

FLOOD RISK ASSESSMENT

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1 INTRODUCTION

1.1 Background

1.1.1 This report has been undertaken in accordance with National Planning Policy Framework (NPPF) and The Planning Practice Guidance on the use of SuDS for achieving sustainable development.

1.1.2 The proposed development will involve the demolition of existing out buildings and the construction of new commercial space, as demonstrated within the preliminary site layout, contained within **Appendix A** of this report.

- Environment Agency Product 4 Response
- Environment Agency Flood Maps for Planning
- Long Term Flood Risk Information; Flood Risk Maps
- Southern Water and Local Authority Drainage Records
- Local Planning Authority and Lead Local Flood Authority Strategic Flood Risk Assessments
- British Geological Survey & Records

1.1.3 This document has been prepared to propose assess drainage constraints and propose a drainage strategy that is appropriate for the design life of the development, without causing offsite impacts from runoff in a design event.

1.1.4 This report has been prepared for the benefit of the named Client only.

1.2 Site Location and Description

1.2.1 The existing site buildings are drained by gully and pipe drainage, presumed to connect into the existing public surface water drainage system.

1.2.2 The nearest watercourse is the Main River (unknown name) that discharges into Slipper Mill Pond

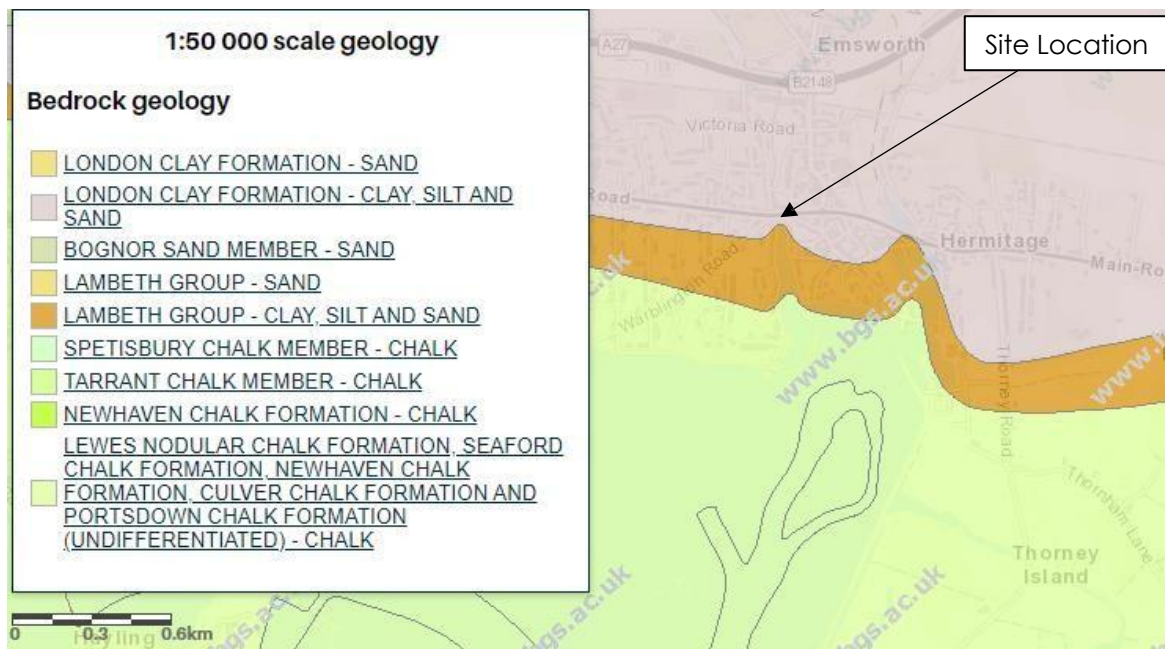
opposite Bath Road from the site (approx. 20 metres from the site boundary). In addition, the River Ems which runs south into coastal Chichester Harbour approximately 275m east of the site.

1.2.3 The nearest surface water feature is Slipper Mill Pond which runs adjacent to the site, approximately 20m to the east.

1.2.4 The existing site has a total area of approximately 675m (0.068 Ha), and consists of entirely hardstanding impermeable areas – as demonstrated in the topographic survey.

1.3 Ground Conditions

1.3.1 In the absence of a site-specific geotechnical investigation, reference has been made to the British Geological Survey (BGS) website.



1.3.2 The BGS geology viewer states that the bedrock geology is likely to consist of 'London Clay Formation – Clay, Silt and Sand', as seen in **Figure 1**.

