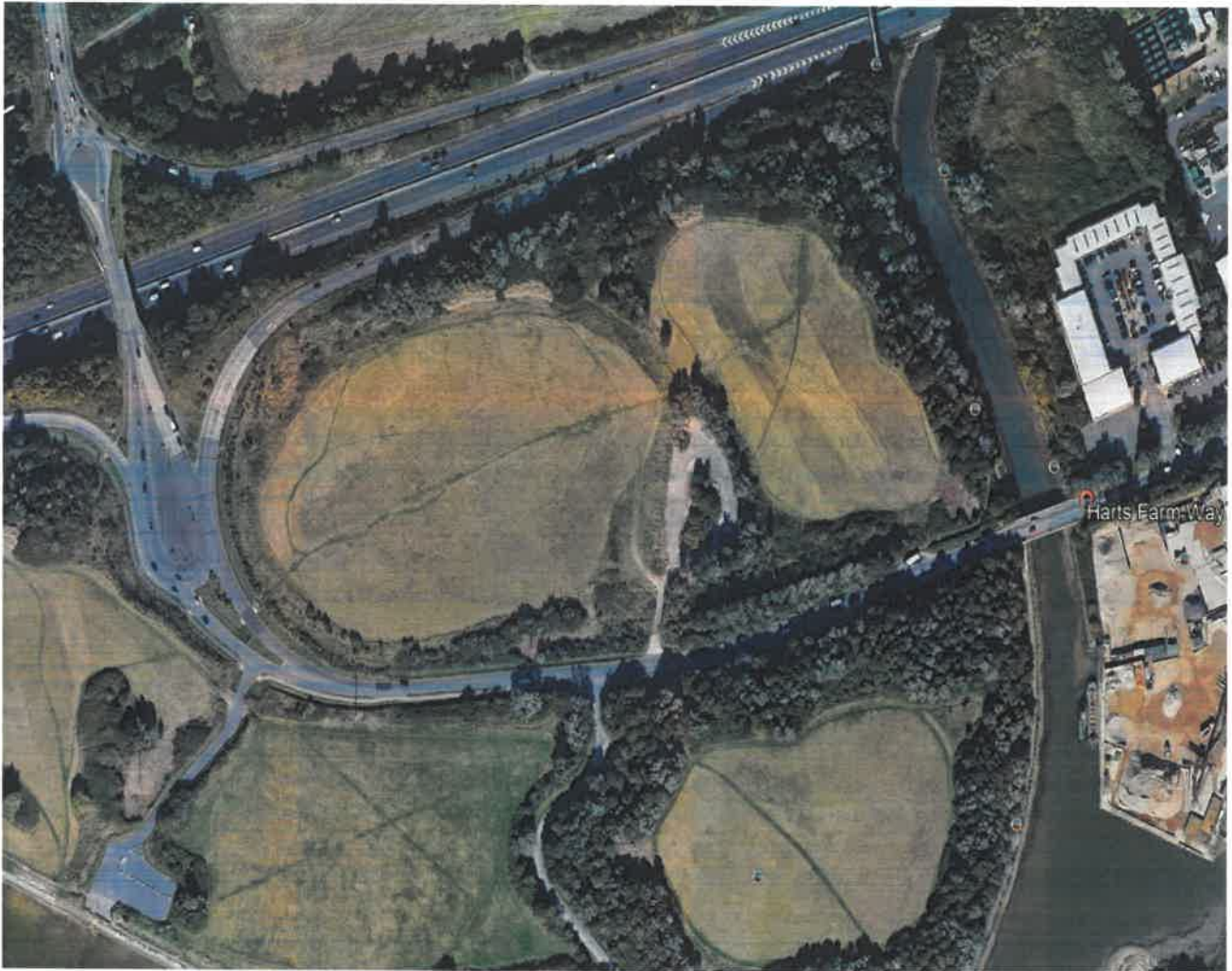




HARTS FARM WAY, HAVANT

Flood Risk Assessment



Date: February 2021

Our Ref: 4199



Executive Summary

Executive Summary

This Flood Risk Assessment (FRA) has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance.

T. R. Collier & Associates Ltd was instructed by Clowes Developments (UK) Ltd to provide Flood Risk advice in support of a full planning application (approximate grid reference: 470131, 105689).

This report demonstrates that the proposed development is at an acceptable level of flood risk, subject to the recommended flood mitigation strategies being implemented.

The site is located within Flood Zone 1 (Low Risk). The NPPF defines Flood Zone 1 as land assessed as having less than a 1 in 1,000 annual probability of river or sea flooding (<0.1%). Therefore fluvial risk can be considered to be low.

Due to the high groundwater levels encountered during the intrusive Geo-Environmental Site Investigation and post installation monitoring, it is recommended that mitigation in the form of sumps and submersible pumps be implemented during the pre-construction/construction phases, dependent on depths and any shoring techniques in place. Ground improvement techniques may also be used at the site to improve the load bearing capacity of the strata thus improving the cohesion nature of the soils. This in combination with the laying of impermeable surfacing will assist in reducing groundwater flood risk at the site post construction.

Ground levels should also be profiled to encourage pluvial runoff and overland flows away from the built development towards the nearest drainage point. Any residual risk posed from pluvial flooding can be mitigated through an appropriate levels design which is to be carried out when establishing finished levels across the development plateaus as part of the detailed design process.

Other sources of flood risk were assessed and are not thought to pose a significant risk to the site. No historical flooding events have been recorded as part of the Havant Borough Council strategic Flood Risk Assessment and Preliminary Flood Risk Assessment to have specifically affected the site and it is not indicated to lie within a Critical Drainage Area as defined within the Havant Borough Council Surface Water Management Plan.

To ensure potential flood flows from the development and drainage would have no adverse impact on flood risk immediately adjacent to the site or elsewhere in the catchment.

It is recommended that a suitable foul and surface water strategy be in place to adequately manage surface and foul water flows from the proposed development appropriately in accordance with guidance and approval of the appropriate regulatory bodies. The discharge is directed towards the tidal Hermitage Stream and Langstone Harbour.

In compliance with the requirements of National Planning Policy Framework, and subject to the mitigation measures proposed, the development could proceed without being subject to significant flood risk. Moreover, the development will not increase flood risk to the wider catchment area as a result of suitable management of surface water runoff discharging from the site.



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1 INTRODUCTION

- 1.1 This Flood Risk Assessment (FRA) has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance.
- 1.2 T. R. Collier & Associates Ltd was instructed by Clowes Developments (UK) Ltd to provide Flood Risk advice in support of a full planning application on Hart Farm Way, Havant, consisting of B2/B8 Units.
- 1.3 This FRA is intended to support an outline planning application and as such the level of detail included is commensurate and subject to the nature of the proposals. Summary information is included as **Table 1.1**.

Table 1.1: Site Summary

Site Name	Harts Farm
Location	Havant
NGR (pprox...)	470131/105689
Application Site Area (ha)	8.3Ha
Development Type	Industrial/Distribution
Flood Zone Classification	Flood Zone 1
NPPF Vulnerability	Less Vulnerable
Environment Agency Office	Hampshire
Lead Local Flood Authority	Havant Borough Council
Local Planning Authority	Havant Borough Council

Sources of Data

- i. Topographical Survey by Greenhatch Group Ref: 36147-T
- ii. Site Layout by MSA Architects, document reference
- iii. OS Explorer Series mapping
- iv. Environment Agency Correspondence
- v. Havant Borough Council Strategic Flood Risk Assessment

Existing Site

- 1.4 The site is located approximately 2 Miles west of Havant Centre. Harts Farm Way lies adjacent to the southern site boundary and A27 abuts the boundary to the north and east. The surrounding land use is industrial and commercial units.
- 1.5 Existing ground levels range between 10.1m 15.1m AOD to the north-east and fall to 3.4m AOD to the East adjacent the Hermitage Stream. A topographical survey is included for reference as **Appendix A**. The sites location is presented within **Figure 1.1**.



