

Fortitudo Limited

Bartons Road, Havant

Flood Risk Assessment

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1 INTRODUCTION

Authorisation

- 1.1 Following instruction from Fortitudo Limited, a Flood Risk Assessment (FRA) has been undertaken by Vectos to support the full planning application for the proposed mixed-use redevelopment of the allocated site at the former Scottish and Southern Energy Plc office, Bartons Road, Havant.

Background

- 1.2 According to the Environment Agency (EA) Flood Map for Planning, the site is located in Flood Zone 1 (i.e. at low risk of fluvial and tidal flooding). However, given the site is in excess of 1 hectare (ha), in accordance with the National Planning Policy Framework (NPPF), an FRA is required to support the planning application. This FRA has been undertaken in accordance with the guidelines set out in the NPPF.
- 1.3 This revision of the FRA has been updated to reflect consultation responses from the Lead Local Flood Authority (LLFA) and Southern Water.

Aims and Objectives

- 1.4 The aim of this FRA is to demonstrate that the site can be developed safely, without exposing it to an unacceptable degree of flood risk or increasing the flood risk to third parties. The objectives of this FRA are to:
- Undertake a desk-based review of the available flood risk data for the site to assess flood risk.
 - Review the relevant planning policy and guidance documents to ensure that the development proposals are in accordance with these requirements.
 - Identify the key sources of flood risk to the site and surrounding area.
 - Identify flood mitigation requirements, if any, to demonstrate how the development can be made safe from flooding without a detrimental impact to third parties.
 - Assess whether the development will result in an increase of surface water runoff and how this can be mitigated through the application of Sustainable Drainage Systems (SuDS).

Development Proposals

- 1.5 The proposed redevelopment consists of three residential blocks with a total of 191 apartments. It also includes two drive through restaurants in the north part of the site. There is a site access to the north and south, with large areas of car parking and landscaping. The proposed site layout plan is enclosed in Appendix A.

Limitations

- 1.6 The general limitations of this assessment are that:
- A number of sources have been used to compile this document, whilst Vectos believe them to be trustworthy; Vectos is unable to guarantee the accuracy of the information that has been provided by others.
 - This report is based on information available at the time of preparation. Consequently, there is potential for further information to become available. These changes may lead to future alteration to the conclusions drawn in this report for which Vectos cannot be held responsible.

2 SITE DESCRIPTION

- 2.1 The site was formally occupied by a Scottish and Southern Energy Plc office, which has been demolished. A large stockpile of hardcore remains within the centre of the site.
- 2.2 The site is located on Bartons Road in the north-east of Havant, Hampshire. The site has an approximate area of 1.69 ha and is centred at an approximate Ordnance Survey (OS) grid reference of SU721080. A site location plan is presented in Figure 1. Note the Google satellite image has not been updated since demolition, and the former Scottish and Southern Energy Plc office site is still shown in Figure 1.



Figure 1: Site Location Plan

Site Topography

- 2.3 A topographical survey is enclosed in Appendix B. It shows a general fall in ground levels from north to the south, but also a centrally located hardcore stockpile, which is approximately 3 m above surrounding ground levels.

- 2.4 The stockpile is around 23 m above ordinance datum (AOD) at its highest point. At the bottom of the stockpile, ground levels are around 20 m AOD. These levels fall to the south of the site, to a minimum level of approximately 18.5 m AOD.

Geology and Hydrogeology

- 2.5 The 1 in 50,000 scale British Geological Survey (BGS) online mapping shows that the solid geology beneath the site consists mainly of Bognor Sand Member – Sand with a small region consisting of London Clay Formation – Clay, Silt and Sand. The online mapping indicates that there are superficial deposits present, which consist of Head-Clay, Silt, Sand and Gravel.
- 2.6 The Cranfield University Soilscales website indicates slowly permeable, seasonally wet, slightly acid, but base-rich loamy and clayey soils with impeded drainage occupy the site and surrounds.
- 2.7 A ground investigation has been undertaken for the site by Forge Environmental Management Ltd. in March 2020 (Appendix C). This included infiltration testing and revealed that in all four trial pits, the water level failed to drop by 50% as per the BRE 365 requirements, thus infiltration rates were unable to be obtained. The ground investigation also revealed that groundwater strikes were encountered within some of the trial pits between 1.1 – 2.3 m below ground level. It was concluded that infiltration is not considered a viable option for surface water disposal.
- 2.8 According to the MAGIC maps, the site is located within a groundwater source protection zone (SPZ) with subdivision of zone 1c (sub-surface activity) for the Havant and Bedhampton springs (which is an essential public water supply source). The ground investigation report also confirms that there is a potable water abstraction located 1,897 m to the south west of the site. According to the EA, the purpose of SPZs is to 'provide additional protection to safeguard drinking water quality through constraining the proximity of an activity that may impact upon a drinking water abstraction'. The site is not located within a drinking water protection area or safeguard zone. Due to the location of the site within an SPZ, consultation was sought with Portsmouth Water and the EA as per the Havant Local Plan guidelines (see Section 3). Portsmouth Water and the EA's response is included within Appendix D and Appendix E, respectively, and is discussed in Section 4.

- 2.9 The EA Aquifer Designation Map (bedrock) shows that the site is located within a Secondary A aquifer which is defined as ‘permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers’. The site lies just within a superficial drift secondary undifferentiated aquifer in the north-east of the site.

Hydrology

- 2.10 There are no watercourses present on site or in the immediately vicinity of the site (see Figure 2). Riders Lane Stream (a tributary of Hermitage Stream) is located approximately 0.6 km to the north-west and the Lavant Stream is located approximately 0.5 km to the east. There is also believed to be a small ditch located approximately 300 m to the east of the site, which is not identified in Figure 2.