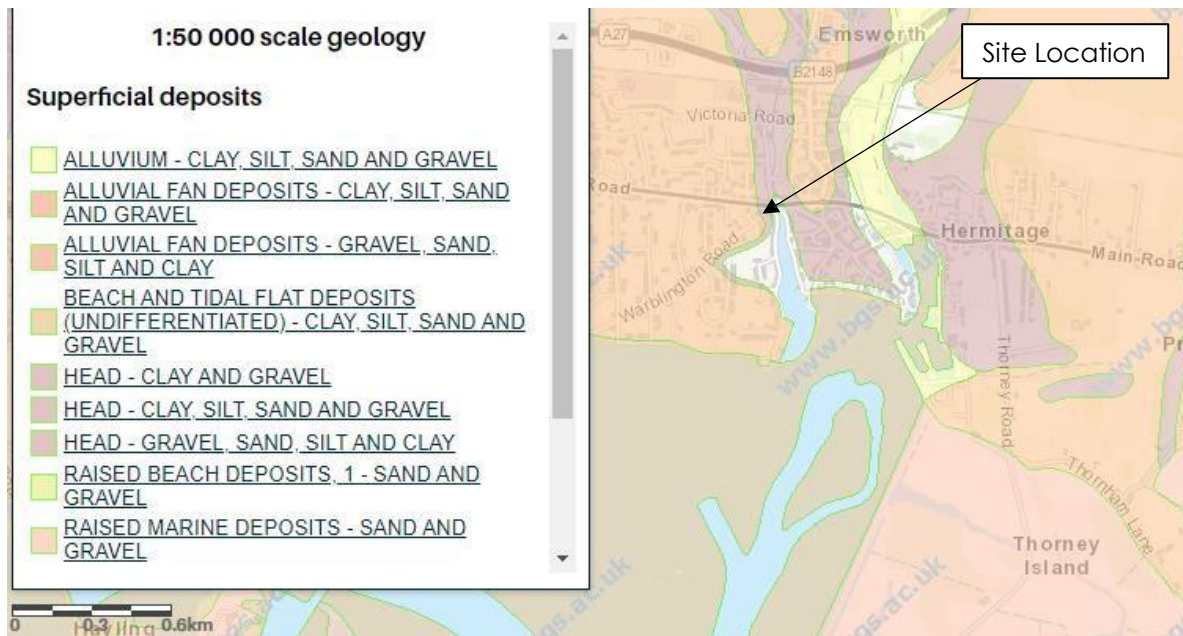


Figure 2. BGS website superficial deposits

1.3.3 Superficial Deposits are recorded as 'Head – Clay and Gravel', as seen in **Figure 2**.

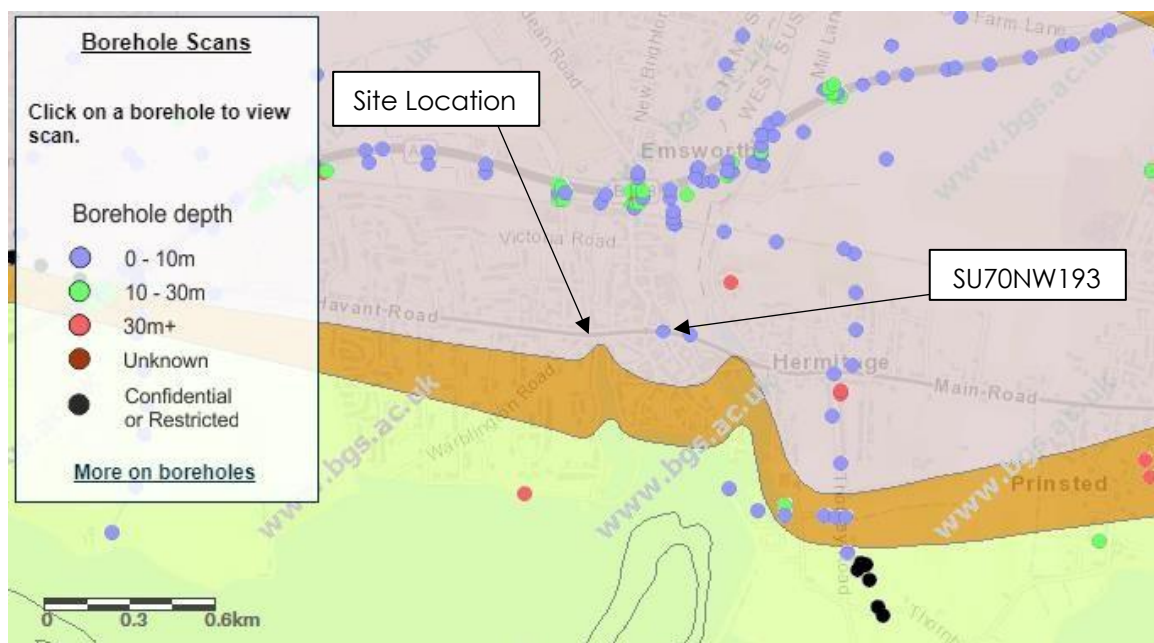


Figure 3. BGS website borehole locations

- 1.3.4 Historic borehole records from the Single Onshore Boreholes Index (SOBI) on the BGS website have also been reviewed in the absence of a site-specific geotechnical investigation, as depicted in **Figure 3**.
- 1.3.5 A borehole at the Emsworth New Bridge, 270m east of the site was assessed in comparison to the site, as seen in **Figure 3**. This borehole has similar geotechnical strata according to the BGS online mapping.
- 1.3.6 The borehole has a recorded depth of 5.9m and confirms the presence of 'stiff brown CLAY' to a depth of 4.0metres, underlain by further layers of MUDSTONE and CLAY.
- 1.3.7 A copy of the BGS records reviewed can be found within **Appendix C** of this report.

