



**GRAINGER PLC
BLUE STAR LAND
WATERLOOVILLE**

FLOOD RISK ASSESSMENT

FEBRUARY 2025



**GRAINGER PLC
BLUE STAR LAND
WATERLOOVILLE**

FLOOD RISK ASSESSMENT

FEBRUARY 2025

Report Reference:	GTWVILLE_BSL_DOC_04_4
Project Code:	SL/GTBLUESTARLAND.23
Prepared by:	FA
Approved by:	CG
Issue Date:	February 2025
Status:	4th Issue

**Grainger PLC
Blue Star Land
Waterloooville
Flood Risk Assessment**

List of Contents

Sections

1	Introduction	2
2	Existing Site Description.....	3
3	Proposed Development.....	5
4	Flood Risk Overview and Mitigation Measures	6
5	Conclusion	8

Figures

Figure 2.1: Site Location.....	3
Figure 3.1: Illustrative Site Masterplan.....	5
Figure 4.1: PUSH SFRA Recorded Groundwater Flood Incidents Map	6
Figure 4.2: PUSH SFRA Recorded Southern Water Sewer Flooding Incidents Map ..	7

Tables

Table 5.1: Flood Risk Summary	8
-------------------------------------	---

Appendices

APPENDIX A: EA Indicative Flood Map	
APPENDIX B: Topographic Survey	
APPENDIX C: Illustrative Site Masterplan	
APPENDIX D: Susceptibility to Groundwater Flooding Map	
APPENDIX E: EA Surface Water Flood Risk Map	

1 Introduction

- 1.1 Mayer Brown Ltd has been commissioned by Grainger PLC to undertake a Flood Risk Assessment in support of a proposed residential development at Blue Star Land, Waterloooville, PO7 7PS (nearest post code).
- 1.2 According to the Environment Agency's (EA) indicative flood map (see Appendix A) the site is located in a low risk Flood Zone 1.
- 1.3 As outlined in the NPPF, for development proposals on sites comprising one hectare or more in a Flood Zone 1, the FRA should consider i) the vulnerability of flooding from sources other than river and sea flooding, ii) the potential to increase flood risk elsewhere through the addition of hard surfaces and iii) the effect of the new development on surface water runoff.
- 1.4 This FRA considers the impact of the proposed development in addition to the common ways in which flooding can occur. The conditions currently existing in the location of the site are described, together with the methods used to identify and assess potential impacts caused by the development proposals. The mitigation measures proposed have been identified in order to avoid and/or reduce the impacts caused by introducing the development proposals.
- 1.5 This Flood Risk Assessment has been compiled in accordance with "National Planning Policy Framework (NPPF)" published by the Ministry of Housing Communities and Local Government in December 2024, "Technical Guidance to the National Planning Policy Framework" and 'CIRIA C624: Development and Flood Risk Guidance'.

2 Existing Site Description

Site Location

- 2.1 The application site is located off Maurepas Way, A3, in the south-east of Berewood and the south-west of Waterlooville. The surrounding area is predominately urban with residential property located to the south and west, and commercial property to the east beyond the A3. Refer to the site location extract in Figure 2.1 below.
- 2.2 The site falls under the administrative boundary of Havant Borough Council. The postcode is PO7 7PS and the approximate co-ordinates to the centre of the site are E467815, N109333.
- 2.3 The approx. 2 ha site consists of greenfield and contains a footpath running across the site.



Figure 2.1: Site Location

Topography

- 2.4 A preliminary topographic survey was undertaken in March 2023 by Grainger PLC and is included in Appendix B.
- 2.5 The levels on site fall from 50.766m AOD close to the south western boundary of the site to 38.187m AOD in the north western section of the site.

- 2.6 The site consists of greenfield land with an existing footpath stemming from Laxton Leaze to Maurepas Way, and Forest End.

Infiltration & Geology

- 2.7 BGS online geological records show the site to be underlain by London Clay Formation – Clay, silt, and sand. This suggests that infiltration drainage is unlikely to be feasible due to the poor permeability of Clay soil.