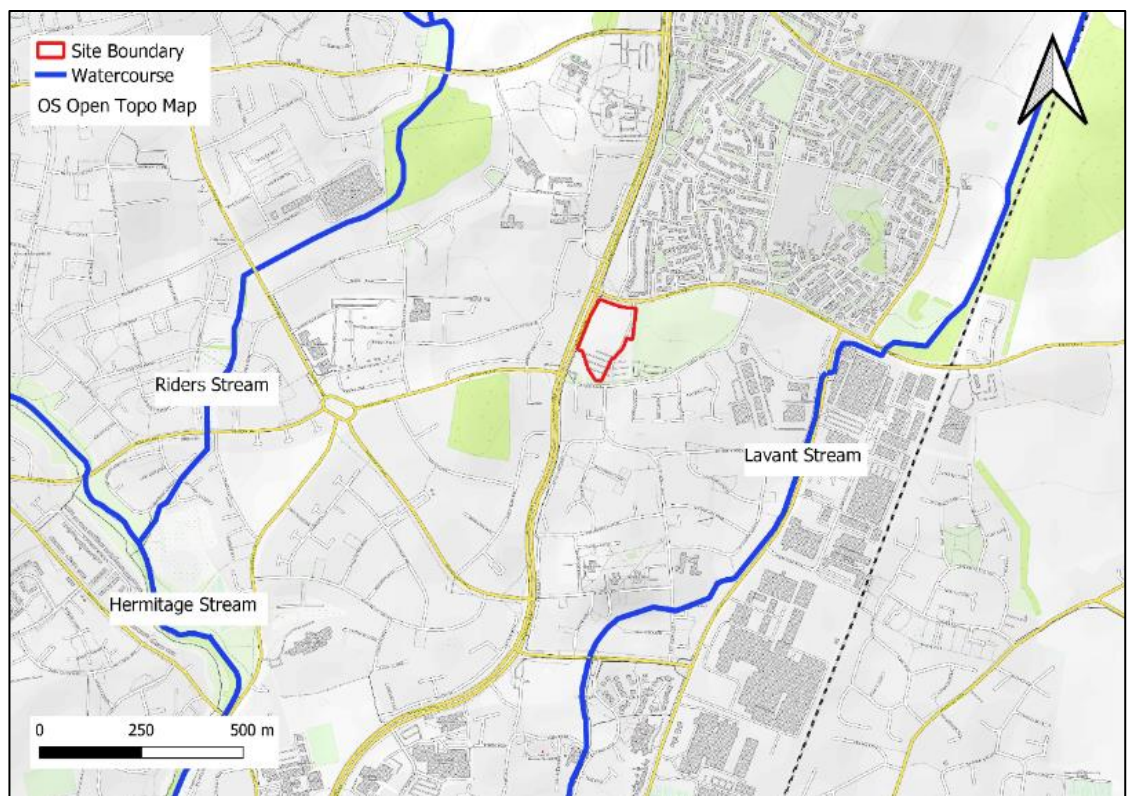


Figure 2: Watercourse Locations

Existing Drainage

- 2.11 Sewer asset plans were obtained from Southern Water and are enclosed in Appendix F. The plans show that both a public surface and foul water sewer pass through the west part of the site. This includes a 750 mm diameter surface water sewer and a 300 mm diameter foul sewer.
- 2.12 The topographic survey enclosed in Appendix B shows a series of private drains that served the site prior to demolition. The private drains are directed towards the public sewers. It is therefore assumed that surface water runoff was previously managed on site via discharge into the public sewerage network. No evidence of surface water attenuation is available and given the age of the former building on site, it is anticipated that runoff would have been released at an unrestricted rate into the 750 mm diameter surface water sewer.

3 PLANNING POLICY AND TECHNICAL GUIDANCE

National Planning Policy Framework (NPPF)

- 3.1 The NPPF sets out the Government's national policies for flood risk management in a land use planning context within England and how these are expected to be applied. This revised Framework replaces the previous NPPF that was published in July 2018.
- 3.2 The NPPF states that developers and local authorities should try to locate development to land in zones with the lowest probability of flooding.
- 3.3 This should be achieved by application of the Sequential Test, which aims to steer new development into Flood Zone 1 (areas with a low probability of river or sea flooding). Where there are no reasonably available sites in Flood Zone 1, it is necessary to take into account the flood risk vulnerability of land uses and consider reasonably available sites in Flood Zone 2 (areas with a medium probability of river or sea flooding), applying the Exception Test if required. Only where there are no reasonably available sites in Flood Zones 1 or 2 should the suitability of sites in Flood Zone 3 (areas with a high probability of river or sea flooding) be considered, taking into account the flood risk vulnerability of land uses and applying the Exception Test if required.
- 3.4 The Planning Practice Guidance (PPG) provides guidance and outlines the approaches that should be taken to meet with the NPPF. In accordance with Table 2 of the PPG, the proposed development (i.e. residential) is classified as 'More Vulnerable', whilst the drive through units are classified a 'Less Vulnerable'.
- 3.5 Table 3 of the PPG sets out the 'compatibility' of the vulnerability classification of development with the identified flood zones. The site has been designated by the EA Flood Map for Planning as Flood Zone 1 and therefore is deemed to be appropriate for the proposed land uses. An extract from the PPG is given in Table 1.

Table 1: Extract from Planning Policy Guidance - Table 3

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	✗	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	✗	✗	✗	✓*

Key:

✓ Development is appropriate

✗ Development should not be permitted.

Local Plan Policy

- 3.6 The Havant Borough Council (HBC) Local Plan: Core Strategy was adopted in 2011 and sets out the planning strategy for the borough up to 2026. HBC is currently in the process of updating the plan to cover the borough up to 2036. The Local Plan 2036 is currently in pre-submission stage, which is likely to be adopted late 2020. Until the new plan is adopted, the 2011 Local Plan Core Strategy (alongside the Site Allocations Plan 2014) will remain the adopted local plan. This report will make reference to both local plans.
- 3.7 Core strategy 6 of the 2011 Local Plan makes reference to the importance of flood risk and adaption to climate change.
- 3.8 Policy CS13 of the 2011 Local Plan highlights the need to incorporate and protect green spaces/infrastructure within new developments.
- 3.9 Policy CS15 of the 2011 Local Plan sets out the borough's stance on flood risk, and states that development in any areas at risk of flooding must apply and meet the sequential and exception tests (as per the NPPF). Wherever possible, development must be located away from areas of high flood risk, stating that Havant Borough Local Development Framework (HBLDF) will not propose development in areas that flood now or in the future. It also highlights that SuDS should be incorporated wherever possible to help manage surface water runoff.

- 3.10 Section 2.25 of the draft 2036 Local Plan makes reference to the requirement that all new homes must be suitably located in order to minimise flood risk, ensure flood risk is not increased to third parties, mitigate against climate change and must utilise SuDS.
- 3.11 E19 of the 2036 Local Plan discusses flood risk, with emphasis on the NPPF principles of ensuring development is steered to areas of lowest floods risk, that flooding is not increased elsewhere as a result of the development, and that the development is safe from flood risk over its lifetime. Developments should look to reduce flood risk overall, rather than just the site in question. E20 of the 2036 Local Plan outlines the requirements for drainage of new developments and reiterates the requirement of SuDS to be incorporated unless clear evidence is given to justify why SuDS cannot be used.
- 3.12 E21 of the 2036 Local Plan discusses SPZs. The borough is situated underneath a principle chalk aquifer and as such must be protected from sources of pollutions (e.g. from infiltration systems infiltrating into the aquifer) as it feeds into several springs across Havant which are used as drinking water resources. The EA and Portsmouth Water must be consulted with any planning application for new development within SPZs 1 and 1c. Although E20 states that propriety should be given to SuDS, it is noted that it would not be appropriate to provide infiltration-based SuDS which would drain into the aquifer without adequate pollution prevention measures.
- 3.13 The proposed redevelopment is considered compliant with these requirements. This is because the brownfield site is located in Flood Zone 1 (lowest flood risk area) and surface water runoff will be managed using SuDS, which have been designed to manage the anticipated impacts of climate change. Consultation has been made between the LLFA, EA and Portsmouth Water regarding the site since it lies in an SPZ zone. This report and associated surface water drainage strategy is compliant with their stipulations because infiltration is not proposed as a means of surface water management (see Section 7), which will help to ensure there is no pathway of contamination to the groundwater resource.

Sustainable Drainage Systems Guidance

- 3.14 The Hampshire County Council Surface Water and Sustainable Drainage Guidance for Developers, Designers and Planners (HCC SWSDG), alongside guidance for SuDS in the NPPF and the SuDS Manual (CIRIA), informs the approach that has been taken with the surface water

drainage strategy to ensure that it meets with the requirements of national regional and local planning policy.

4 CONSULTATION

Lead Local Flood Authority

4.1 Hampshire County Council are the LLFA for the area. The LLFA were contacted with regards to the redevelopment proposals. Their advice is based on relevant policy documents and the key points are summarised below:

- Brownfield (previously developed) sites should achieve a 30% reduction in runoff rates.
- Exceedance flow routes within the development must be assessed to ensure property and infrastructure is not adversely affected based on proposed levels.
- Blocking of surface water flow routes is not allowed, requiring that existing ground levels along boundaries where the 1 in 1,000 flow path enters the site should be as close to existing site levels as possible, with overland flow paths through the site retained as much as possible to avoid flood water displacement.
- Ground floor levels for residential development must ensure that surface water does not pose a flood risk by raising finished ground floor levels to be 150 mm above surrounding ground level.

4.2 Full consultation details are enclosed in Appendix G.

4.3 As part of their consultation response, the LLFA objected to the proposals because of the proposed surface water discharge rates. Revised rates were agreed, which have been reflected in Section 7 of this report. A record of this consultation is enclosed in Appendix G.