1.4 Groundwater

- 1.4.1 The recorded BGS borehole at Emsworth New Bridge recorded groundwater at 1.2mbgl.
- 1.4.2 The Urban South Hampshire PUSH SFRA indicates that areas at risk of groundwater flooding are north of the borough where highly permeable geology meets lower permeability geology and is reflected by historical incident records. The PUSH SFRA Flood Mapping indicated no recorded groundwater flood incidents in the vicinity of the site. Extracts from the SFRA can be found within **Appendix D**.
- 1.4.3 Mapping managed by MAGIC (magic.defra.gov.uk) provides geographic information concerning the natural environment from across government. This mapping tool has been referred to in order to confirm whether the site is located within either any groundwater source protection zones or groundwater vulnerability zones.
- 1.4.4 The site is situated within an 'Unproductive' Aquifer for Bedrock stratum and a 'Secondary A' Aquifer for Superficial Drift stratum, as seen in **Figure 4**. This refers to drift deposits only that exhibit variable permeability and may provide groundwater storage or supply at a local or strategic level.

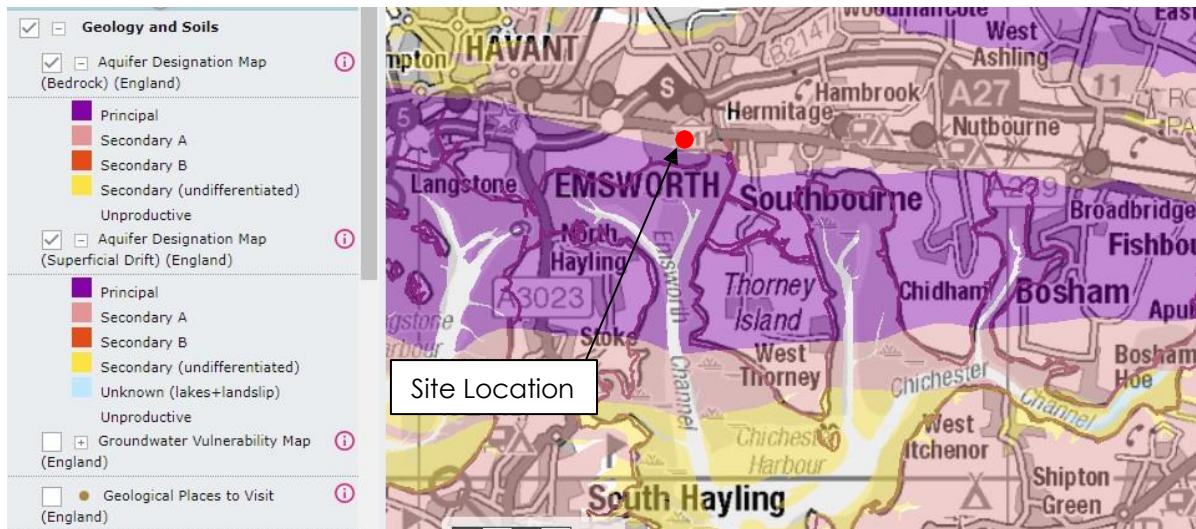


Figure 4. DEFRA Aquifer Designation Map

- 1.4.5 The Groundwater Vulnerability Map (**Figure 5**) confirms that the site falls within a 'Medium-High' and 'Medium-Low' groundwater vulnerability zone with Soluble Rock Risk.