Figure 1.1 Site Location Plan

Proposed Development

- 1.6 The outline planning application is to comprise of three B2/B8 Units car parking and service yard areas. The proposed site access is located off Harts Farm Way to the South. Development proposals are included for reference as **Appendix B**.



2 FLOOD RISK PLANNING POLICY

National Planning Policy Framework

- 2.1 The NPPF1 sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. Planning Practice Guidance is also available online2.
- 2.2 The Planning Practice Guidance sets out the vulnerability to flooding of different land uses. It encourages development to be located in areas of lower flood risk where possible and stresses the importance of preventing increases in flood risk off site to the wider catchment area.
- 2.3 The Planning Practice Guidance also states that alternative sources of flooding, other than fluvial (river flooding), should be considered when preparing a Flood Risk Assessment.
- 2.4 The Planning Practice Guidance includes a series of tables that define Flood Zones (Table 1), the flood risk vulnerability classification of development land uses (Table 2) and 'compatibility' of development within the defined Flood Zones (Table 3).
- 2.5 This Flood Risk Assessment is written in accordance with the NPPF and the Planning Practice Guidance.

Flood Map for Planning

- 2.6 With particular reference to planning and development, the Flood Map for Planning produced by the Environment Agency identifies Flood Zones in accordance with Table 1 of the Planning Practice Guidance.
- 2.7 Flood Zone 1 (Low Probability) is defined as land having less than a 1 in 1000 annual probability of river or sea flooding (<0.1% Annual Exceedance Probability).
- 2.8 Flood Zone 2 (Medium Probability) is defined as land having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1% AEP); or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% - 0.1% AEP).
- 2.9 Flood Zone 3a (High Probability) is defined as land having a 1 in 100 or greater annual probability of river flooding (>1% AEP); or land having a 1 in 200 or greater annual probability of flooding from the sea (>0.5% AEP). This is represented by "Flood Zone 3" on the Flood Map for Planning.
- 2.10 Flood Zone 3b (The Functional Floodplain) is defined as land where water has to flow or be stored in times of flood. This is not identified or separately distinguished from Zone 3a on the Flood Map for Planning.



2.11 The site is shown to be located wholly within Flood Zone 1, as shown in **Figure 2.1**.



Figure 2.1

The Design Flood

2.12 The Planning Practice Guidance identifies that new developments should be designed to provide adequate flood risk management, mitigation, and resilience against the 'design flood' for their lifetime.



- 2.13 This is a flood event of a given annual flood probability, which is generally taken as fluvial (river) flooding likely to occur with a 1% annual probability (a 1 in 100 chance each year), or tidal flooding with a 0.5% annual probability (1 in 200 chance each year), against which the suitability of a proposed development is assessed and mitigation measures, if any, are designed.

Climate Change

- 2.14 Predicted future change in peak river flows caused by climate change are provided by the Environment Agency, with a range of projections applied to regionalised 'River Basin Districts'.
- 2.15 The catchment falls within the South East River Basin District. **Table 2.1** identifies the relevant peak river flow allowances from this River Basin District.

Table 2.1: Peak River Flow Allowance for the South East River Basin District

Allowance Category	Total potential change anticipated for the '2020's' (2015 to 2039)	Total potential change anticipated for the '2020's' (2040 to 2069)	Total potential change anticipated for the '2020's' (2070 to 2115)
Upper end	20%	30%	50%
High Central	15%	20%	30
Central	10%	15%	20%

- 2.16 When determining the appropriate allowance for use in a Flood Risk Assessment the Flood Zone classification, flood risk vulnerability and the anticipated lifespan of the development should be considered. **Table 2.2** provides a matrix summarising the Environment Agency's guidance on determining the appropriate allowances.

Table 2.2: Application of the Appropriate Climate Change Allowance

Flood Zone	Essential Infrastructure	High Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
1	Use the central allowance				Use none of the allowances
2 or 3a	Use the upper end allowance	Use the higher central and upper end to assess a range of allowances	Use the higher central and upper end to assess a range of allowances	Use the central and higher central to assess a range of allowances	Use the central allowance
3b	Use the upper end allowance	Development should not be permitted	Development should not be permitted	Development should not be permitted	Use the central allowance

*If development is considered appropriate when not in accordance with Flood Zone vulnerability categories, then it would be appropriate to use the upper end allowance.



- 2.17 The site is located entirely within Flood Zone 1, the proposed development is classified as 'Less Vulnerable', and it has an anticipated lifespan of over 50 years. Therefore, the Central allowances for the '2050s' epoch will be considered.
- 2.18 An additional 40% allowance on flows to account for climate change would therefore be appropriate.
- 2.19 However, given that the site is considerably removed from the nearest extent of Flood Zone 2 or 3, the effects of climate change are considered to be negligible.

Strategic Flood Risk Assessment

- 2.20 A Strategic Flood Risk Assessment (SFRA) is a study carried out by one or more local planning authorities to assess the risk to an area from flooding from all sources, now and in the future.
- 2.21 The Havant Borough Council Level 2 SFRA⁴ was produced to facilitate the application of Sequential and Exception Tests to screen allocated development sites. The proposed application site is not referenced within the Level 2 SFRA. Information from the Level 2 SFRA will be referenced within **Section 3** where applicable.

Preliminary Flood Risk Assessment

- 2.22 A Preliminary Flood Risk Assessment (PFRA) is an assessment of floods that have taken place in the past and floods that could take place in the future. It generally considers flooding from surface water runoff, groundwater and ordinary watercourses, and is prepared by the Lead Local Flood Authorities.
- 2.23 The Havant Borough Council PFRA⁵ considers flooding from surface water runoff, groundwater, ordinary watercourses and canals. It also references the historic river flooding which occurred in the local area in 1992, 1993 and 1998. However, no historic instances of flooding at the site are referenced. Information from the PFRA will be referenced within this report where applicable.

Local Flood Risk Management Strategy

- 2.24 A Local Flood Risk Management Strategy (LFRMS) is prepared by a Lead Local Flood Authority to help understand and manage flood risk at a local level. The LFRMS aims to ensure that the knowledge of local flood risk issues is communicated effectively so that they can be better managed. The LFRMS also aims to promote sustainable development and environmental protection.
- 2.25 The Havant Council LFRMS has been reviewed and will be referenced within this report where applicable.

Local Plan

- 2.26 The Havant Borough Council Core Strategy, flood risk CS Policy 2, states that all development should be directed to locations with the least impact on flooding or water resources.



- 2.27 Where development is proposed in flood risk areas, mitigation measures must be put in place to reduce the effects of flood water. Both greenfield and brownfield sites should be assessed for their contribution to overall flood risk, taking into account climate change.
- 2.28 All development should aim to limit surface water run-off within the site as a means to reduce overall flood risk and protect the quality of the receiving watercourse by giving priority to the use of sustainable drainage techniques in developments.
- 2.29 Information from the Havant Borough Council Core Strategy will be reference where applicable.



3 POTENTIAL SOURCES OF FLOOD RISK

- 3.1 Flooding can occur from a variety of sources, or combination of sources, which may be natural or artificial. **Table 3.1** below identifies the potential sources of flood risk to the site in its current condition, and the impacts which the development could have in the wider catchment, prior to mitigation. These are discussed in greater detail in the forthcoming section. The mitigation measures proposed to address flood risk issues and ensure the development is appropriate for its location are discussed within **Section 4**.