Portsmouth Water

4.4 Consultation with Portsmouth Water has been undertaken since the site lies within an SPZ, and correspondence is enclosed in Appendix D.

4.5 Portsmouth Water have indicated that the use of shallow infiltration drainage (i.e. within the sand geology) will be permitted, but deep pit-based systems would have a presumption against them since there is a risk groundwater contamination. However, as discussed in Section 2, infiltration is not feasible at the site, and no infiltration systems are proposed.

Environment Agency

- 4.6 Although the Flood Map for Planning indicates that the site is located in Flood Zone 1, consultation with the EA was required since the site is located within a SPZ, and correspondence is enclosed in Appendix E.

5 ASSESSMENT OF FLOOD RISK

Historic Flooding

- 5.1 The Partnership for Urban South Hampshire (PUSH) Level 1 Strategic Flood Risk Assessment (SFRA, 2016) is the current SFRA covering Havant and surrounding area. The SFRA provides a high-level summary of sources of flood risk and effects of climate change.
- 5.2 The SFRA cites flood risks for the PUSH area as tidal sources (predominantly from the Solent) alongside significant fluvial flooding risks from rivers (including Hermitage and Lavant Streams). It also cites groundwater flooding as significant, referencing the winter of 2013/14 as the cause of major ground water flood issues.
- 5.3 Geographical Information System (GIS) maps of the data collected for the SFRA report are available online at:

<https://www.portsmouth.gov.uk/SiteElements/Html/PUSHLive-Server.html>
- 5.4 The online map indicates that the site is susceptible to surface water flooding and that there was one reported incident of sewer flooding, located south of Martin Road, caused by hydraulic overload. The online mapping shows no groundwater flood incidents within the site or surrounding area.
- 5.5 The EA Historic Flood Map and Recorded Flood Outline data were also obtained for the site. This data provides no evidence of historic flood events within the site or surrounding areas.

Fluvial and Tidal Flood Risk

- 5.6 The EA Flood Map for Planning shows the risk from both fluvial (i.e. river) and tidal sources. It locates the site entirely within Flood Zone 1 as shown in Figure 3. Land and property in this flood zone are classified as having a low probability of flooding or more specifically, having a less than 1 in 1, 000 annual probability of flooding.

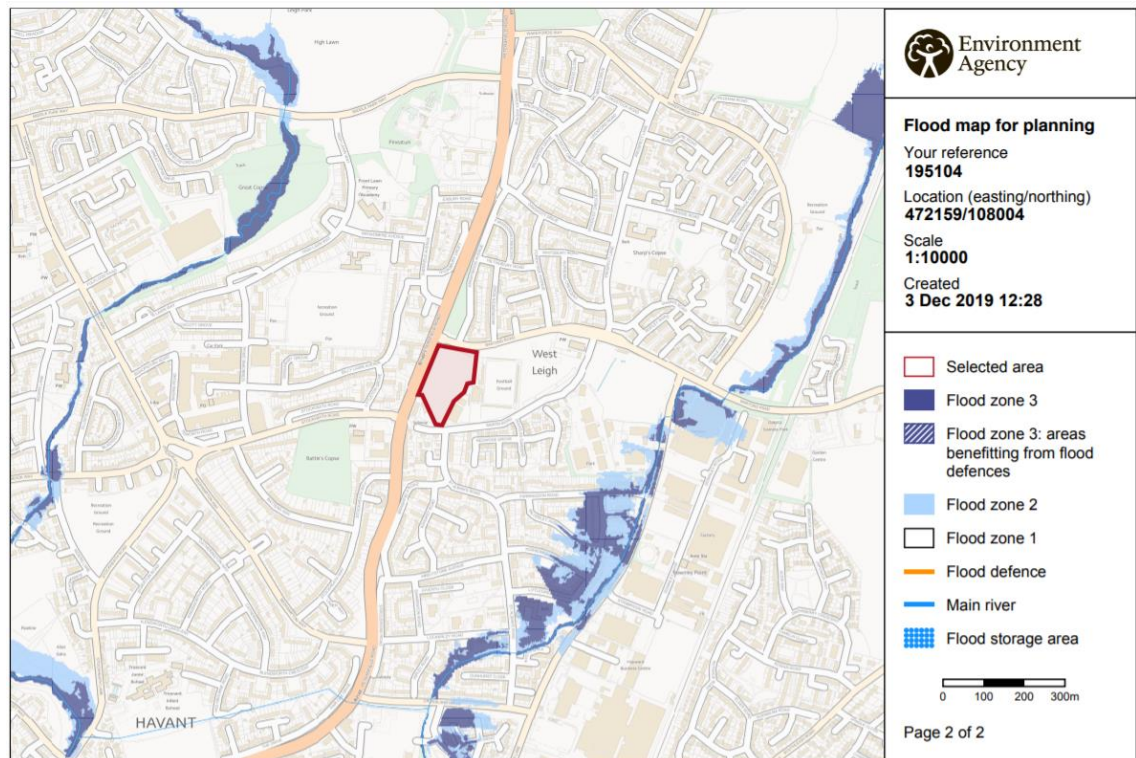


Figure 3: EA Flood Map for Planning

- 5.7 It should be noted that the EA Flood Map for Planning only considers river catchments greater than 3 km². However, this does not infer that there is no flood risk from smaller watercourses or ditches, but it tends to be considered a more local flood risk, which is often defined on the Risk of Flooding from Surface Water (RoFSW), see Figure 4.
- 5.8 The SFRA shows the effects of climate change on Flood Zones 2 and 3 up to 2115. The associated fluvial and tidal flood zones do not impact site. Fluvial and tidal flood risk is therefore considered to be low.

Surface Water Flood Risk

- 5.9 Surface water flooding is a result of overland flow that can follow a rainfall event, before the runoff enters a watercourse or sewer. This form of flooding is usually associated with high intensity rainfall events but can also occur with lower intensity rainfall or melting snow where the ground is saturated, frozen, developed or otherwise has a low permeability.

- 5.10 The flood risk relates to both the conveyance of waters to the site by overland flow from areas outside the site and also areas within the site itself, and the ponding of these waters in depressions in the topography.
- 5.11 The EA RoFSW map is available online. The methodology used to derive this map is based on the application of rainfall to the entire catchment upstream (i.e. a direct rainfall approach). An extract of this map is shown in Figure 4. It shows the majority of the site is unaffected by this source of flooding, which is defined as a very low risk and means that each year, this area has an annual chance of flooding of less than 1 in 1,000.