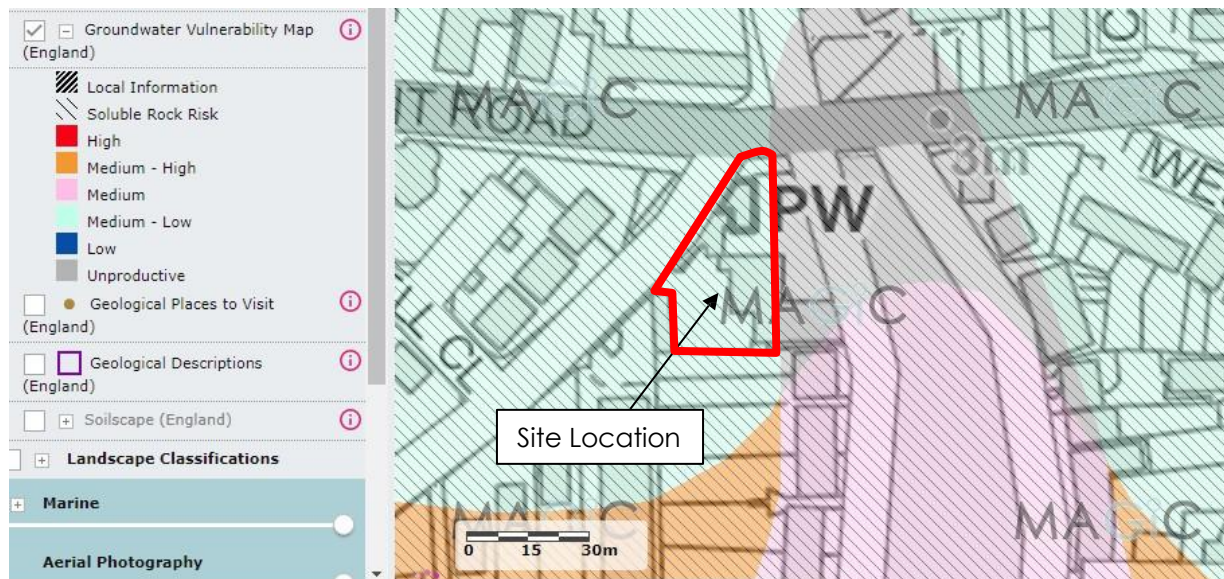


Figure 5. DEFRA Groundwater Vulnerability Map

1.4.6 The site is not indicated as within or in the vicinity of any Drinking Water Safeguard Zone or a Source Protection Zone.

1.5 Existing Drainage

1.5.1 The local Water Authority is Southern Water, who provide sewerage services within the area. Public sewer records have been obtained from Southern Water, as contained within this report in **Appendix E**.

1.5.2 Surface Water:

- (a) The Southern Water public sewer records (**Appendix E**) show public surface water sewers along Warblington Road adjacent to the site.
- (b) An existing public surface water manhole (6851) on Warblington Road is adjacent to the site frontage, and demonstrates cover level as 4.28mAOD.
- (c) The existing building is drained by rainwater pipes. The connection route of this drainage is not confirmed.
- (d) The nearest surface water feature is Slipper Mill Pond which runs adjacent to the site, approximately 20m to the east.
- (e) The nearest watercourse appears is an ordinary watercourse 330m northwest of the site, the River Ems which runs south into coastal Chichester Harbour 400m southeast of the site.

1.5.3 Foul Water:

- The Southern Water public sewer records (**Appendix E**) show public foul water sewers along Warblington Road adjacent to the site

- It is expected that there is an existing connection into the foul water sewer network adjacent to the site.

1.5.4 Highway Drainage:

- (f) Warblington Road appears to be drained by highway gullies.

2 PROBABILITY

2.1 Sources of Information

2.1.1 The NPPF requires that all sources of flooding are considered being Tidal, Fluvial, Pluvial, Groundwater, Sewers and Man-made reservoirs/canals.

2.1.2 The likelihood of the site flooding has been established by reviewing the following information:

- Environment Agency Flood Maps for Planning
- Long Term Flood Risk Assessment Surface Water Flood Risk Maps
- Long Term Flood Risk Assessment Reservoir Flood Risk Maps
- Local Authorities Strategic Flood Risk Assessment
- Consultation with Local Authority/Lead Local Flood Authority

2.2 Flood Maps and Modelling

2.2.1 The Environment Agency's Product 4 Response provided flood maps for rivers, sea and surface water as seen in **Appendix F**. The Product 4 shows the site location within Flood Zones 1 and 2.

2.2.2 Flood levels for 3 No. nodes on the site have been taken from the Fluvial Levels Map, completed by The Environment Agency. It states there is no fluvial data regarding 1% AEP (1 in 100 year), however fluvial levels for the 0.1% (1 in 1000 year) event are shown, with a maximum level of **3.25mAOD in a 2023 0.1% AEP fluvial flood event**.

Point	Water Surface Level (mAOD*)		Ground Level	Water Depth (metres)	
	1% Annual Probability/1 in 100 Year (Flood Zone 3)	0.1% Annual Probability/1 in 1000 Year Present Day (Flood Zone 2)		1% Annual Probability/1 in 100 Year (Flood Zone 3)	0.1% Annual Probability/1 in 1000 Year Present Day (Flood Zone 2)
1	No Data	3.25	3.08	No Data	0.17
2	No Data	3.25	3.18	No Data	0.07
3	No Data	3.15	3.13	No Data	0.02

2.2.3 The existing building levels for Phase 3 are 3.67mAOD, with external levels of between 3.65m at the building entrance to 3.80m at the site access point, with higher levels to the southwest for access and egress.

2.2.4 In addition, Tidal flood levels for the site have been taken from the Tidal Levels Map, completed by The Environment Agency. Three of these within the site have been provided in the table below.