Table 3.1: Pre-Mitigation Sources of Flood Risk

Flood Source	Potential Risk				Description
	High	Medium	Low	None	
Fluvial			X		The site lies entirely within Flood Zone 1
Coastal				X	The site has no tidal influences
Canals		X			There are no canals in the vicinity of the site
Groundwater		X			TRC site investigation recorded perched and standing groundwater at the site
Reservoirs and waterbodies			X		The site is shown to fall outside of the area at risk of reservoir failure
Pluvial runoff		X			Pluvial flood risk at the site is indicated to be very low within the majority of the site. However, there is a low risk flow route through the site with some isolated high risk areas.
Sewers			X		The sewer network around the site may have limited capacity which could be exceeded in an extreme storm event.
Effect of Development on Wider Catchment		X			The development will not increase impermeable surfaces or look to impede surface water flow routes. However, new site drainage will be required to adequately manage surface water flows implemented as part of the new development proposals in accordance with local and wider guidance.



Fluvial Flood Risk

- 3.2 Flooding from watercourses occurs when flows exceed the capacity of the channel, or where a restrictive structure is encountered, which leads to water overtopping the banks into the floodplain. This process can be exacerbated when debris is mobilised by high flows and accumulates at structures.

Main Rivers

- 3.3 The site is shown by the Environment Agency Flood Map for Planning to lie entirely within Flood Zone 1, at Low Probability of fluvial flooding. The closest Main River to the site is the Hermitage Stream which is located approximately 25m East of the proposed development site. The Hermitage Stream is tidal and discharges to Langstone Harbour. **Figure 2.1.** The level difference between the site and Hermitage Stream is approximately 7m.
- 3.4 The site and access routes are shown to be well removed from any flood extent. The distance and intervening topography between the site and the surrounding watercourses is such that the overall risk is considered to be low.

Groundwater Flood Risk

- 3.5 Groundwater flooding occurs when the water table rises above ground elevations. It is most likely to happen in low lying areas underlain by permeable geology. This may be regional scale chalk or sandstone aquifers, or localised deposits of sands and gravels underlain by less permeable strata such as that in a river valley.
- 3.6 British Geological Mapping, indicates that the site is underlain with superficial deposits.
- 3.7 **Introduction** – A phase 2 Geo-environmental investigation of land at the site has been completed in order to review risks associated with ground conditions in view of potential development of the site for commercial/industrial use.
- 3.8 **Site Location and Description** – The site comprises a predominantly rectangular shaped plot of land, approximately 9 hectares in size. It is grassed/vegetated open space.
- 3.9 **Geology** – The site is underlain by Made Ground (including landfill material). The superficial natural strata is understood to comprise predominantly Raised Marine Deposits that are variably granular and cohesive but with potential River Terrace and Tidal Flat Deposits and alluvium encroaching onto northern, southern and eastern areas of the site respectively. The solid geology is characterised by the presence of Chalk (Seaford or Newhaven Formations).
- 3.10 **Hydrogeology** – The superficial deposits are characterised as Secondary Aquifers. The underlying Chalk is characterised as a Principal Aquifer, however the site is not located within a Source Protection Zone.
- 3.11 **Hydrology** – Immediately east of the site is the Hermitage Stream. The northern edge of the Langstone Harbour is situated approximately 170m south of the site, at its closest point.



- 3.12 **Site History** – Up until the late 1960's/1970's, the site comprised tidal, mud flats, surface water and marshland. It is understood that the site was reclaimed using a clay and steel sheet pile bund and that various phases of landfilling between the 1970's – 1990's took place resulting in the deposition of domestic landfill, incinerator waste and road construction waste; further groundworks (activities unknown) are also evident from aerial photographs post 2000 in the south west of the site.

- 3.13 **Ground Conditions Encountered** – Ground conditions encountered during the investigation were consistent with those identified in the published literature and comprised a consistently thick layer of Made Ground (up 11.5m thick) comprising variably a cohesive 'capping material' and landfill; the landfill thickness ranged from approximately 4.5-7.4m thick across the site.

Beneath the made ground in the east of the site River Terrace Deposit (maximum 5m thick) comprising sand gravel were recorded. Beneath the made ground in the west of the site alluvium (maximum 3.5m thick) was recorded comprising sandy gravelly clay or silty clay. White chalk was encountered beneath superficial strata in the east and west and directly beneath the chalk in the centre of the site.

Groundwater strikes were recorded in both landfill and superficial strata at depths ranging between 3.9 and 11.5m bgl during the investigation; during return monitoring visits, the depth to groundwater was typically in excess of 5m.

- 3.14 Overall risk posed from this flood source is therefore considered to be low subject to the implementation of appropriate mitigation. Refer to **Section 4** for further details.

Flood Risk from Reservoirs & Large Waterbodies

- 3.15 Flooding can occur from large waterbodies or reservoirs if they are impounded above the surrounding ground levels or are used to retain water in times of flood. Although unlikely, reservoirs and large waterbodies could overtop or breach leading to rapid inundation of the downstream floodplain.
- 3.16 To help identify this risk, reservoir failure flood risk mapping has been prepared, this shows the largest area that might be flooded if a reservoir were to fail and release the water it holds. The map displays a worst case scenario and is only intended as a guide.



- .17 The nearest reservoir breach flood outline is from Southwick Parklake which lies approximately 5 miles northwest of the site.
- 3.18 The site is shown to be significantly removed from any reservoir inundation zone should reservoir failure occur. There are no other large waterbodies in the area. Therefore, flood risk from these sources is considered to be low.

Pluvial Flood Risk

- 3.19 Pluvial flooding can occur during prolonged or intense storm events when the infiltration potential of soils, or the capacity of drainage infrastructure is overwhelmed leading to the accumulation of surface water and the generation of overland flow routes.
- 3.20 Risk of flooding from surface water mapping has been prepared, this shows the potential flooding which could occur 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.