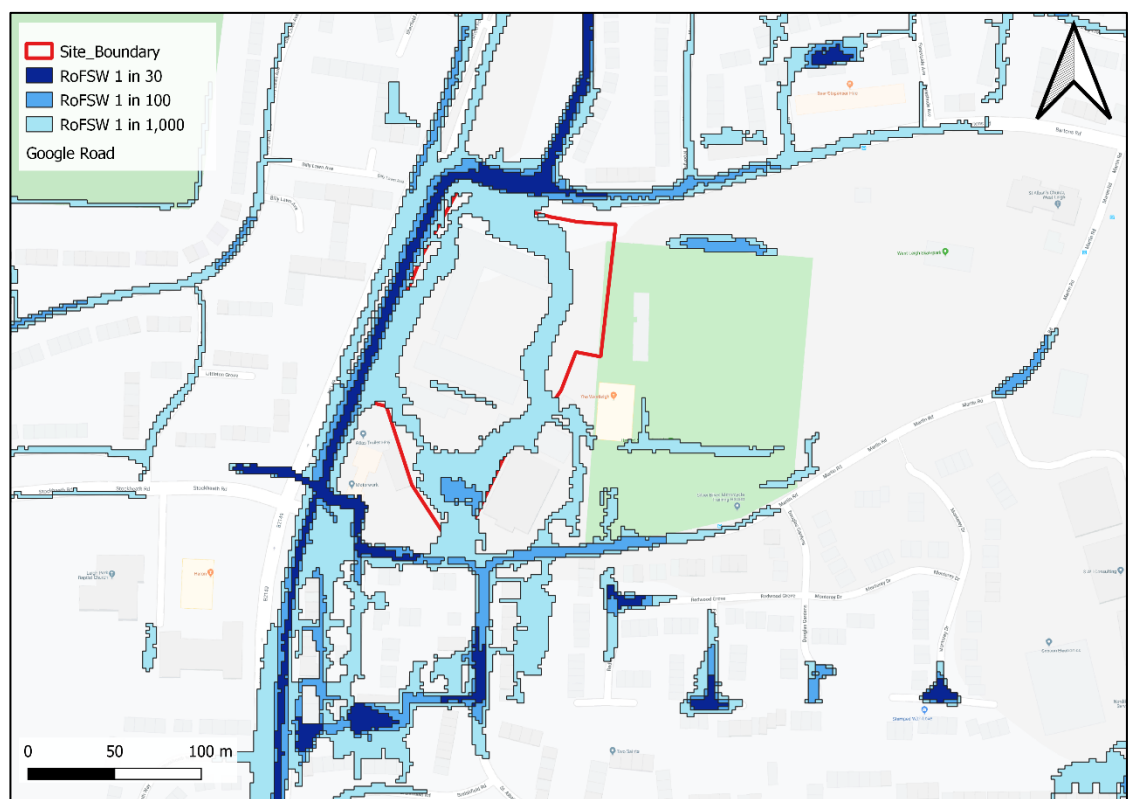


Figure 4: EA Risk of Flooding from Surface Water Map

- 5.12 However, the RoFSW map identifies a flow path through the site. This is shown to occur in an extreme event only, which is attributed to an annual probability 1 in 1000 and is classified low risk. This flood flow path was discussed with the LLFA and agreed flood mitigation has been identified in Section 6, which will help to ensure that the proposed redevelopment is safe from the this source of flooding.

Drainage and Infrastructure Flood Risk

- 5.13 Drainage and infrastructure flooding occur when sewerage systems are overwhelmed and result in flooding, which may occur alone or be combined with other flood sources (e.g. fluvial or surface water).
- 5.14 A 750 mm diameter public surface water sewer passes through the west part of site, as discussed in Section 2. According to the Land Searches report (see Appendix F), the site is not recorded as being at risk of internal flooding from sewer flooding (as a result of overloading).
- 5.15 As described previously, the SFRA mapping identifies one reported incident of sewer flooding in the proximity of the site, which is located south of Martin Road. This is located at a lower elevation than that of the site and represents no flood risk to the proposed redevelopment.
- 5.16 The risk of flooding from the public sewer network is considered to be low, however the flood mitigation outlined in Section 6 will offer further protection to the site in the unlikely event of flooding from this source.

Groundwater Flood Risk

- 5.17 Groundwater flooding occurs when the top of a water tables rises above the surface of local ground levels. This is generally associated with durations of sustained heavy rainfall (typically in the winter months).
- 5.18 In Havant (and Hampshire in general) groundwater flooding is significant as Havant lies beneath a principal chalk aquifer. According to the Hampshire Local Flood Risk Management Strategy (HLFRMS), groundwater flooding has occurred due to a combination of water levels rising above ground levels and from high groundwater levels causing increased water flows into rivers via the aquifers, causing rivers to spill their banks.
- 5.19 The HLFRMS ranks Havant as the 4th most at risk ward from groundwater flooding.
- 5.20 The 2016 SFRA online maps show that the site is located within an area of moderate bedrock permeability, which indicates the susceptibility/risk of the area to groundwater flooding based upon local geology. However, no groundwater flood events are reported on the SFRA maps within the site's boundary or surrounding area.

- 5.21 The ground investigation concluded that 'based upon the geology [of the site] it is considered that there is potential for groundwater flooding [to occur] from the underlying aquifer, although there is no evidence of such flooding [occurring on site]'. The ground investigation was undertaken in early spring (March 2020), which is the time of the year when groundwater tends to be at its highest. This followed an incredibly prolonged wet period and groundwater strikes were encountered in some trial pits but between 1.1 – 2.3 m below ground level.
- 5.22 Given the information above, groundwater flood risk is therefore considered to be low.

Artificial Sources of Flood Risk

- 5.23 Non-natural or artificial sources of flooding can include canals, reservoirs, sewers, etc.

Canals

- 5.24 There are no canals located within the site. The nearest major canal is the Chichester Canal which is approximately 18 km to the south-east. Therefore, flood risk associated with this source is considered to be negligible.

Reservoirs

- 5.25 The site and surroundings lie outside of the EA's flood risk from reservoirs map. Therefore, flood risk associated with this source is considered to be negligible.

6 FLOOD MITIGATION

- 6.1 The majority of the potential sources of flooding at the site have been identified to represent little or no flood risk to the redevelopment and mitigation measures are not required. However, a surface water flow path passes through the site and therefore flood mitigation is required.
- 6.2 Whilst there is no evidence that flooding from sewers or groundwater has impacted the site in the past, flooding from these sources cannot be completely ruled out. The flood mitigation outlined below will also help to protect the site from this low risk of flooding.

Proposed Site Levels

- 6.3 At this stage external ground levels have not been designed. However, as agreed with the LLFA existing levels where surface water flooding enters and leaves the site will be retained. This will ensure that the flow path is still able to enter the site and is not displaced elsewhere. The layout of the site has been derived in a way that will allow the flow path through it and leave at the same location as per existing conditions. At a more detailed stage of design, the external levels will also be prepared to facilitate this. Figure 5 illustrates the likely direction of surface water flooding through the site.

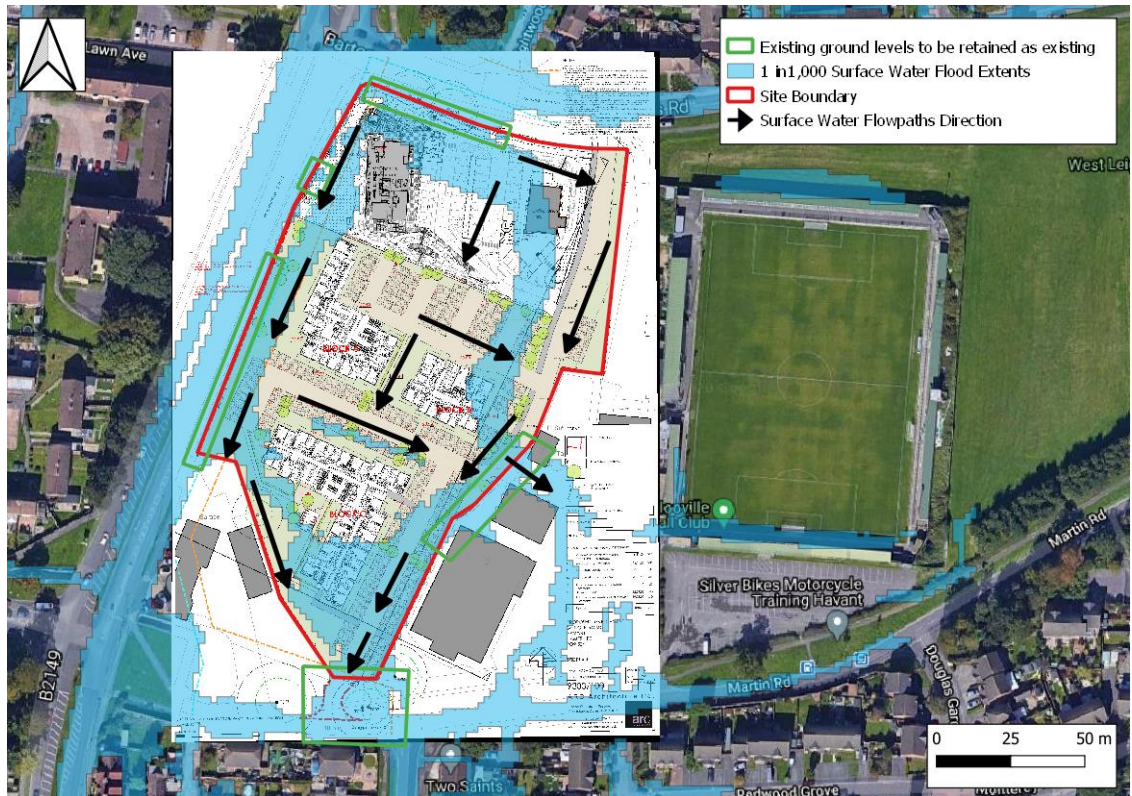


Figure 5: Likely Surface Water Flow Path through Site

Finished Floor Levels

- 6.4 To reduce the likelihood of surface water flooding from entering properties in the event of an extreme rainfall event, finished flood levels (FFL) will be raised 150 mm above surrounding ground levels as agreed with the LLFA.