Hydrology

- 2.8 The main recipient watercourse for site runoff will be the River Wallington, which flows east to west and is located approximately 250m to the north of the site.
- 2.9 The site is bordered on all sides by field ditches typical of the adjacent Berewood site prior to development. Generally, overland flows are collected and drain northwards via the ditches on the east and west sides of the site.

3 Proposed Development

- 3.1 The development proposal is for a new 69-unit residential scheme containing an open attenuation water storage feature, an access road, and associated parking. Please see Appendix C and Figure 3.1 below for the Illustrative Site Masterplan.



Figure 3.1: Illustrative Site Masterplan

- 3.2 The development is located in a low-risk Flood Zone 1 area as shown on the Environment Agency (EA) flood Map for planning (Appendix A), so the proposed levels will be dictated by the boundary and engineering constraints as opposed to a predicted fluvial or tidal level. The levels in the proposed development aim to match existing ground levels where possible to minimise the volume bulk earthworks.

4 Flood Risk Overview and Mitigation Measures

4.1 In theory, there are five types/sources of flooding that could affect the proposed development. These are described below with proposed mitigation measures outlined where necessary.

- **Fluvial** – The site is located in a low risk Flood Zone 1. This means that it has an annual probability of <0.1% of experiencing flooding from fluvial sources. There are no mitigation measures required and it will not be addressed further in this report.
- **Tidal** – The site is located in a low risk Flood Zone 1. This means that it has an annual probability of <0.1% of experiencing flooding from tidal sources. There are no mitigation measures required and it will not be addressed further in this report.
- **Groundwater** – The Preliminary Flood Risk Assessment undertaken by Hampshire County Council, provides a map showing areas susceptible to groundwater flooding. From the map, the site is located in an area that has less than 25% susceptibility to groundwater flooding (Appendix D). Moreover, the Partnership for Urban South Hampshire (PUSH) SFRA interactive map shows that there are no recorded groundwater flood incidents at or close to the site, please see Figure 4.1 below. Therefore, it is considered that the risk of groundwater flooding at the site is low, meaning that no mitigation measures are required and it will not be addressed further in this report.

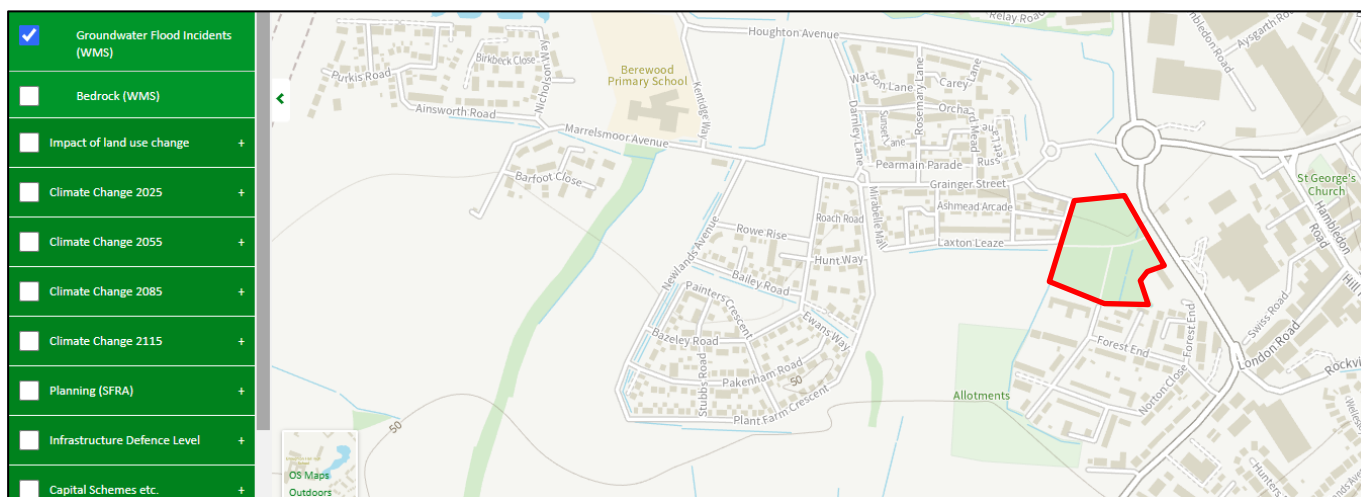


Figure 4.1: PUSH SFRA Recorded Groundwater Flood Incidents Map

- **Surface Water Runoff** – The EA Surface Water Flood Risk Map (Appendix E) indicates that there is a very low to low risk of surface water flooding at the site. The natural flow paths through the site will be maintained, excluding the area of the

existing watercourse which is proposed to be culverted. This will help to manage flood risk and reduce the impact of surface water runoff.