Point	Water Surface Level (mAOD*)		Ground Level	Water Depth (metres)	
	0.5% Annual Probability/1 in 200 Year (Flood Zone 3)	0.1% Annual Probability/1 in 1000 Year Present Day (Flood Zone 2)		0.5% Annual Probability/1 in 200 Year (Flood Zone 3)	0.1% Annual Probability/1 in 1000 Year Present Day (Flood Zone 2)
1	No Data	3.69	3.69	No Data	0.00
4	No Data	3.70	3.67	No Data	0.03

2.2.5 Of the information provided by the Environment Agency, as detailed above, Node 1 is located in the southeast corner, and Node 4 is on the northwest boundary at the vehicular access.

2.2.6 Based on the above table, the existing flood levels are considered as a maximum of **3.50mAOD in a 2023 0.5% AEP tidal flood event**, and **3.70mAOD for a 2023 0.1% tidal flood event**.

2.2.7 When the modelled tidal flood levels are considered in comparison with the existing site levels from the topographic survey, there is negligible potential for flooding in existing events.

2.2.8 The Product 4 Response does not include an allowance for climate change, and therefore an allowance needs to be factored in to allow for an assessment of flood risk for the lifetime of the development (100 years).

2.2.9 Climate change allowances are set out for the following:

- peak river flow
- peak rainfall intensity
- sea level rise
- offshore wind speed and extreme wave height

2.2.10 The site is located within the Arun and Western Streams Management Catchment, and the following peak river flow climate change allowances are provided by the Environment Agency for the catchment.

Epoch (period of time)	Central Allowance	Higher Allowance	Upper Allowance
2020s	11%	16%	27%
2050s	13%	19%	36%
2080s	25%	36%	64%

2.2.11 As per the Environment Agency guidance for more vulnerable development in flood zones 2 and 3a, the central allowance should be utilised. This represents a 25% increase in peak river flow for the lifetime of the development, and while it is not possible to quantify the potential increase in fluvial flood levels the building as a result of climate change without extensive 2D hydraulic modelling (unreasonable to scope of development), it is clear that there is an increased risk of fluvial flooding as a result of climate change.

2.2.12 As a result, it is recommended that a 300mm conservative allowance is considered above maximum fluvial flood levels – assuming a maximum level of **3.55mAOD in a 2123 0.1% AEP fluvial flood event**.

2.2.13 The Environment Agency provide sea level allowances by river basin district for each epoch (with a calculation made using the per year allowance for a 2022 baseline). The table below demonstrates the the total sea level rise in the South East river basin district, per epoch, in metres.

South East	2022 to 2035	2036 to 2065	2066 to 2095	2096 to 2122	Cumulative risk from 2022 to 2122
Higher Central	0.075m	0.261m	0.348m	0.354m	1.04m
Upper End	0.090m	0.339m	0.474m	0.491m	1.39m

2.2.14 This indicates an increase in maximum tidal flood levels of between 1.04m and 1.39m over the next 100 years. This would represent an increase in the tidal flood levels to between 4.55mAOD and 4.9mAOD for a 0.5% AEP tidal flood event.

2.2.15 The PUSH Strategic Flood Risk Assessment (SFRA), produced by Atkins in 2007, also indicated extreme water levels for Chichester Harbour as **4.5mAOD for a 2123 0.5% AEP tidal flood event**.

2.2.16 As agreed by the Environment Agency for the flood risk assessment for the previous application at this site (APP/21/01120), the design flood level for future flood risk an allowance for climate change is 4.50mAOD. A copy of the Environment Agency's previous response is included in **Appendix D**.

2.2.17 Although there are also wind and wave allowances for climate change, the site is located significantly within an estuary that it is not considered these would have a significant effect on the site location.

2.2.18 The Environment Agency's on-line Flood Maps for Planning (rivers and sea) show that the site is located within Flood Zones 2 and 3a. The flood zones are also confirmed by information and mapping obtained from The Environment Agency following consultation, which is consistent within other flood risk mapping reviewed.

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

2.2.19 **Figure 6** also shows that the site is at 'low' to 'high' risk of flooding from rivers or sea.



Figure 6. Long Term Flood Risk Map; Flood risk from rivers or the sea

2.2.20 **Figure 7** shows that the north of the site is at low risk of surface water flooding, with much of the rest of the site at very low risk of surface water flooding. There is however medium to high risk of surface water flooding within the adjacent highways, although this would appear to be less than 300mm in a low risk flood scenario, which would not inhibit access or egress from the site.



Figure 7. Long Term Flood Risk Map; Flood risk from surface water

2.2.21 **Figure 8** shows that the site is not at risk of flooding from reservoirs.