Flood Resistance

- 6.5 Whilst the elevated FFL will protect the buildings from flooding, flood resistant construction techniques on the ground floor can offer further protection in the unlikely event that the flooding exceed the floor levels. These measures are appropriate where shallow flooding is possible and is intended to keep the water out of the buildings.
- 6.6 This will be undertaken in accordance with the recommendations outlined in Improving the Flood Performance of New Buildings (2007).

7 SURFACE WATER DRAINAGE STRATEGY

Overview

- 7.1 It is well understood that one of the effects of development is typically to reduce the permeability of the site and consequently to change its response to rainfall. Therefore, a suitable surface water drainage strategy is required to ensure that the surface water runoff regime is managed appropriately so that there will be no increase flood risk to third parties.
- 7.2 The NPPF states that flood risk to land and property must not be increased as a result of development. The associated PPG states that flood risk should not increase for events up to and including a 1 in 100 year return period, with appropriate allowance for climate change.
- 7.3 A fundamental principle of sustainable development in terms of flood defence is the reduction of surface water run-off from new developments. Surface water drainage arrangements for any development site must ensure that volumes and peak discharge rates leaving the site are no greater than those for the site prior to development. Any increase in surface water run-off above the pre-development volumes must also be controlled on site.
- 7.4 The proposed surface water management strategy has been derived based upon the principles of SuDS, in accordance with the NPPF.
- 7.5 SuDS will be utilised to manage surface water runoff from the entire site. The concept of sustainable drainage is that environmental and social factors such as the quantity and quality of runoff and amenity value of surface water in the developed site are considered when making decisions about drainage. SuDS can be used to compliment or replace conventional piped urban drainage to recreate the natural water cycle.

Proposed Receptor of Site Runoff

- 7.6 The drainage hierarchy presented in the Hampshire County Council Surface Water and Sustainable Drainage Guidance for Developers, Designers and Planners states that, as per the PPG, the aim should be that surface water runoff is discharged from the site by the following methods, listed in order of preference/priority:
 - 1. into the ground (infiltration)
 - 2. to a surface water body;

3. to a surface water sewer, highway drain, or another drainage system;
 4. to a combined sewer.
- 7.7 Given the underlying geology and the results of the ground investigation, infiltration as a means of surface water management is not possible.
- 7.8 There are no surface water bodies within or adjacent to the site that could be used as a discharge receptor and therefore a connection to these cannot be viably made.
- 7.9 An existing surface water sewer (750 mm diameter) is present and runs along the western boundary of the site. It is therefore proposed that runoff from the site will be discharged to this public surface water sewer. This will retain the connectivity of the former use of the site.

Existing Discharge Rates

- 7.10 The Wallingford Procedure Modified Rational Method has been used to estimate the brownfield runoff rate from the impermeable areas of the site. This was undertaken based on the Scottish and Southern Energy Plc office, as shown in Figure 1. This was considered appropriate given that the existing drainage on site was constructed to serve this building. The calculation is outlined below:

$$Q = C \times I \times A$$

Where:

$$C = 2.78 \times C_v \times C_r;$$

2.78 is a dimensionless scaling factor to convert units of Q to l/s;

C_v is the volumetric runoff coefficient, which is set at 0.75 as per the Wallingford Procedure;

C_r is the routing coefficient, which is set at 1.3 as per the Wallingford Procedure;

I is the average rainfall intensity in mm/hr (taken from the MicroDrainage rainfall profile tool, provided as Appendix H, using an FSR 10 year return period, which is likely to be the minimum return period that the existing site drainage was designed to accommodate, a

winter profile, and a 60 minute storm duration¹). The average intensity has been calculated as 23.519 mm/hr;

A is the impermeable area in ha, which is 1.14 ha².

Therefore:

$$Q = 2.78 \times 0.75 \times 1.3 \times 23.519 \text{ mm/hr} \times 1.14 \text{ ha}$$

$$Q = 72.67 \text{ l/s}$$

Proposed Discharge Rates

7.11 In accordance with the LLFA requirements, a 30% betterment on the existing discharge rates is proposed. The proposed discharge rates are reflected in Table 1, which were recently agreed with the LLFA (see Appendix G). Thus, the proposed discharge rates for the whole site will be restricted to 50.9 l/s for all events up to and including the 1 in 100 year plus 40% climate change event with the exception of the 1 in 1 year event which will be discharged to the existing 1 in 1 year runoff rate. This is outlined in Table 1.

Table 1: Proposed Discharge Rates per Return Period for the Whole Site

Return Period	Average Rainfall (mm/hr)	Existing Runoff Rate (l/s)	Proposed Discharge Rate (l/s)
1 in 1	12.5	38.7	38.7
1 in 10	23.5	72.7	50.9
1 in 30	30.2	93.3	50.9
1 in 100	39.7	122.6	50.9
1 in 100 + 40% CC	-	-	50.9

7.12 The proposed redevelopment has been split into two separate drainage catchments, with each catchment having its own outfall as shown in the Preliminary Surface Water Drainage Strategy enclosed in Appendix I. The 50.9 l/s discharge rate will therefore be applied pro-rata across the two catchments, as illustrated in Table 2.

¹ Whilst a shorter storm duration was considered to be critical, a 60 minute storm duration was adopted as a conservative approach.

² This is the estimated impermeable area of the former Scottish and Southern Energy site.

Table 2: Proposed Discharge Rates

Catchment	Proposed Use	Impermeable Area (ha)	Proposed Discharge Rate (l/s) 1 year event	Proposed Discharge Rate (l/s) All other events
1 (north)	Drive through	0.40	12.8	16.8
2 (south)	Residential	0.81	25.9	34.1

Proposed Surface Water Drainage Strategy

Catchment 1

7.13 Attenuation of surface water will be required to restrict runoff rates to 12.8 l/s for the 1 year event and to 16.8 l/s for all other events. This will be achieved using a cellular storage crate and a hydrobrake (or similar approved) as shown in the Preliminary Surface Water Drainage Strategy enclosed in Appendix I. The attenuation will be supplemented with areas of permeable paving, which will provide water quality benefits. Ultimately, surface water will be discharged into the public surface water sewer.

7.14 A MicroDrainage network model has been undertaken to estimate the size of the crate required to provide a sufficient attenuation storage and to inform the design pipe network. These calculations are enclosed in Appendix J and some of the key parameters used are outlined in Table 3. The total volume of attenuation storage required is 105 m³.

Table 3: Parameters for the Cellular Storage Crate in Catchment 1

Parameter	Values	Units
Impermeable Area	0.40	ha
Discharge Rate (1 year)	12.8	l/s
Discharge Rate (> 1 year)	16.8	l/s
Infiltration Rate	0	m/hr
Porosity	95	%
Climate Change Allowance	40	%

7.15 As part of the detailed design stage, it may be desirable to utilise the permeable paving to contribute towards the attenuation storage volume. This could help to reduce the size of the cellular storage.