- **Infrastructure Failure** – The PUSH SFRA interactive map shows that there are no previously recorded sewer flooding incidents at or close to the application site according to Southern Water records, please refer to Figure 4.2 below. Therefore, it is considered that the risk of infrastructure failure at the site is low, meaning that no mitigation measures are required, and it will not be addressed further in this report.

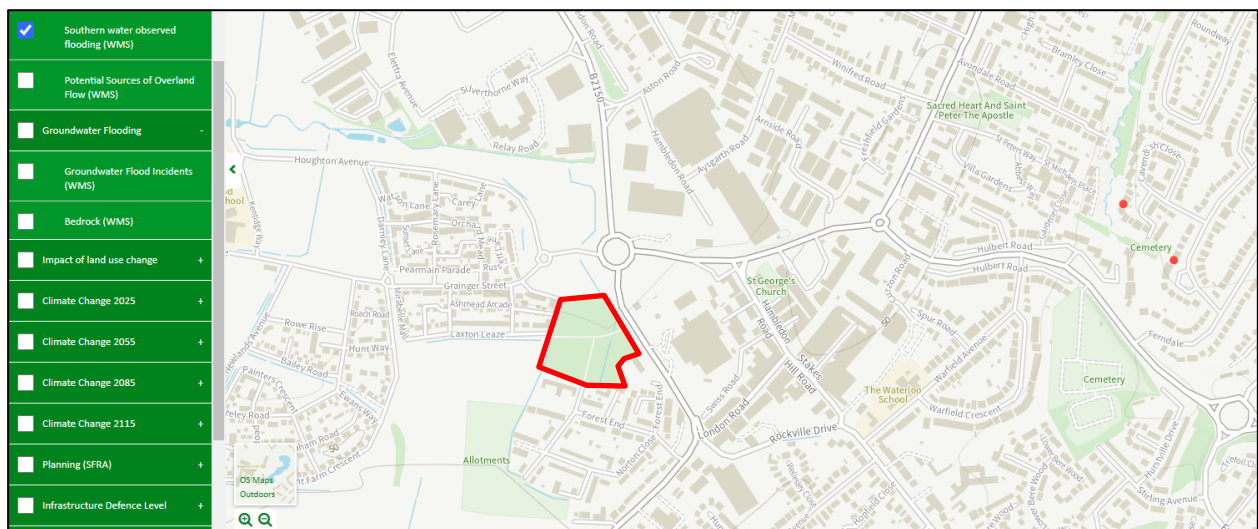


Figure 4.2: PUSH SFRA Recorded Southern Water Sewer Flooding Incidents Map

5 Conclusion

- 5.1 The EA flood maps indicate that the site is located in a low risk Flood Zone 1 area so the proposed levels will be dictated by boundary and engineering constraints as opposed to a predicted fluvial or tidal flood level.
- 5.2 The development is also at a low risk from flooding from the following sources: Fluvial, Tidal, groundwater, surface water and Infrastructure Failure (see Table 5.1).

Flood Mechanism	Source	Flood Risk to the Development	Mitigation Required?
Fluvial	N/A	Low	No
Tidal	N/A	Low	No
Groundwater	Underlying geology and groundwater levels	<25%	No
Surface Water / Overland Flow	Runoff from surrounding elevated land.	Very low – low.	Natural flow paths to be maintained (excluding the area of the existing watercourse which is proposed to be culverted).
Infrastructure Failure	Surface water systems and Water mains	Low	No

Table 5.1: Flood Risk Summary

- 5.3 Therefore, having completed this Flood Risk Assessment, the conclusion is that the proposed development at Blue Star Land, Waterloooville, PO7 7PS, can be safely drained without increasing the risk of flooding to downstream/surrounding properties.