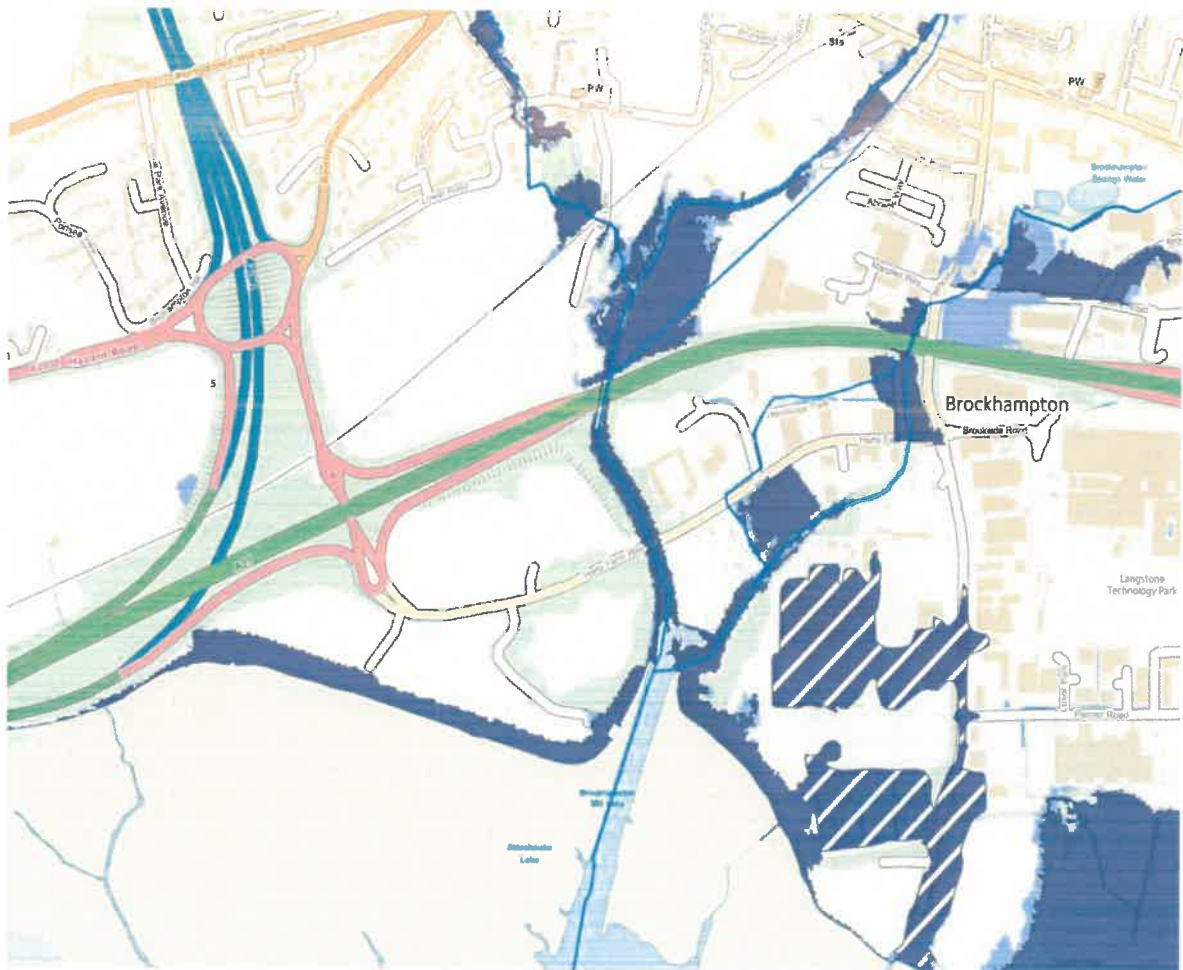


Figure 3.4: Risk of flooding from surface water mapping



- 3.21 The majority of the site is at 'Very Low' risk of surface water flooding. However, there is a pluvial flow route shown to engage across the site from northwest to the east, occurring within a 1 in 1000 year event, routing pluvial flows through the site onto Sunningdale Road to exit along the eastern site boundary.
- 3.22 There are also areas within localised topographical depressions across the site, where ponding is shown to occur within a 1 in 30 year, High Risk and 1 in 100 year, Medium Risk events. Depths are indicated to be between 150mm-300mm, with depths of 300mm-600mm within a singular low spot to the west of the site.
- 3.23 Any areas of 'Medium' to 'High' pluvial flooding are shown to be limited to topographical lows and any residual risk posed from pluvial flooding can therefore be mitigated through an appropriate levels design.
- 3.24 Overall risk posed is therefore considered to be Medium, mitigation measures are discussed further within **Section 4**.

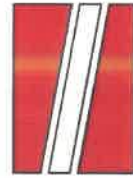
Flood Risk from Sewers

- 3.25 Sewer flooding can occur when the capacity of the infrastructure is exceeded by excessive flows, or as a result of a reduction in capacity due to collapse or blockage, or if the downstream system becomes surcharged. This can lead to the sewers flooding onto the surrounding ground via manholes and gullies, which can generate overland flows.
- 3.26 A private network is envisaged to be present on the adjacent site. Manhole covers and surface water drainage features can be seen on site as shown on the topographical survey (**Appendix A**).
- 3.27 However in the event of sewer exceedance it is considered the local topography would route flows away from site towards along the adjacent highways to the north and south therefore overall risk posed from sewer flooding is considered to be low.

Effect of Development on Wider Catchment

Development Land Use/Drainage Considerations

- 3.28 The site currently lies over a previous landfill or impermeable areas. The proposed development would introduce significant additional impermeable area to the site and as such there would be an increase in the surface water run-off rate.
- 3.29 To ensure potential flood flows from the development and drainage would have no adverse impact on flood risk immediately adjacent to the site or elsewhere in the catchment, direct discharge to the adjacent tidal Hermitage Stream and eventually Langstone Harbour.
- 3.30 The development would also result in foul flows which would require management to ensure flows were directed to appropriate discharge points with no adverse impact on the immediate area or elsewhere in the catchment.



- 3.31 Mitigation measures to address both surface water and foul drainage are therefore considered within **Section 4**.



4 FLOOD RISK MITIGATION

- 4.1 **Section 3** has identified the sources of flooding which could potentially pose a risk to the site and the proposed development. This section of the FRA sets out the mitigation measures which are to be incorporated within the proposed development to address and reduce the risk of flooding to within acceptable levels.

Development Levels

- 4.2 It is recommended that ground levels should be profiled to fall away from the building footprints to help mitigate the risk of pluvial and sewer flooding.

Pluvial Flow Routing

- 4.3 Any residual risk posed from pluvial flooding can be mitigated through an appropriate levels design which is to be carried out when establishing finished levels of the development plateaus as part of the detailed design process.
- 4.4 Ground levels should also be profiled to encourage pluvial runoff and overland flows away from the built development towards the nearest drainage point.

Groundwater

- 4.5 Due to the perched and standing groundwater being recorded during the Phase II Geo-Environmental Investigation and post installation monitoring, it is recommended that de-watering techniques be used to mitigate any risk posed from groundwater flooding.
- 4.6 The construction of sumps and submersible pumps should be considered and dependent on the depth of excavation to be undertaken, the provision of shoring techniques to ensure that adequate safety precautions are in place ensuring stability of groundworks during the construction phase.
- 4.7 Ground improvement techniques may be used at the site to improve the load bearing capacity of the strata thus improving the cohesion nature of the soils. This in combination with the laying of impermeable surfacing will assist in reducing groundwater flood risk and emergence at the site post construction.

Surface & Foul Water Drainage

- 4.8 To ensure potential flood flows from the development and drainage would have no adverse impact on flood risk immediately adjacent to the site or elsewhere in the catchment, surface water discharge is directed to the tidal Hermitage Stream with no infiltration.
- 4.9 The development would also result in foul flows which would require management to ensure flows were directed to appropriate discharge points with no adverse impact on the immediate area or elsewhere in the catchment.



- 4.10 It is therefore recommended that a suitable foul and surface water strategy be established to adequately manage flows from the proposed development in accordance with guidance and approval of the appropriate regulatory bodies.



5 CONCLUSIONS AND RECOMMENDATIONS

- 5.1 This Flood Risk Assessment (FRA) has been prepared in accordance with requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance.
- 5.2 This FRA is intended to support a outline planning application and as such the level of detail included is commensurate and subject to the nature of the proposals.
- 5.3 This report demonstrates that the proposed development is at an acceptable level of flood risk, subject to the recommended flood mitigation strategies being implemented. The identified risks and mitigation measures are summarised within **Table 5.1:**

Table 5.1: Summary of Flood Risk Assessment

Flood Source	Risk & Proposed Mitigation Measures
Groundwater	Due to the perched and standing groundwater being recorded at the site. It is recommended that mitigation in the form of de-watering techniques be used to mitigate any risk posed from groundwater flooding during construction. The construction of sumps and submersible pumps should be considered and dependent on the depth of excavation to be undertaken, the provision of shoring techniques to ensure that adequate safety precautions are in place ensuring stability of groundworks during the construction phase. Ground improvement techniques may be used at the site to improve the load bearing capacity of the strata thus improving the cohesive nature of the soils. This in combination with the laying of impermeable surfacing will assist in reducing groundwater flood risk at the site post construction.
Pluvial runoff / Sewers	Residual risk posed from pluvial/sewer flooding can be mitigated through an appropriate levels design which is to be conducted to establish formation levels of the development plateaus as part of the detailed design process. Ground levels should be nominally raised above surrounding levels and re-profiled to encourage pluvial runoff and overland flows away from the built development towards the nearest drainage point.
Impact of the Development	A suitable foul and surface water strategy should be developed to adequately manage flows from the proposed development in accordance with guidance and approval of the appropriate regulatory bodies.