- 7.16 The permeable paving will be lined/tanked to ensure that it does not mobilise groundwater and dispose it to the public sewer.

Catchment 2

- 7.17 For the southern catchment, surface water attenuation storage will be provided within a substructure (i.e. gravel sub-base) located beneath permeable paving in two car parks, as shown in the Preliminary Surface Water Drainage Strategy in Appendix I. The paving will allow rainwater to infiltrate through the surface and into the gravel sub-base, where it will be stored before discharge to the public surface water sewer at 25.9 l/s for the 1 year event and to 34.1 l/s for all other events.
- 7.18 MicroDrainage network model has been undertaken to estimate the depth of the gravel sub-base required to provide a sufficient attenuation storage and to inform the design pipe network. These calculations are enclosed in Appendix J and some of the key parameters used are outlined in Table 4.

Table 4: Parameters for the Permeable Paving in Catchment 2

Parameter	Values	Units
Impermeable Area	0.81	ha
Discharge Rate (1 year)	25.9	l/s
Discharge Rate (> 1 year)	34.1	l/s
Infiltration Rate	0	m/hr
Porosity	30	%
Climate Change Allowance	40	%

- 7.19 The total volume of attenuation storage required is 344 m³. This was split over two areas of permeable paving, with a gravel sub-base depth of 0.35 m and 0.60 m.
- 7.20 The permeable paving will be lined/tanked to ensure that it does not mobilise groundwater and dispose it to the public sewer.

Water Quality

- 7.21 Permeable paving provides water quality benefits when water cascades through the sub-base it collides with the individual aggregate components and deposits pollutants on their surface. The large surface area of the aggregates will filter the pollutants, which are broken down by

natural microbial action. It is therefore anticipated that the proposed drainage solution will provide water quality betterment compared with the existing site conditions.

- 7.22 In accordance with the SuDS Manual (CIRIA C753), SuDS components must have a total pollution index that equals or exceeds the pollution hazard index for different land use classifications. It is considered that the SuDS provided as part of the surface water drainage strategy would offer sufficient mitigation for the land use classification as demonstrated in Table 5 and Table 6 (as informed by Table 26.2 and 26.4 of the SuDS Manual respectively), for Catchment 1 and Table 7 and Table 8 for Catchment 2.

Table 5: Pollution Hazard Indices – Catchment 1 – Drive Through

Land Use	Total suspended solids (TSS)	Metals	Hydrocarbons
Other roofs (typically industrial and commercial)	0.3	0.2	0.05
Non-residential car parking with frequent change.	0.7	0.6	0.7
Total	1.0	0.8	0.75

Table 6: SuDS Mitigation Indices – Catchment 1 – Drive through

Type of SuDS	Mitigation Indices		
	TSS	Metals	Hydrocarbons
Permeable Paving	0.7	0.6	0.7
HydroShark	0.5	0.4	0.45
Total	1.2	1.0	1.15

Table 7: Pollution Hazard Indices – Catchment 2 – Residential

Land Use	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential roofs (typically industrial and commercial)	0.2	0.2	0.05
Individual property driveways, residential car parking, low traffic roads	0.5	0.4	0.4
Total	0.7	0.6	0.45

Table 8: SuDS Mitigation Indices – Catchment 2 – Residential

Type of SuDS	Mitigation Indices		
	TSS	Metals	Hydrocarbons
Permeable Paving	0.7	0.6	0.7
Total	0.7	0.6	0.7

Maintenance and Adoption

- 7.23 The permeable paving and cellular storage crates will be privately operated and maintained. Maintenance will be undertaken in accordance with the recommendations outlined in The SuDS Manual (CIRIA C753, 2015), as replicated in Figures 6 and 7, respectively.
- 7.24 Various other smaller assets of the surface water drainage strategy consist of gutters, down water pipes, manholes and pipes. These assets should be checked annually and after large storm events, in order to remove debris and inspect the condition.
- 7.25 Jet washing may be required on occasion to remove any blockages within the pipe network. If the condition is found to be poor, replacement or repairs may be required.

TABLE 20.15 Operation and maintenance requirements for pervious pavements		
Maintenance schedule	Required action	Typical frequency
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Figure 6: Operation and Maintenance Requirements for Permeable Paving

TABLE 21.3 Operation and maintenance requirements for attenuation storage tanks		
Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

Figure 7: Operation and Maintenance Requirements for Attenuation Tanks

Summary

- 7.26 Given that the site is brownfield and the reduced discharge rates proposed, it is considered that the redevelopment would offer a significant betterment over the existing drainage regime and therefore reduce the local flood risk mechanism.
- 7.27 The surface water drainage strategy has been prepared to demonstrate that the proposed redevelopment of the site can meet national and local requirements for the management of surface water runoff. This will be achieved through the principles of SuDS, but is subject to more detailed design considerations once planning has been approved.

8 FOUL WATER DRAINAGE SATRETRY

- 8.1 A 300 mm diameter public foul water sewer passes through the site. Based on the size for size rules it is anticipated that a new connection can be made to the foul sewer without the need for any infrastructure upgrades at the cost of the applicant. However, this will need to be confirmed through consultation with Southern Water.

9 CONCLUSIONS

- 9.1 This Flood Risk Assessment (FRA) has been undertaken to support the full planning application for the proposed redevelopment of land at the former Scottish and Southern Energy Plc office, Bartons Road, Havant.
- 9.2 This report has been prepared by Vectos on behalf of Fortitudo Ltd. in accordance with the guidelines set out in the National Planning Policy Framework.
- 9.3 The site is entirely located within Flood Zone 1, however, a surface water flow path is evident through the site in an extreme 1 in 1000 year event. Where this surface water flooding enters the site existing ground levels will be retained. This will ensure that the flow path is still able to enter the site and is not displaced elsewhere. The layout of the site has been derived in a way that will allow the flow path through it and leave at the same location as per existing conditions. At a more detailed stage of design, the external levels will also be prepared to facilitate this.
- 9.4 Finished Floor Levels (FFLs) will be raised by 150 mm above surrounding ground levels to further mitigate the likelihood of flood water entering buildings.
- 9.5 Surface water will be discharged from the site to a public surface water sewer. However, it will first be attenuated on site and discharged at a 30% betterment compared to the existing brownfield rates.
- 9.6 The surface water drainage strategy has been designed to accommodate the 1 in 100-year rainfall event including a 40% climate change allowance, which will be achieved using a range of SuDS.
- 9.7 The drainage strategy is subject to detailed drainage design, which will be undertaken once planning permission has been granted.