APPENDIX A: EA Indicative Flood Map

ENVIRONMENT AGENCY FLOOD MAP
(March 2023)
Blue Star Land, Berewood



Havant Borough Council, Post code: PO7 7PS Co-ords: E467815, N109333

1. Floodplain

A floodplain is the area that would naturally be affected by flooding if a river rises above its banks, or high tides and stormy seas cause flooding in coastal areas.

There are two different kinds of area shown on the Flood Map. They can be described as follows:

- **Flood Zone 3**  shows the area that could be affected by flooding, either from rivers or the sea, if there were no flood defences. This area could be flooded:
 - from the sea by a flood that has a 0.5% (1 in 200) or greater chance of happening each year;
 - or from a river by a flood that has a 1% (1 in 100) or greater chance of happening each year.
- **Flood Zone 2**  shows the additional extent of an extreme flood from rivers or the sea. These outlying areas are likely to be affected by a major flood, with up to a 0.1% (1 in 1000) chance of occurring each year.

These two colours show the extent of the natural floodplain if there were no flood defences or certain other manmade structures and channel improvements.

- Where there is no blue shading, this shows the area where flooding from rivers and the sea is very unlikely. There is less than a 0.1% (1 in 1000) chance of flooding occurring each year.

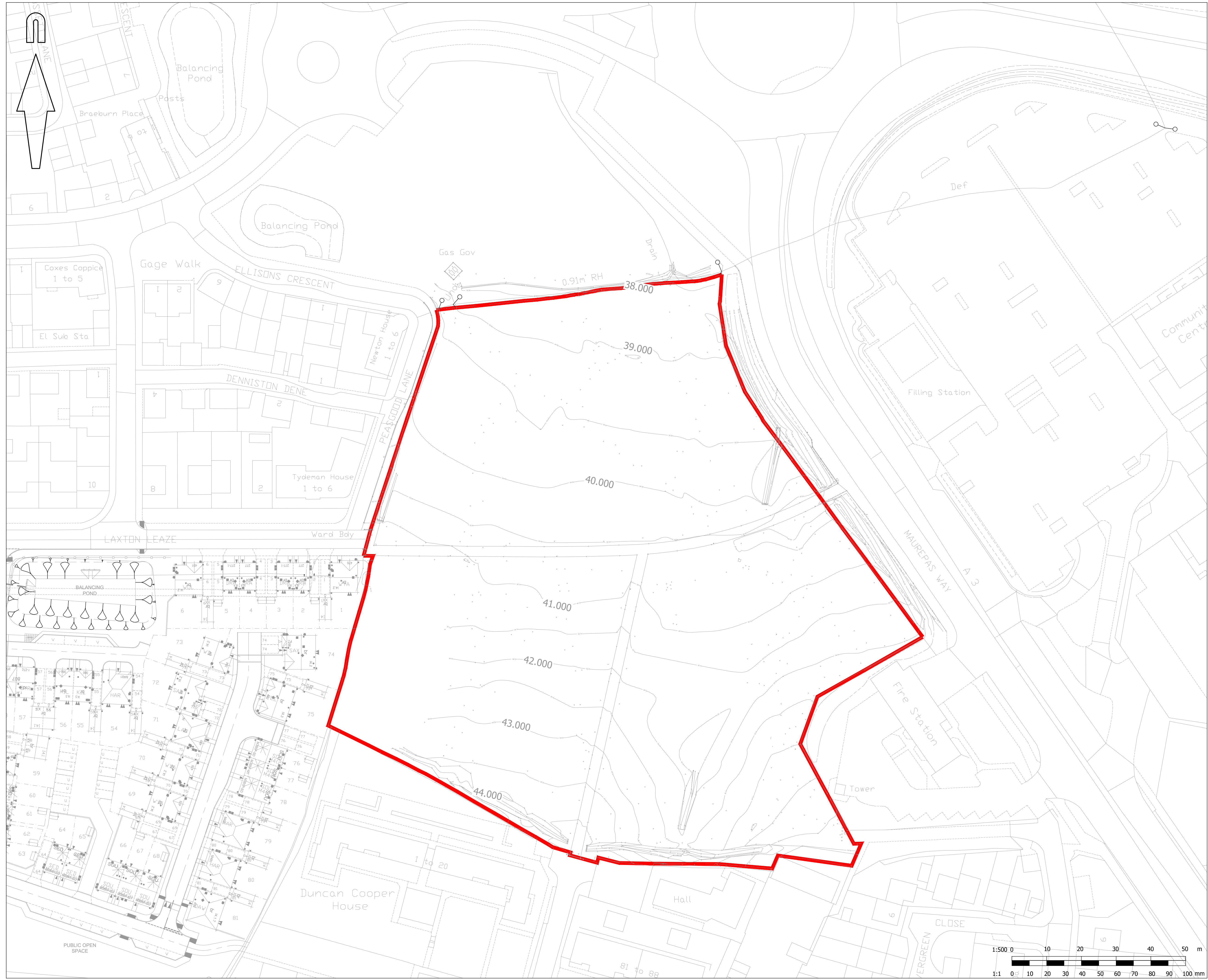
2. Flood Defences