- 5.4 In compliance with the requirements of National Planning Policy Framework, and subject to the mitigation measures proposed, the development could proceed without being subject to significant flood risk. Moreover, the development will not increase flood



risk to the wider catchment area as a result of suitable management of surface water runoff discharging from the site.



APPENDIX A

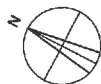
Topographical Survey



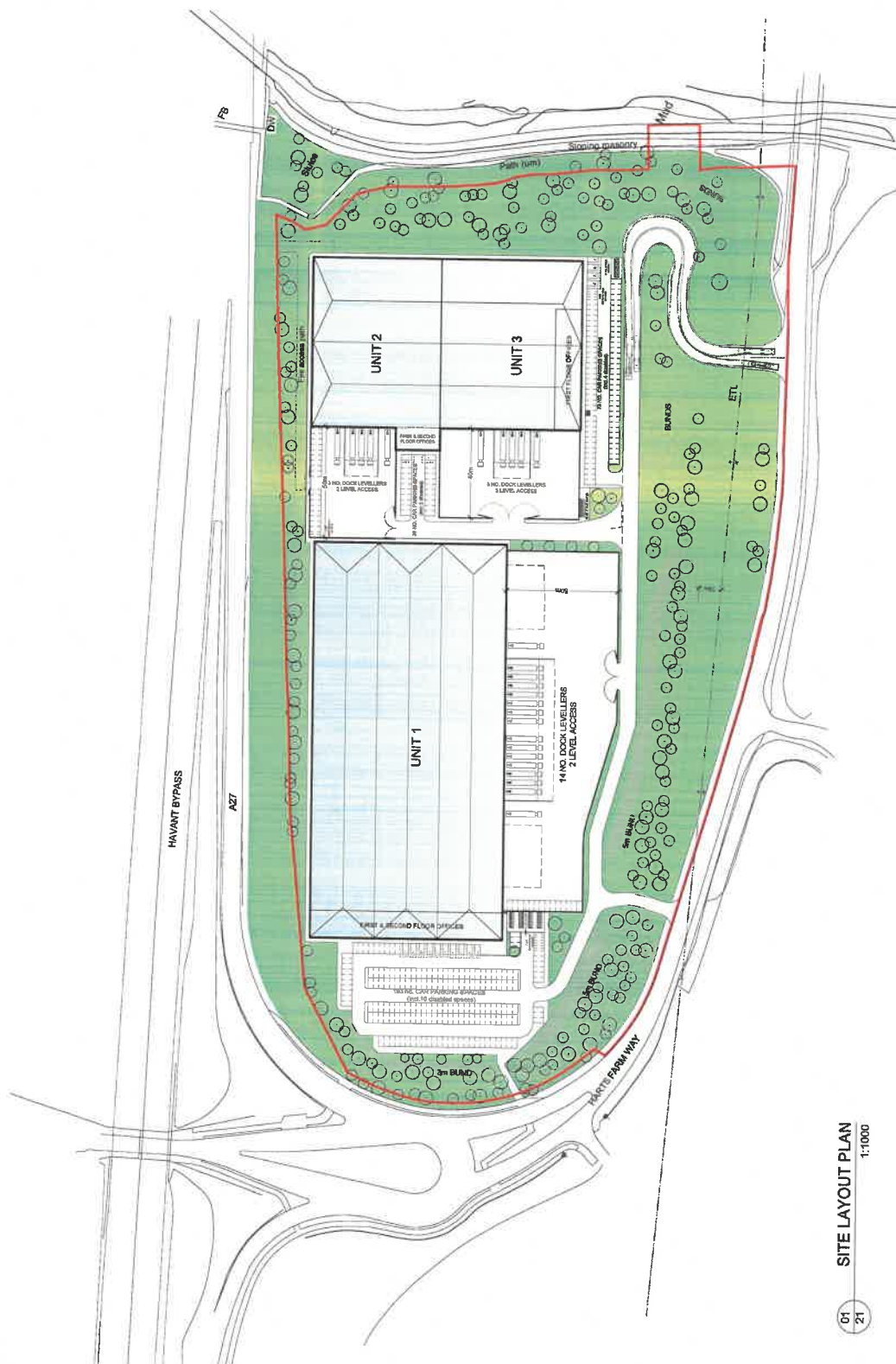
APPENDIX B

Development Proposals

SUBJECT TO STATUTORY CONSENTS
 SUBJECT TO SURVEY
 BASED ON OR MAP REPRODUCED BY R.C. MANN
 CONTROLLER OF THE STATIONARY OFFICE
 COPYRIGHT
 COPYRIGHT RESERVED
 DO NOT SCALE THIS DRAWING
 DO NOT USE ELECTRONIC VERSIONS OF
 SETTLEMENT DIMENSIONS UNLESS SPECIFICALLY
 AUTHORIZED BY MICHAEL SPARKS ASSOCIATES
 USING AN ELECTRONIC VERSION OF THE
 REQUIRED DIMENSIONS TAKE PRECEDENCE
 MICHAEL SPARKS ASSOCIATES OR ANY
 OF ITS AFFILIATES OR SUBSIDIARIES



AREA SCHEDULE					
GK		sqm	sqft		
1	Unit		sqft		
	2 Story Office	15,360	165,960		
	Subtotal	1,824	20,710		
		17,277	185,970		
2	Unit		sqft		
	2 Story Office	4,325	46,705		
	Subtotal	360	3,872		
		4,685	50,580		
3	Unit		sqft		
	First floor office	4,734	50,955		
	Subtotal	575	6,100		
		5,309	57,165		
TOTAL		27,471	294,445		
				sq	area
				8,527	20,660
					(APPROX.)



01 21
SITE LAYOUT PLAN
1:10000

€	12/02/2021	Site area updates in schedule, under open to the public	A1	A2
D	20/01/2021	One and eight parking updated, steps down to the 3rd floor, boundary updated to include drainage connection	A1	A2
C	14/01/2021	Secondary site access shown, adding trees	A1	A2
B	08/10/2020	Adding trees shown	P8	A2
A	03/10/2020	Access road updated	P8	A2
	24/04/2020	First issue	P8	A2
	DATE	NOTE		



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Exton Estates
 REAL ESTATE

**12345
HARTS FARM WAY, HAVANT
MASSACHUSETTS 01830**
SITE LAYOUT PLAN
EXTON ESTATES
 12345

DATE: 11/10/00
 DRAWN: PG
 SCALE: 1"=100' @ A1
 DATE: SEPTEMBER 2020
 STATUS: AS BUILT
 PREPARED BY: FEASIBILITY
 CHECKED BY: AC
 DESIGNED BY:

31383 / FE / 21 E
 31383 / FE / 21 E
 31383 / FE / 21 E

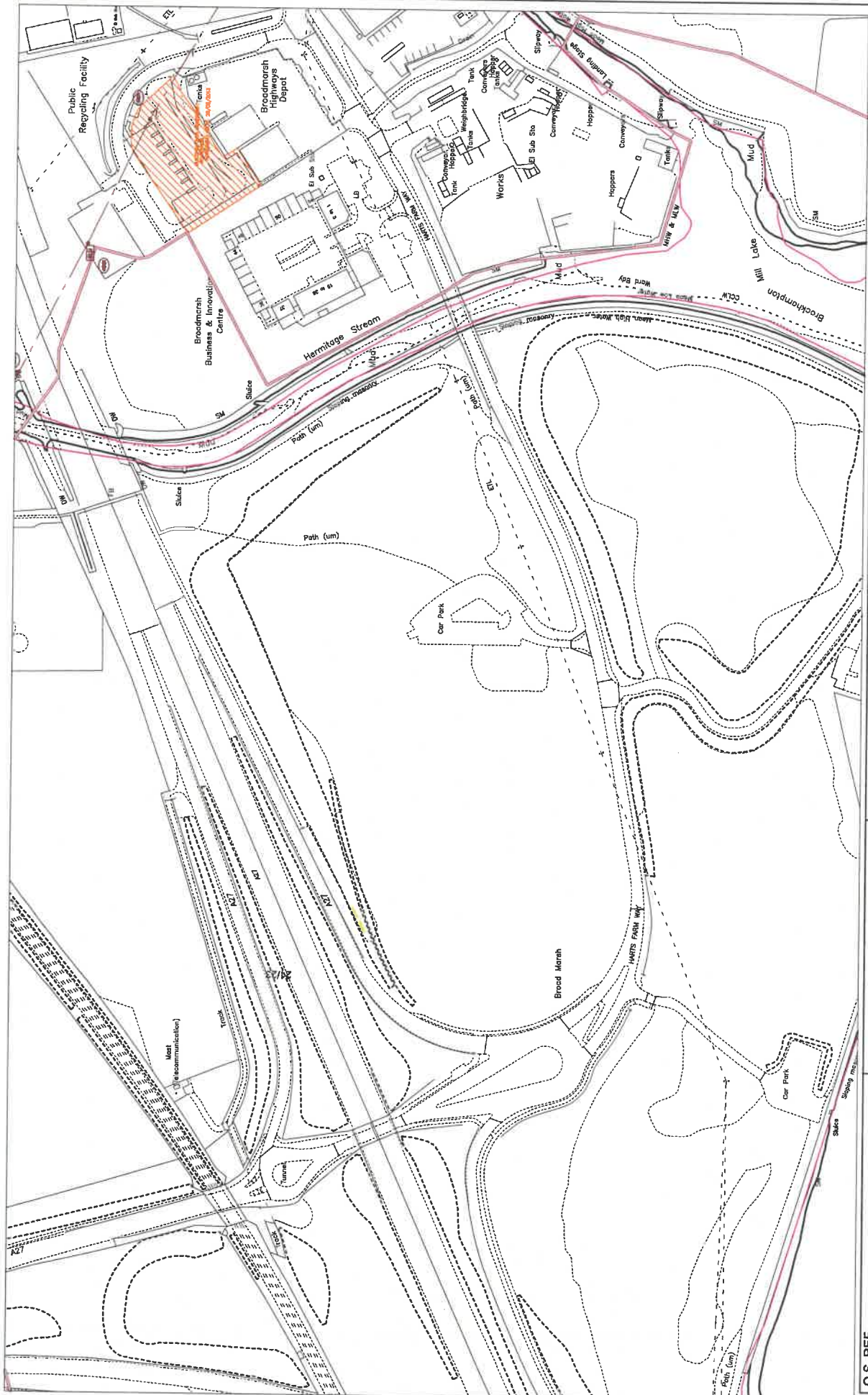


APPENDIX C

Southern Water Sewer Records

SEWER RECORDS PAGE 1 OF 2

105958



105380

O.S. REF. SU7005NW		Drawn by: KumarAmb	
469655		Scale: 1:2500	
Title: Land at Brockhampton West Hart		Date: 02/06/2020	
The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. WARNING: BAC pipes are constructed of Bonded Asbestos Cement WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement Based upon Ordnance Survey Digital Data with the permission of the controller of H.M.S.O. Crown Copyright Reserved Licence No. WU 298530.		470595 Southern Water N	

Left Side				Right Side			
Node	Cover	Invert	Size	Material	Shape	Node	Cover
3901X	3.25		OTHER	Cp	CIRC		
4901X	2.84		UNK	UNK	CIRC		
5901X	3.01	0.11	OTHER	Cp	CIRC		

LINE STYLES / COLOURS

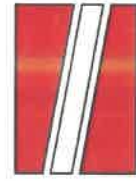
Line Styles:

- A: Solid
- B: Dashed
- C: Dotted
- D: Long Dash
- E: Short Dash
- F: Wavy
- G: Zigzag
- H: Solid with Dots
- I: Solid with Dots (thick)
- J: Solid with Dots (thin)
- K: Solid with Dots (thick)
- L: Solid with Dots (thin)

Colors:

- A: Black
- B: White
- C: Red
- D: Green
- E: Blue
- F: Yellow
- G: Cyan
- H: Magenta
- I: Brown
- J: Grey
- K: Light Grey
- L: Dark Grey
- M: Very Dark Grey
- N: Very Light Grey
- O: Very Dark Blue





APPENDIX D

Extract from Havant Borough Council SFRA

Basic Information



The Site: The site lies to the south of the A27 in the Brockhampton area, to the west of the teardrop junction.

Site Area: 9.29ha

Allocation Proposal: Commercial / Leisure ('less vulnerable')

Flood Risk Information

Source / Pathway: The dominant source of flooding to this site will be fluvial flooding from the watercourse to the east of the site (Brooklands stream)

Level of Flood Risk: Present day flood mapping shows only the areas immediately adjacent to the Brooklands stream to the east of the site being at risk of flooding. This area increases to a small degree with climate change, but still leaves the vast majority of the sites free from flood risk.



Current Day Zones 2 & 3 vs Climate Change 2115. Source: EA Flood Map and PUSH SFRA

Sequential Approach - Can areas of flood risk be avoided?

Yes – the vast majority of the site is free from flood risk.

If flood risk cannot be avoided, what is the preferred approach?

n/a

Conclusion on prospect of safe development in light of flood risk

There is a good prospect of safe delivery. The vast majority of the site is free from flood risk.

Implications for Local Plan 2036

Allocation acceptable in flood risk terms. Policy would have to stipulate that small areas at risk of flooding now and in the future must be avoided.

Flood map for planning

Your reference
4199

Location (easting/northing)
470131/105689

Created
9 Feb 2021 12:51

Your selected location is in flood zone 1, an area with a low probability of flooding.

This means:

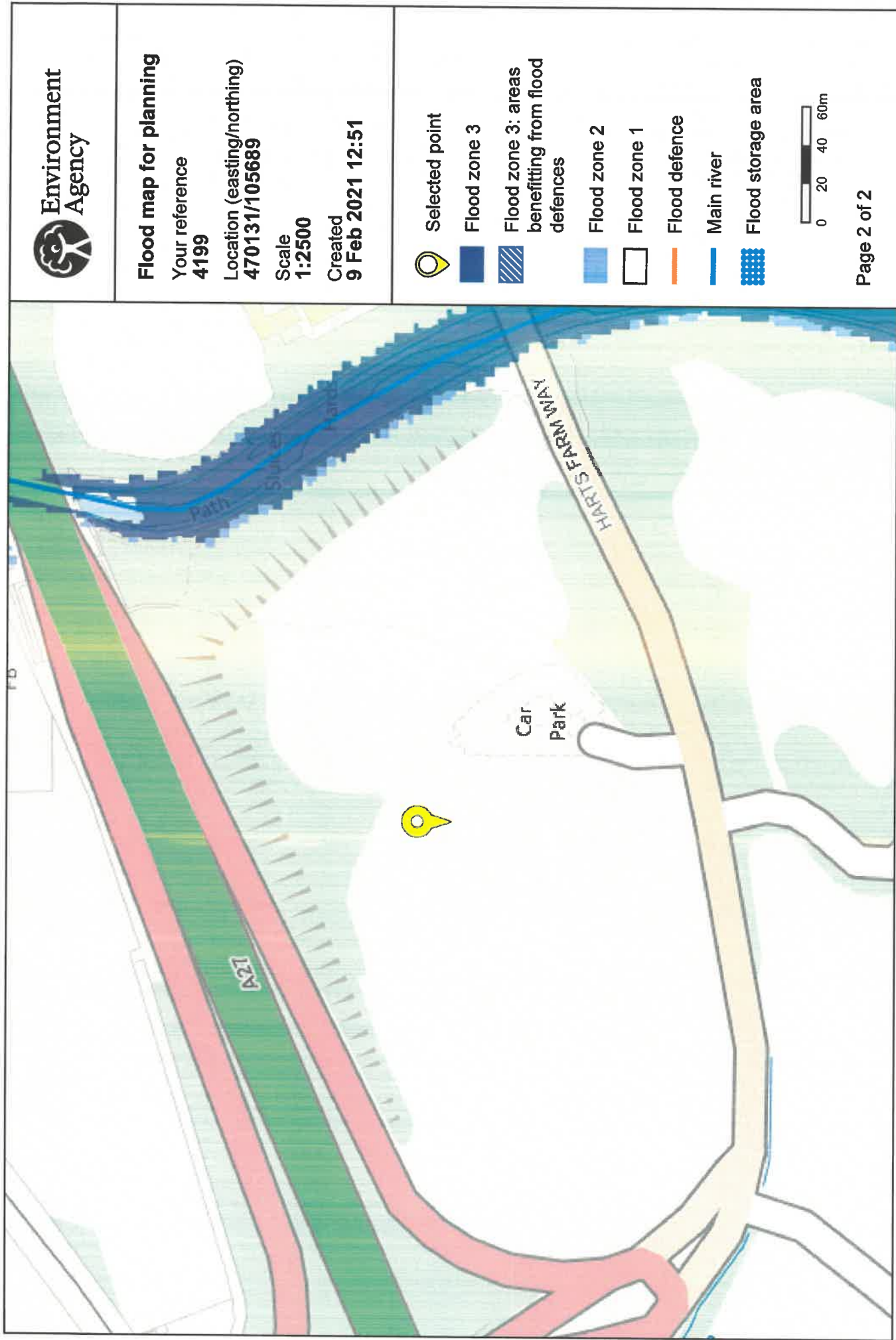
- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

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<https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>



DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND
REPORT ANY OMISSIONS OR ERRORS



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email: can@wgg.com



Client:
HAVANT BOROUGH COUNCIL

Project:
BROCKHAMPTON WEST

Drawing Title:
SITE LOCATION PLAN

REV	DESCRIPTION	BY	CHK	APP	DATE
	Scale @ A4	Drawn	Date	Checked	Date
	RTS	WP	18.04.17	MO	18.04.17
	Project No.	LDN	Type	Drawing No.	Revision
	A102760	LDN	N	001	00

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Borough of Havant



SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
CONSTRUCTION	IT IS CONSIDERED THAT THE PROPOSED WORKS ARE WITHIN THE SCOPE OF A COMPETENT CONTRACTOR AND AS SUCH NO UNUSUAL HAZARDS HAVE BEEN IDENTIFIED. WITH THE EXCEPTION OF THE FOLLOWING:-
MAINTENANCE/OPERATION	THE CONTRACTOR TO PROVIDE METHOD STATEMENTS TO HIGHLIGHT & MINIMISE RISKS FOR ELEMENTS OF WORK INDICATED ON THIS DRAWING MAINLY WORKING AT DEPTH & THE REQUIRED TEMPORARY SUPPORT FOR EXISTING
DECOMMISSION/DEMOLITION	SETTING OF PREVENTION MEASURES TO BE BY UNIDENTIFIED AT REGULAR INTERVALS (APPROX 6 MONTHS) BY SPECIALIST
NO SPECIAL REQUIREMENTS	
IT IS ASSUMED THAT ALL WORKS WILL BE CONDUCTED BY A COMPETENT CONTRACTOR AND NO UNUSUAL HAZARDS ARE ANTICIPATED. TO AN APPROX. 1:1000	

- DRAINAGE NOTES**
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS AND SPECIALISTS DRAWINGS AND SPECIFICATIONS.
 2. ALL DRAINAGE WORK TO BE CARRIED OUT IN ACCORDANCE WITH BS 8301, BS 8005 AND THE BUILDING REGULATIONS.
 3. ALL PIPES ARE TO HAVE SURROUND IN ACCORDANCE WITH DRAINAGE DETAILS, UNLESS NOTED OTHERWISE.
 4. FOR EXACT LOCATION OF RAIN WATER AND FOUL WATER OUTLET, REFER TO ARCHITECTS DRAWINGS.
 5. SURFACE WATER DRAINS SHALL BE EITHER H.D.P.E. RIDGE DRAIN TWIN WALL CARRIER PIPE BY POLYPIPE PLC (OR SIMILAR APPROVED) TO BS EN 1401-1 OR P.C.C. PIPES TO BS 5911 (PWT 100) OR VITRIFIED CLAY TO BS 65.
 6. FOUL WATER DRAINS SHALL BE EITHER P.V.C. PIPEWORK BY POLYPIPE PLC (OR SIMILAR APPROVED) TO BS EN 1401-1 OR VITRIFIED CLAY TO BS EN 208.
 7. ALL GRP UNDERGROUND TANKS ARE TO BE BEDDED ON AND ENCASED IN 225mm C30 20mm AGG. CONCRETE STRICTLY IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.
 8. ROAD GULLY OUTLET PIPE INVERT LEVELS TO BE 500mm BELOW TOP OF GRATING LEVEL.
 9. ALL MANHOLE AND INSPECTION CHAMBER COVERS, FRAMES AND ACCESSORIES SHALL BE TO THE REQUIREMENTS OF BS 5400-1:1991 PART 1 HEAVY DUTY COVERS TO MATCH OR BS EN 124 GRADE D400 (115 TONNE WHEEL LOADS).
 10. FOR DRAINAGE CONSTRUCTION AND PIPE BED DETAILS REFER TO DRAWING NO. 4199/51 & 52.
 11. ALL DRAINAGE BRANCHES TO BE 100mm FOR FOUL WATER & 150mm FOR SURFACE WATER UNLESS MARKED OTHERWISE.
 12. ALL SOIL & VENT STACKS TO HAVE ROADABLE ACCESS 150mm ABOVE GROUND FLOOR SLAB LEVEL WITH REMOVABLE ACCESS PLATES.
 13. ALL DRAINAGE CHANNELS TO HAVE ACCESS CHAMBER AT ENDS OF RUNS & BE ROADABLE EVERY 30m THEREAFTER.
 14. ALL SLOTTED DRAINAGE TO HAVE SUMP UNITS AT OUTLETS OF RUNS & HAVE ROADABLE ACCESS POINTS EVERY 30m THEREAFTER.
 15. ALL SHALLOW DRAINAGE (1000mm COVER) AND DRAINAGE BELOW FLOOR SLAB TO BE ENCASED IN MIN 150mm CONCRETE SURROUND.
 16. ALL CONCRETE SURROUND FOR THE DRAINAGE TO BE CLASS C22 (SULPHATE RESISTING) OR TO COMPLY WITH SOIL INVESTIGATION REPORT.