Figure 8. Long Term Flood Risk Map; Flood risk from reservoirs

2.3 Strategic Flood Risk Assessment

- 2.3.1 The Urban South Hampshire PUSH SFRA identified the site location as at high susceptibility to groundwater, located within Flood Zones 1 and 2, and located wholly within a Flood Warning Area.
- 2.3.2 The site is shown to have a 'low risk' rating for Flood Zone 2 Undefended Hazards, at very low risk of surface water flooding (small isolated area at low risk within the site, low to high risk within the adjacent highway), outside of the Climate Change (Year 2115) Fluvial Flood Zone 3 but within the Climate Change (Year 2115) Tidal Flood Zones 2 & 3.
- 2.3.3 Extracts are included in **Appendix D**.
- 2.3.4 As this development is only for a change of use, a Sequential Test and Exception Test would not be required.

2.4 Historic Flooding

- 2.4.1 The Environment Agency were consulted regarding historic flooding at the site, and online information from Department for Environment, Food & Rural Affairs (DEFRA), Hampshire County Council and Havant Borough Council was investigated for details of historic flooding in the vicinity of the site.
- 2.4.2 The DEFRA recorded flood outlines on environment.data.gov.uk demonstrate a recorded flood outline along the watercourse corridor of the main river to the east of the site, including along the length of Bridge Road to the north and Bath Road to the east, and across the adjacent Havant Road where the watercourse passes under the road. This was shown to affect the site frontage, however the flood extents do not indicate flooding within the site area.
- 2.4.3 The PUSH SFRA Flood Mapping indicated no records of Southern Water observed flooding in the vicinity

of the site, and no recorded groundwater flood incidents in the vicinity of the site.

2.4.4 Extracts are included in **Appendix D**.

2.5 Summary of Flood Risk

2.5.1 The potential sources of flooding are:

Source of Flooding	Level of Risk
Rivers and Coastal	High The site is within Flood Zones 1 and 2, and is shown to be at increased risk of tidal flooding for the lifetime of the development as a result of climate change and rising extreme tidal levels.
Surface Water	Low-Very low The long-term flood risk for surface water is classified as 'Low' to the north of the site with much of the rest at 'very low' risk. Surface water flooding within the adjacent highway is 'high'.
Groundwater	Medium BGS records found the site to be situated above variable permeability strata. Nearby borehole logs found presence of groundwater 1.2mbgl. The PUSH SFRA did not indicate the site area as susceptible to groundwater flooding.
Sewers	Medium There are surface water sewers within the area, and no reports of sewer flooding found. The high risk of surface water flooding within the adjacent highway could indicate areas of highway drainage at risk of being surcharged, however.
Artificial Sources	None The site is not shown to be at risk of flooding due to artificial sources.

3 PROPOSED DEVELOPMENT

3.1 Description of Development

- 3.1.1 The proposed development will involve the demolition of an existing out building and construction of new studio and Class E commercial space with associated parking.
- 3.1.2 The existing use of 'Building used for financial, professional, offices etc' is classified as 'less vulnerable' development whilst 'Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels' is classified as 'more vulnerable' development to the classification (Flood Risk and Coastal Change Table 2) and is appropriate within Flood Zones 1 and 2 (Flood Risk and Coastal Change Table 3).
- 3.1.3 When including an allowance for climate change to assess Sequential requirements, the site is liable to an Exception Test. However, as the proposals are for a change of use and first floor extension, a Sequential test is not required. This Flood Risk Assessment will provide flood mitigation measures to address the future flood risk to the development.

Flood Zones	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Flood Zone 1	✓	✓	✓	✓	✓
Flood Zone 2	✓	Exception Test Required	✓	✓	✓
Flood Zone 3a†	Exception Test Required †	✗	Exception Test Required	✓	✓
Flood Zone 3b*	Exceptions Test Required *	✗	✗	✗	✓*
✓ = Development is appropriate ✗ = Development should not be permitted					

- 3.1.4 The extension is at first floor only, elevated above all existing and future flood levels.
- 3.1.5 The proposed development will decrease the hardstanding area of the site; reducing the rate of run-off generated by the site, with an area of existing building and hardstanding converted into soft landscaping garden areas. The surface water drainage of the site will follow existing principles as the proposals are only for a change of use and first floor extension to the existing buildings.

4 SEQUENTIAL AND EXCEPTION TESTS

4.1 Sequential Test

- 4.1.1 The Flood Maps for Planning show that the development area is within Flood Zones 1 and 2, however is at increased risk of flooding as a result of climate change. Exception Test assessment is therefore made in the context of future flood risk.
- 4.1.2 The local planning authority will however consider what changes of use are acceptable with regards to the National Planning Policy Framework and taking into account the Strategic Flood Risk Assessment. This is likely to depend on whether development can be designed to be safe and that there is safe access and egress.