- The purple line  shows all flood defences built in the last five years to protect against river floods with a 1% (1 in 100) chance of happening each year, or floods from the sea with a 0.5% (1 in 200) chance of happening each year, together with some, but not all, older defences and defences which protect against smaller floods. Flood defences that are not yet shown, and the areas that benefit from them, will be gradually added.
- Hatched areas  benefit from the flood defences shown, in the event of a river flood with a 1% (1 in 100) chance of happening each year, or a flood from the sea with a 0.5% (1 in 200) chance of happening each year. If the defences were not there, these areas would be flooded.

3. Main Rivers

The blue line  shows the main rivers, these are usually larger streams and rivers.

APPENDIX B: Topographic Survey



© Mayer Brown Limited Copyright. The drawings, information and data recorded in this document ("the information") is the property of Mayer Brown. This document and the information are solely for the use of the authorised recipient and this document may not be used, copied or reproduced in whole or part for any purposes other than which it was supplied by Mayer Brown. Mayer Brown makes no representation, undertakes no duty and accepts no responsibilities to any third party who may use or rely upon this document or the information.

A1 ORIGINAL

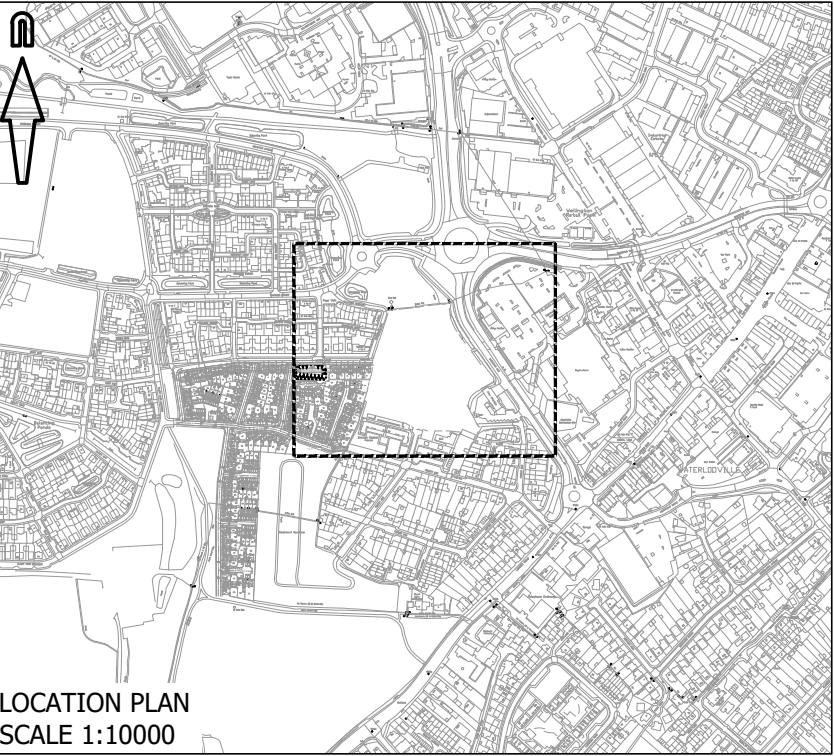
© Crown Copyright and database rights 2023 Ordnance Survey 0100031673

NOTES:

- TOPOGRAPHICAL SURVEY WAS UNDERTAKEN BY ENCOMPASS SURVEYS LTD ON MARCH 2023.