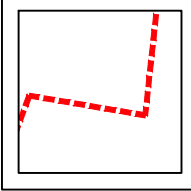
APPENDIX A PROPOSED SITE LAYOUT

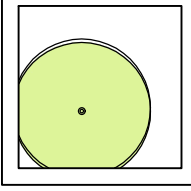
- NOTES
- The contents of this drawing are copyright.
 - Do not scale. Figure dimensions only to be used.
 - Contractors must verify all dimensions and report any discrepancies before putting work in hand or making any shop drawings.
 - All flat roofs to be fitted with a man safe system to satisfy CDM 2015 regulations unless written confirmation from Principle Designer/ Principle Contractor is provided to show alternative compliance has been sought and approved.
 - Please note a domestic sprinkler system may be required - check with your building control inspector.
 - Fixed shut fire safety glass windows may be required where windows are in close proximity to boundaries (subject to building regulations).
 - Stair design to be independently checked by stair fabricator for regs. compliance and sizing, prior to construction/ ordering. Dimensions to be checked before fabrication.
 - Maclean waterproofing specialists (or similar company with relevant PI insurance) to be instructed and detail all basement waterproofing designs. - ARC carry no responsibility for basement designs in terms of waterproofing or structure in any way.
 - "AS BUILT" drawings will only be issued upon request from the client/ contractor. All information within as built drawings is to be confirmed and provided by the client/ contractor. ARC Architecture do not perform regular site inspections to guarantee as built information so contractor or client must sign a letter from ARC to confirm compliance with our plans on site.
 - Any discrepancies between specification notes and details must be clarified for design intention with ARC before continuing with construction.
 - At Building Regulation stage our instruction is to gain a certificate of building regulations compliance from the chosen inspector (A or Private).
 - To ensure compliance with EWS1 fire safety forms an independent and an appropriately qualified and insured fire consultant / engineer should be appointed by the client to ensure the finished project can be mortgaged.
 - A design and risk assessment should form part of our drawing package. If you have not received this from us by post, email or collection please contact us for a copy before moving forward with the project.
 - At planning stage planning drawings are to only be used for planning purposes.
 - Mechanical ventilation may be required to basement car parks and apartment lobbies.
 - All cladding & building attachments to be A1 fire rated.

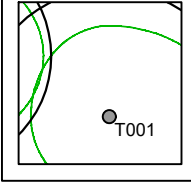
ORANGE DASH LINE INDICATES APPROXIMATE LOCATION OF FOUR WATER DRAINAGE (SUBJECT TO FULL DRAINAGE SURVEY TO BE CARRIED OUT BY DEVELOPER)

BLUE DASH LINE INDICATES APPROXIMATE LOCATION OF SURFACE WATER DRAINAGE (SUBJECT TO FULL DRAINAGE SURVEY BEING CARRIED OUT BY DEVELOPER)

LEGEND

 SITE BOUNDARY

 PROPOSED PLANTING

 EXISTING TREES TO BE RETAINED

SITE AREA: 1.676 HECTARES / 4.141 ACRES			
PARKING SPACES = 182			
EXISTING GIA - N/A			
PROPOSED GIA - 11,427.3 SQM / 123,003 SQFT			
G.	Marlin road access removed & pedestrian route added.	16.11.20	WD
F.	Site boundary amended.	04.11.20	WD
E.	Restaurant location updated.	03.11.20	WD
D.	Restaurant & cafe updated.	20.10.20	WD
C.	Road names amended following comments.	06.10.20	WD
B.	Notes amended.	15.09.20	WD
A.	Extra proposed levels added following comments.	19.08.20	WD
No.	Revision.	date	by

PROPOSED DEVELOPMENT,
BARTONS ROAD,
HAVANT,
HAMPSHIRE,
PO9 5EY

SITE PLAN

scale	AS SHOWN @ A1	checked	//
date	DECEMBER 2019	drawn	WD

9303/100

ARC Architecture Ltd.

Chapel Studios, 14 Purewell,
Christchurch, Dorset, BH23 1EP

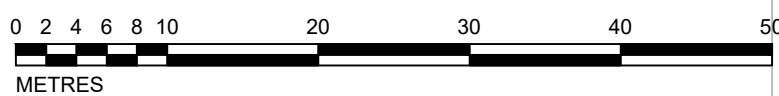
Tel: +44 (0) 1202 479919
E-mail: enquiries@andersrobertscheer.co.uk
Web: www.andersrobertscheer.co.uk



SITE PLAN: BASED ON TOPOGRAPHICAL SURVEY INFORMATION
SCALE 1:275

10m @ 1:100

APPENDIX B TOPOGRAPHIC SURVEY



108100mN

108000mN

107900mN

LAND NOTES:

The Development Services Ltd. own the copyright of this drawing. Their written consent must be obtained before this drawing is copied, forwarded to any third parties, and/or used for any purpose other than the one for which it was supplied.

This survey has been carried out on an accuracy consistent with a presentation scale of 1:500. Therefore, the survey data may differ slightly from the information associated with the scale. The same accuracies implied by the plotting scale are hereby applicable to digital data supplied for CAD.

Boundaries shown are not necessarily legal boundaries.

All units, heights, measurements and dimensions are in metres unless otherwise stated.

Eaves levels are taken at the bottom of the lowest roof level. Where underside of fascia or other ground level is shown, this is taken as the eaves level.

All below-ground features (including drainage, voids and services) have been identified from above ground and therefore all details relating to these (such as sizes, depth, pipe positions and alignments, description etc.) will be approximate only. Underground services have not been traced, and any are shown based on plan. No allowance has been made for any sub-surface materials or other chambers or voids below ground level. While every effort is made to show the correct above-ground features, it should be noted that there may be features obscured at the time of survey.

Spot heights of grades are road/highway levels, not top or to kerb unless otherwise stated.

Trees have been drawn diagrammatically (i.e. circular) showing average canopy spread. However they are not drawn to scale and are not intended to identify species, but only to indicate that they are present for the accuracy of this information.

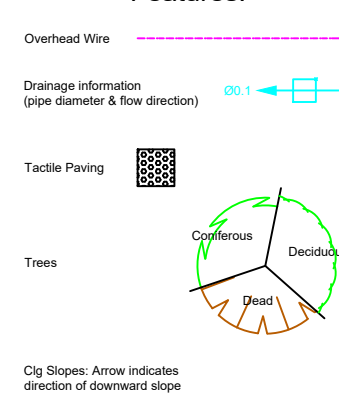
Circled figures are heights measured from internal floor levels and are therefore unrelated to the datum.

Measurements to internal walls have been taken to the wall finishes at approximately 1m above ground level and assumed to be vertical.

[illegible]

LEGEND:

Features:



Fences:

- Angle Iron Fence
- Barbed Wire Fence
- Close Boarded Fence
- Corrugated Iron Fence
- Chainlink Fence
- Iron Railings
- Larch Lap Fence
- Open Boarded Fence
- Post & Rail Fence
- Post & Rod Fence
- Post & Wee Fence
- Retaining Wall
- (Cnc Post/Steel Post/Timber Post)



Client:
FORTITUDO LTD.

Drawing Title:
TOPOGRAPHIC SURVEY

Project:
LAND AT PETERSFIELD RD
HAVANT

The horizontal & vertical control of this survey is based on Ordnance Survey grid as translated from GPS co-ordinates: using the OSTN15 & OSGM15 transformation as supplied by OS. We have applied a reverse scale factor to maintain true ground distances. Vertical values may differ from existing benchmarks in the vicinity which should be disregarded. All levels should be taken from LDS survey stations.

Scale: 1:500 Plotted on A1	Drawing No: LDS/15748-TP1 © Land Development Services Ltd. 2019
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APPENDIX C GROUND INVESTIGATION REPORT