4.2 Exception Test

- 4.2.1 The proposals do not require an Exception Test, the principles of NPPF have been considered with respect to safe site use, access and egress.
- 4.2.2 Table 3 within Paragraph 067 of Flood Risk and Coastal Change confirms that developments classified as "More Vulnerable" require an Exception Test for Flood Zone 3a. The proposed development is in Flood Zone 3a due to the risk of flooding from the culverted river.
- 4.2.3 In order to demonstrate the requirements are met with reference to Paragraphs 102 & 103 of NPPG Flood Risk and Coastal Change we summarise as follows:
- 4.2.4 Paragraph 102 quotes 'If, following application of the Sequential Test, it is not possible, consistent with wider sustainability objectives, for the development to be located in zones with a lower probability of flooding, the Exception Test can be applied if appropriate. For the Exception Test to be passed:
- *it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a Strategic Flood Risk Assessment where one has been prepared*
- 4.2.5 The proposals will not increase flood risk to or from the development, and mitigation measures will reduce flood risk to occupants.
- *a site-specific flood risk assessment must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall*
- 4.2.6 Flood Mitigation measures will be proposed to ensure that the Change of Use is safe for its lifetime for the proposed residential occupants.

- 4.2.7 Paragraph 103 states 'When determining planning applications, local planning authorities should ensure flood risk is not increased elsewhere and only consider development appropriate in areas at risk of flooding where, informed by a site-specific flood risk assessment following the Sequential Test, and if required the Exception Test, it can be demonstrated that:'
- *within the site, the most vulnerable development is located in areas of lowest flood risk unless there are overriding reasons to prefer a different location.*
- 4.2.8 The proposals are for the development to an existing building and therefore this will not increase flood risk elsewhere, and is not subject to sequential assessment.
- *development is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed, including by emergency planning; and it gives priority to the use of sustainable drainage systems.'*
- 4.2.9 As discussed in **Section 6**, Flood Mitigation measures will be proposed that reduce risk to users and ensure the development is appropriately flood resilient. In addition, safe access and egress routes will be provided where necessary so that any residual risk to future users can be safely managed. A Flood Evacuation Plan (FEP) template is provided in **Appendix G**.
- 4.2.10 As the development is partially within Zone 2, it is therefore recommended that the occupants of the development are subscribed to the Environment Agency's flood warning scheme and there is provision of a Flood Evacuation Plan to determine what actions occupants should take leading up to and during a nearby flood event. The Flood Plan would consider further the specific requirements with regard to access and egress.

5 PROPOSED DRAINAGE STRATEGY

5.1 Surface Water

- 5.1.1 The site will continue to utilise the existing surface water drainage infrastructure, which is understood to be conventional gully and pipe drainage to the public surface water sewer network.

5.2 Foul Water Drainage

- 5.2.1 The proposed foul drainage will utilise the existing site foul infrastructure, and as such there are no proposed changes to the foul drainage strategy.
- 5.2.2 It is not expected that any marginal increase in foul discharge will impact the foul sewer network capacity, however, the infrastructure and connection charges (OFWAT Charging Rules) place the onus on the sewerage undertaker to reinforce their network should there no longer be sufficient capacity to serve the new development. Funding for this is provided by revised charging arrangements for infrastructure and connection charges for each dwelling constructed comprising a Network Reinforcement Charge and Site-Specific Charges. The revised charging arrangement (funded by the developer) covers alterations to the Existing Sewer Network and the sewerage undertaker remains responsible for the cost of reinforcing their Strategic Assets. The developer is responsible for connecting the development to the public sewer network.

6 RESIDUAL RISK AND MITIGATION

6.1 Residual Risk

6.1.1 The following residual risks have been identified in relation to the proposed development:

- i. Flooding of buildings within flood zone.
- ii. Increased flood risk as a result of climate change.

6.2 Mitigation

6.2.1 Consideration has been taken to the residual risks stated in Section 6.1, and the following mitigation measures are proposed:

- i. Proposed building access and egress to be via higher ground. Accordingly, the proposed building access is to the south, with existing external elevation of 3.80mAOD, above existing modelled flood levels. Safe access and egress is set out in Section 5.
- ii. The Environment Agency Product 4 response indicates the site is subject to 1 in 200 year flood levels 3.50mAOD (Flood Zone 3) and 1 in 1000 year flood levels of 3.70mAOD. The existing floor levels are approximately 3.67mAOD. The architect has confirmed that these can be altered within the Change of Use development, and it is recommended that **ground floor finished floor levels are raised to minimum 3.70mAOD**.
- iii. The impact of climate change is predicted to result in an increase to design flood levels over the lifetime of the development, to 4.5mAOD. This could result in flooding to the property of up to 0.80m. Further mitigation measures are required to ensure that the site is safe for use for the lifetime of the development. In accordance with "Improving the Flood Performance of New Buildings – Flood Resilient Construction", produced for Communities and Local Government and the Environment Agency, May 2007, as well as in accordance with standing advice and Flood Resilient Construction guidance (<https://www.gov.uk/government/publications/flood-resilient-construction-of-new-buildings>) (<https://www.gov.uk/guidance/flood-risk-assessment-standing-advice#extra-flood-resistance-and-resilience-measures>), the following mitigation measures are proposed accordingly:
 - a. Flood resistance measures; which look to keep water out of the building when flood depths are up to 300mm. This includes tanking and waterproof construction, to be considered as retrofit measures to the building as part of the Change of Use, as well as the use of impermeable building materials to at least 300mm. This will look to keep water out of the building in a 1-in-200 year event, and would result in minimal damage or deformation. People could also leave their house and follow the evacuation plan in this scenario.
 - b. Flood resistance measures; in addition, use of floodgates across doors could prevent flood ingress to entrances.
 - c. Flood resilience measures; where flood depths exceed 300mm, impacts could be minimised by use of flood resilient materials such as lime plaster, raising air bricks, positioning NRVs and services at 1.0m height from FFL, raising potential hazards and/or damage above modelled flood levels, and design of the proposed building layout to allow access to all spaces to