KEY

EXTENT OF DEVELOPMENT BOUNDARY



FOR INFORMATION
NOT FOR CONSTRUCTION

rev.	amendment	checked	date
------	-----------	---------	------

m3
mayer brown

Mayer Brown Limited Lion House
Oriental Road Woking Surrey GU22 8AR
Telephone 01483 750 508 Fax 01483 750 437
wokingoffice@mayerbrown.co.uk www.mayerbrown.co.uk

client **grainger plc**

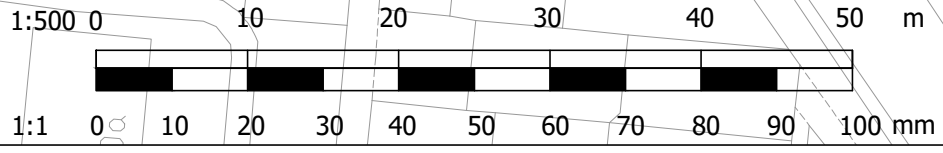
project
BEREWOOD, WATERLOOVILLE
BLUE STAR LAND

scale 1:500 drawn by KD checked by WD

date JANUARY 2023 cad file GA_02.DWG

title
EXISTING TOPOGRAPHICAL SURVEY

drawing number GTWVILLE_BSL/GA/02 rev.



APPENDIX C: Illustrative Site Masterplan



Romsey Portishead Camberley
T: 01794 367703 T: 01275 407000 T: 01276 749050
F: 01794 367276 F: 01794 367276 F: 01794 367276

www.thrivearchitects.co.uk

This drawing is the copyright of Thrive Architects Ltd ©. All rights reserved. Ordnance Survey Data © Crown Copyright. All rights reserved. Licence No. 100007359. DO NOT scale from this drawing. Contractors, Sub-contractors and suppliers are to check all relevant dimensions and levels of the site and building before commencing any shop drawings or building work. Any discrepancies should be recorded to the Architect. Where applicable this drawing is to be read in conjunction with the Consultants' drawings.

Rev	Description
P1	Preliminary Issue
P2	Revised in accordance with SKL-01 P2
P3	SuDS position updated based on latest engineering drawing
P4	Red Line Updated
P5	Revised Layout
P6	Revised Layout
P7	Revised layout
P8	Revised PROW
P9	Updated Attenuation Feature
P10	Revised Layout
P11	Revised Layout

