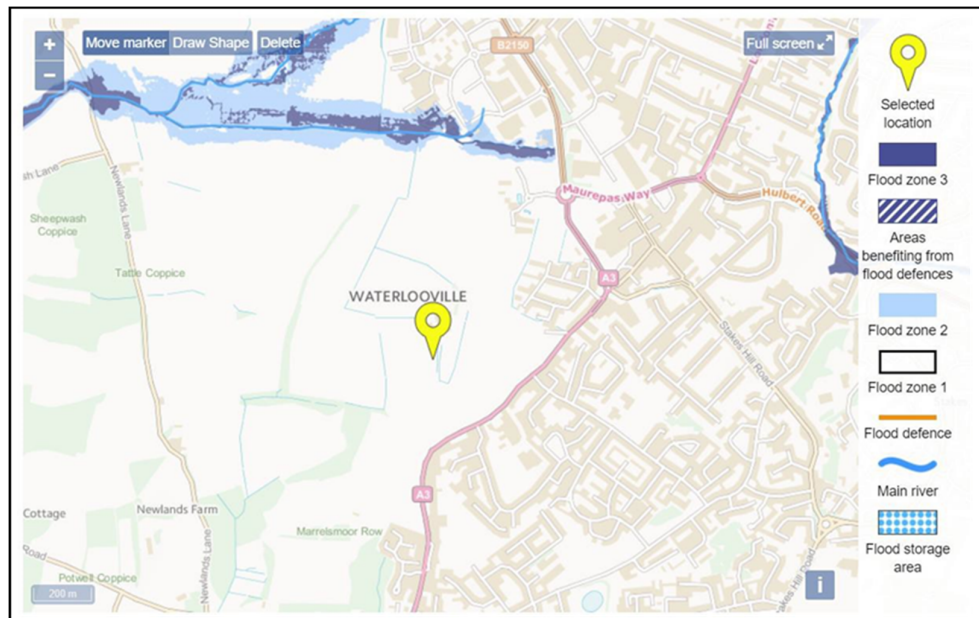


Figure 3.1 Environment Agency Fluvial/Tidal Map

Surface Water

- 3.3 The EA surface water flood map indicates that the site has a 'very low' risk of surface water flooding, as shown in **Figure 3.2**. There is a small area of a 'low' risk of surface water flooding in the north of the site.
- 3.4 The surface water runoff from the proposed development will be managed by the site surface water drainage.
- 3.5 Therefore, the site is not at risk of surface water flooding and no mitigation measures are required.
- 3.6 Dwg. GTWVILLE_TP2/DR/01 shows the surface water strategy for the wider area around the Pavilion. Existing surface water ditches are to be retained as part of the Town Park Development in which the Pavilion will be situated.

- 3.7 A separate report describing the drainage provision for the wider Town Park has been produced (Ref. GTWVILLE_TP2/REP/DR02).



Figure 3.2 Environment Agency Surface Water Flood Map

Sewer/Drainage

- 3.8 The site is greenfield and has no existing sewer network within the vicinity of the site. A new foul sewer drainage connection, which will be for the sole use of the proposed Pavilion will be provided from the existing network in Plant Farm Crescent to the north.
- 3.9 Drawing. GTWVILLE_TP2/DR/01 in Appendix A, shows the proposed gravity foul sewer route from the Pavilion to its connection in Plant Farm Crescent.
- 3.10 Drawing. GTWVILLE_TP2/DR/02 in Appendix A shows the proposed drainage system for the Pavilion and associated car park.
- 3.11 The access road leading from the north to the car park entrance will drain to the car park network.
- 3.12 Stormwater run-off from the Pavilion building, associated car park and access road will be collected and attenuated in the car park pavement structure before discharging from the north east corner of the car park into the adjacent surface water ditch. The outfall from the car park will be fitted with a Vortex Flow Control device limited to 2l/s.
- 3.13 The car park surface will be a permeable construction and will be designed to enable sub-surface storage of stormwater from the building and the car park surface, prior to discharge. Storage will be provided in the form of a cellular storage tank with

supplementary storage provision in the surrounding sub-base. Surface run-off will be allowed to permeate through the car park surface to collector drains located on the eastern and northern boundaries. The collector drains will be directly connected to the cellular storage prior to discharging to a ditch via a flow control device.

- 3.14 Calculations supporting the above proposal are contained in Appendix C.
- 3.15 Therefore, the site is not at risk of flooding and no mitigation measures are required.
- 3.16 The attenuation of stormwater discharge to 2l/s, will also minimise any flood impact presented by the Pavilion development.

Groundwater

- 3.17 The Partnership for Urban southern Hampshire (PUSH) Strategic flood Risk Assessment (SFRA) – Guidance Document, February 2016, indicates that groundwater flood risk is in areas where highly permeable meets lower permeability geology. As the site ground has relatively low permeability and there have been no records of groundwater flooding, it is considered that the risk of groundwater flooding at the site is low. Therefore, no mitigation measures are required.

Artificial Sources

- 3.18 The EA's reservoir flood maps indicate that the site is not located within the maximum extent of reservoir flooding.
- 3.19 There are no other artificial sources such as canals or ponds that pose potential flood risks to the site.
- 3.20 Therefore, the risk of flooding from artificial sources is considered low, and no mitigation measures are required.

EA Flood Warning

- 3.21 The site is not located within the EA flood warning areas.

4 The Sequential and Exception Tests

The Sequential Test

- 4.1 The aim of the sequential test is to steer new development to areas with the lowest probability of flooding and to demonstrate that there are no suitable alternative development sites located in the lower-risk flood zones.
- 4.2 As the site is in Flood Zone 1, it is considered that the Sequential Test has been passed.

The Exception Test

- 4.3 Table 2 (Flood Risk Vulnerability Classification) of the Planning Practice Guidance (PPG) classes the proposed pavilion and car park as 'Less Vulnerable'.
- 4.4 According to Table 3: Flood risk vulnerability and flood zone compatibility, the proposed development, which is in Flood Zone 1 does not require to undergo the Exception Test.

5 Summary and Conclusion

- 5.1 The development proposals comprise the erection of a pavilion and associated car park, which is part of wider development for sports fields.
- 5.2 The ground investigation indicates gravelly sandy clay soils which are characters of London Clay, resulting in poor infiltration.
- 5.3 The site is within the Potwell Trib catchment, contributing flows to the Old Park Farm, a Main River to the north of the site.
- 5.4 The EA flood maps indicate that the site is in Flood Zone 1, with a 'very low' risk of flooding from surface water.
- 5.5 The risk of flooding from sewers, groundwater and artificial sources is low.
- 5.6 The surface water runoff from the proposed development will be managed by the site surface water drainage.
- 5.7 No other flood mitigation measures are required to reduce the risk of flooding on-site.
- 5.8 This FRA has demonstrated that the proposed development is at low risk of flooding and will be safe for its lifetime without increasing flood risk elsewhere.

APPENDIX A: Proposed Layout

APPENDIX B: Ground Investigation

APPENDIX C: Pavilion Drainage Proposals and Calculations