permit drying and cleaning. This would minimise damage to building in an extreme future modelled flood event.

- d. Installation of a sump and pump, to allow draining away of internal flooding in coordination with flood gates.
- e. All proposed bedrooms to be located on the higher floors of the property, within the first floor extension of the proposed development.
- f. Installation of non-return valves of all soil pipes to prevent back-flow.
- g. Development of an emergency escape plan, inclusive of recommendations on seeking refuge at higher levels and of when and how to utilise a safe route of access and escape to ground above the estimated flood level, which connects the site to an area away from flood risk. This is to include provision of a Flood Warning and Flood Alert System. A Flood Evacuation Plan (FEP) template is provided in **Appendix G**.

7 FLOOD RISK MANAGEMENT

7.1 Safe Access and Egress

- 7.1.1 The proposed site development falls within Flood Zones 1 and 2, however the access to the site is from Warblington Road, which is within Flood Zone 1. Access to the proposed development is via the south of the building, with external levels of 3.80mAOD, above existing modelled flood levels.
- 7.1.2 Due to the potential of increased flood levels , access and egress to the site could continue via the existing access point on Warblington Road, which is elevated at 3.8mAOD – above existing modelled flood levels. Access to higher ground, should climate change flood levels exceed this, is available by leaving the site via the Warblington Road access and headed due southwest, where levels quickly exceed the predicted future flood level of 4.5mAOD.

7.2 Flood Warning

- 7.2.1 The site is at risk of fluvial and tidal flooding therefore there is a need for a Flood Evacuation Plan (FEP). This should consider the provision of a Flood Warning and Flood Alert System. A Flood Evacuation Plan (FEP) template is provided in **Appendix G**.

8 **OFFSITE IMPACTS**

- 8.1.1 The proposed development will not result in any increase in runoff from the site, and therefore will not cause an increase in flood risk offsite.
- 8.1.2 Post development foul water flows will contribute a negligible increase to the sewer network compared to the previous use – it is expected that the foul sewer flow from the proposed commercial property will be 0.05l/s.

9 SUMMARY

- 9.1.1 This site-specific report is based on the EA Product 4 Response, Flood Maps, Public Sewer Records, BGS records, and the local SFRA mapping and guidance.
- 9.1.2 The existing site consists of gym and associated out buildings.
- 9.1.3 The topographical survey shows that the existing site levels fall from 3.87mAOD in the south west corner of the site to the north with a low point of 3.65mAOD at the building access.
- 9.1.4 The existing site buildings are drained by gully and pipe drainage, presumed to connect into the existing public surface water drainage system.
- 9.1.5 The nearest watercourse is the Main River (unknown name) that discharges into Slipper Mill Pond apposite Bath Road from the site (approx. 20 metres from the site boundary). In addition, the River Ems which runs south into coastal Chichester Harbour approximately 275m east of the site.
- 9.1.6 The development lies within Flood Zones 1 and 2. Proposed internal development levels will be raised to a minimum of 3.70mAOD, above existing modelled flood levels. The site is subject to increased future tidal flood risk. Flood mitigation measures and the consideration of safe access and egress have been considered in order to address the safe use of the development for its lifetime. A Flood Evacuation Plan (FEP) template is provided within the appendices.
- 9.1.7 The wastewater from the proposed development will discharge to the public foul sewer network, with connection arrangement to be confirmed subject to site investigation.
- 9.1.8 The completion of the development will not increase flood risk on or off the site, and appropriate flood mitigation has been proposed to ensure the site is safe for use, access and egress for the lifetime of the development.

Conditions and Limitations

1. This report does not constitute a design document. It is the duty of the project designers, to confirm the content of this report and to design the scheme in accordance with their own research and other extraneous parameters.
2. Unless specifically stated otherwise in the report, any recommendations for works given in the report are to be confirmed or modified as appropriate at design stage.
3. Under the Construction (Design & Management) Regulations, latest edition, the Client has obligations for ensuring the Health & Safety arising from any construction work. If it is proposed to proceed with construction works, based upon information or recommendations contained in this report, these regulations probably apply. Further details of any issues arising from our report or the client's obligations generally are available on request