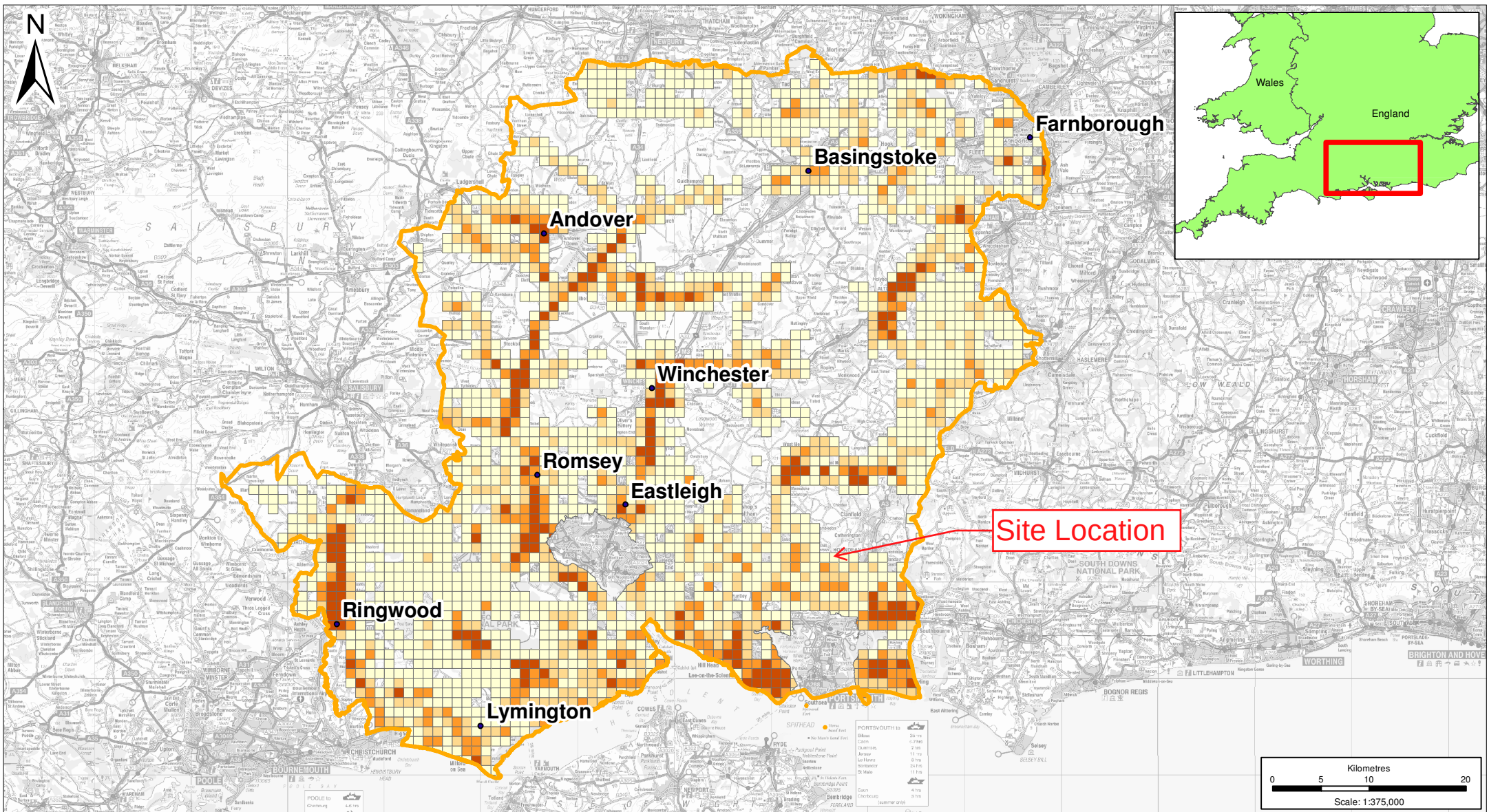
Date	Au	Ch
17.03.23	GR/CI	HT
30.03.23	GR/HM	
03.04.23	GR/SWD	
05.04.23	GR/SWD	
23.05.23	GR/CI	
04.09.23	GR/ER	HT
05.03.24	GR/HT	
23.07.24	GR/AC	GR
25.07.24	GR/AC	GR
06.02.25	GR/MG	
07.02.25	GR/MG	

Project Bluestar Land, Berewood
Drawing Illustrative Masterplan - 01

Client	GRAINGER PLC				
Job no.	GRAI230212			Date	17.03.23
Dwg no.	IMP-01			Rev.	P11
Author	GR/CI	Checked	HT	Scale	1:500@A1
Status	PRELIMINARY			Office	Romsey
Client ref.	-				



APPENDIX D: Susceptibility to Groundwater Flooding Map



APPENDIX E: EA Surface Water Flood Risk Map

ENVIRONMENT AGENCY SURFACE WATER FLOOD MAP
November 2024
Blue Star Land, Berewood



Havant Borough Council, Post code: PO7 7PS Co-ords: E467828, N109330

Risk of Flooding from Surface Water

Surface water flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead.

The shading on the map shows the risk of flooding from surface water in this particular area.

There are four different kinds of area shown on the Flood Map. They can be described as follows:

-  High Risk Area – Each year this area has a greater than 1in30 (3.3%) chance of flooding from surface water:
-  Medium Risk Area – Each year this area has between a 1in100 and a 1in30 (1%-3.3%) chance of experiencing flooding from Surface Water:
-  Low Risk Area – Each year this area has a between a 1in1000 and 1in100 (0.1%-1%) chance of experiencing flooding from Surface Water.
-  Very Low Risk Area – Each year this area has a less than 1in1000 (0.1%) chance of experiencing flooding from Surface Water.