SURFACE WATER VELOCITY RATE
0.3 metres/second (Maximum)

- LEGEND**
- 1500mm MANHOLE & DRAIN RUN
FOUL WATER - RED
CLEAN SURFACE WATER - BLUE
DIRTY SURFACE WATER - GREEN
COLOURS AS ABOVE
 - 1000mm MANHOLE & DRAIN RUN
COLOURS AS ABOVE
 - 600mm MANHOLE & DRAIN RUN
COLOURS AS ABOVE
 - EXISTING FOUL WATER SEWER
 - EXISTING SURFACE WATER SEWER
 - PACKAGED PUMP STATION WITH RISING MAIN
(BLUE - SURFACE WATER - OUTSTANDING)
(RED - FOUL WATER - OUTSTANDING)
 - HIGH LEVEL SYNCHRONIC DRAINAGE
PRIMARY SYSTEM
 - SOIL & VENT PIPES/STACK WITH HW
FOR UP WASTE
 - RODABLE TRAPPED FLOOR GULLY
 - RAIN WATER PIPE
 - TRAPPED ROAD GULLY
 - TRAPPED YARD GULLY
 - DRAINAGE CHANNEL
200mm C30 CONCRETE SURROUND
 - CLASS 1 BYPASS PETROL
HYDROPHOBIC CHAMBER (DIFFERENCES)
OR SIMILAR APPROVED
MANUFACTURER

P4	17.02.21	ENTRANCE TO CAR PARK 3 REVISED	TC	CE
P3	16.02.21	ROAD ALIGNMENT REVISED	TC	CE
P2	08.02.21	SW OUTLET SECTION ADDED	TC	CE
P1	01.02.21	PRELIMINARY ISSUE FOR COMMENT	TC	CE
REV	DATE	DESCRIPTION	CHK	DRN

T. R. COLLIER & ASSOCIATES.
CONSULTING ENGINEERS
Rochester House 275 Shadow Road
Chesham Bucks HP8 3DA
Telephone 01494 500000
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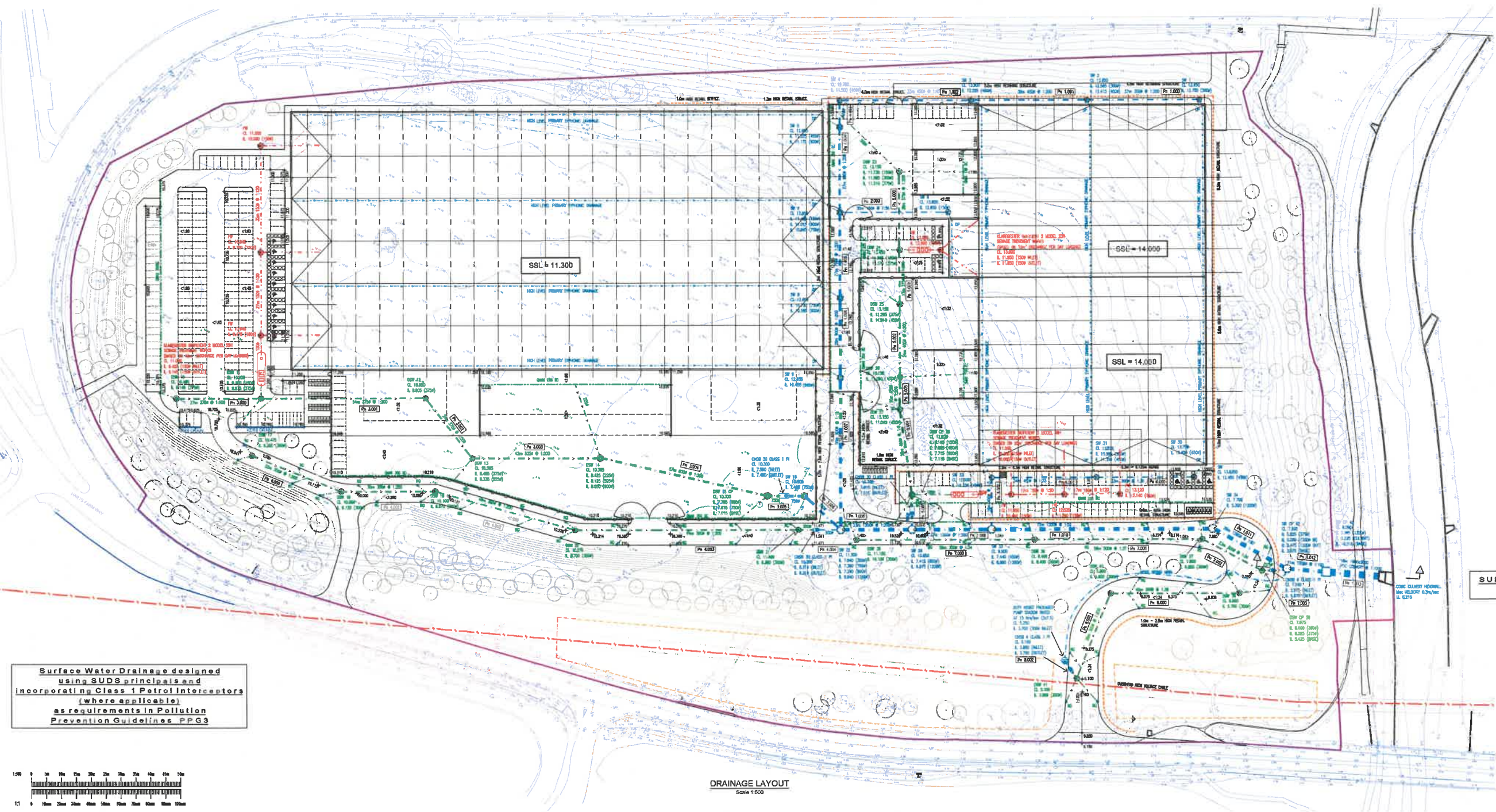
PROJECT
BROCKHAMPTON WEST
BROADMARCH, HAVANT. PO9 1HS

TITLE
DRAINAGE LAYOUT

ARCHITECT
MICHAEL SPARKS ASSOCIATES

DATE	SCALE	STATUS
Feb 2021	1:500	Preliminary

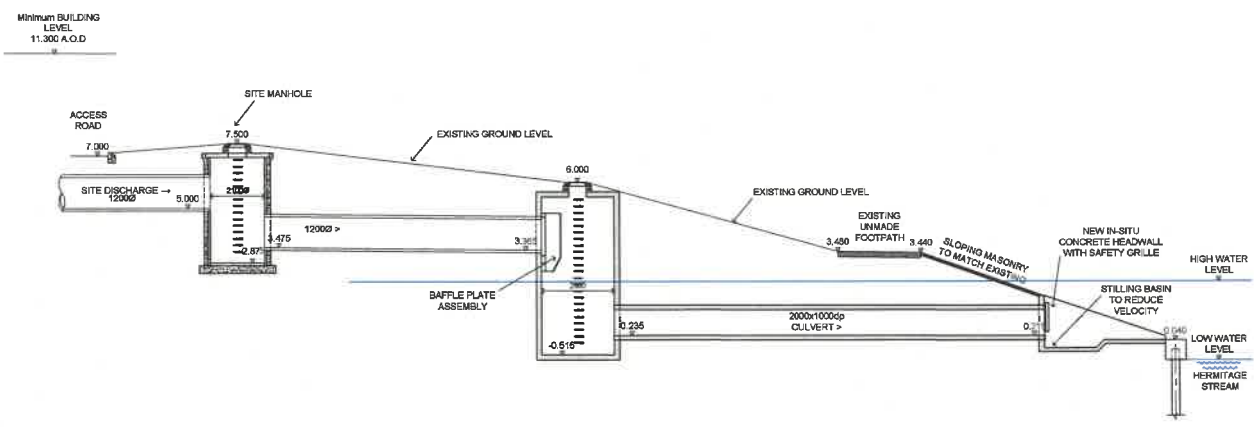
4199 / 50



Surface Water Drainage designed using SUDS principles and incorporating Class 1 Petrol Interceptors (where applicable) as requirements in Pollution Prevention Guidelines PPG3



DRAINAGE LAYOUT
Scale 1:500



SECTION THRO' SURFACE WATER OUTLET
Scale 1:100