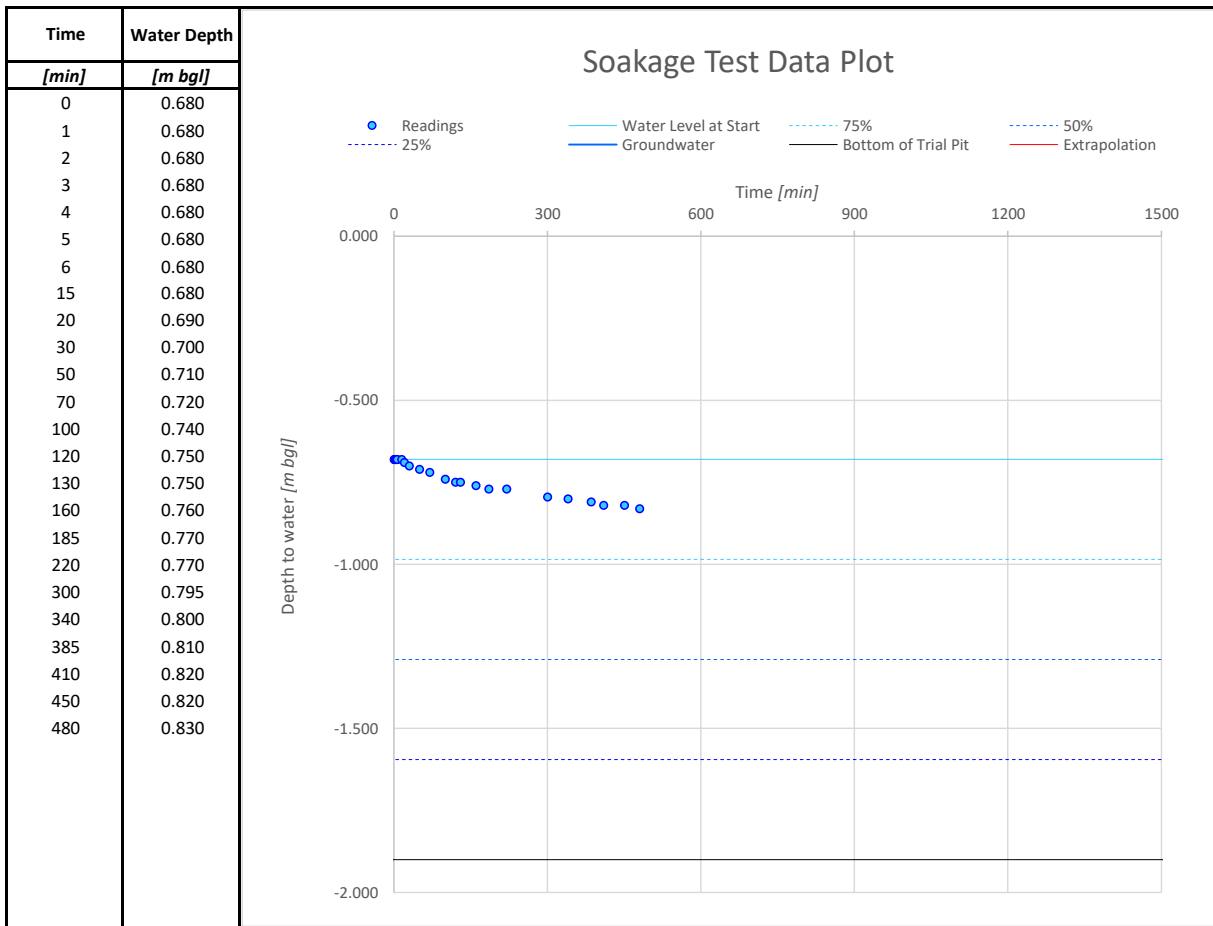
SOIL INFILTRATION RATE

Client: Fortitudo
Project Title: SSE Depot, Harvant
Project No: BRA140.D

Borehole No: TP1
Test No: 1
Date: 03/03/2020
Logged by: RB

Length [m]: 1.80
Depth [m]: 1.90
Width [m]: 0.60
Groundwater [m bgl]:

Ground	Conditions	from - to [m bgl]		Description
		0.00	0.40	crushed concrete
		0.40	0.60	made ground
		0.60	1.00	firm clay becoming very gravelly with depth
		1.00	1.90	medium dense fine sand



Soil Infiltration Rate [m/s]:

$$f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$$

with:

V_{p75-25} as Effective Storage Volume of water between 75% and 25% effective storage depth [m³] **0.66**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **4.01**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



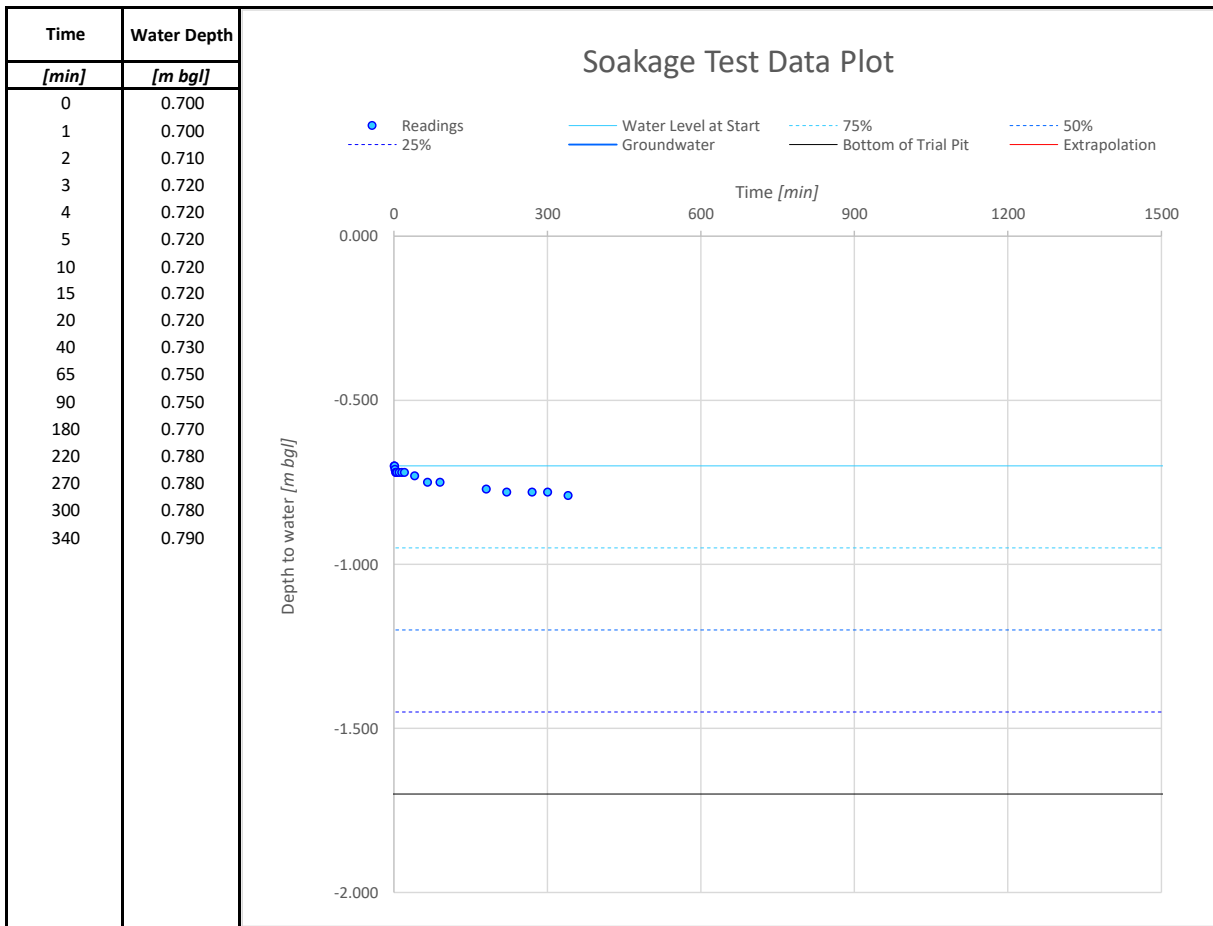
SOIL INFILTRATION RATE

Client: Fortitudo
Project Title: SSE Depot, Harvant
Project No: BRA140.D

Borehole No: TP2B
Test No: 1
Date: 03/03/2020
Logged by: RB

Length [m]: 1.40
Depth [m]: 1.70
Width [m]: 0.70
Groundwater [m bgl]:

Ground	Conditions	from - to [m bgl]		Description
		0.00	0.35	crushed concrete
		0.35	0.90	made ground
		0.90	1.70	firm gravelly clay becoming sandy with depth



Soil Infiltration Rate [m/s]:

$$f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$$

with:

V_{p75-25} as Effective Storage Volume of water between 75% and 25% effective storage depth [m³] **0.49**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **3.08**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



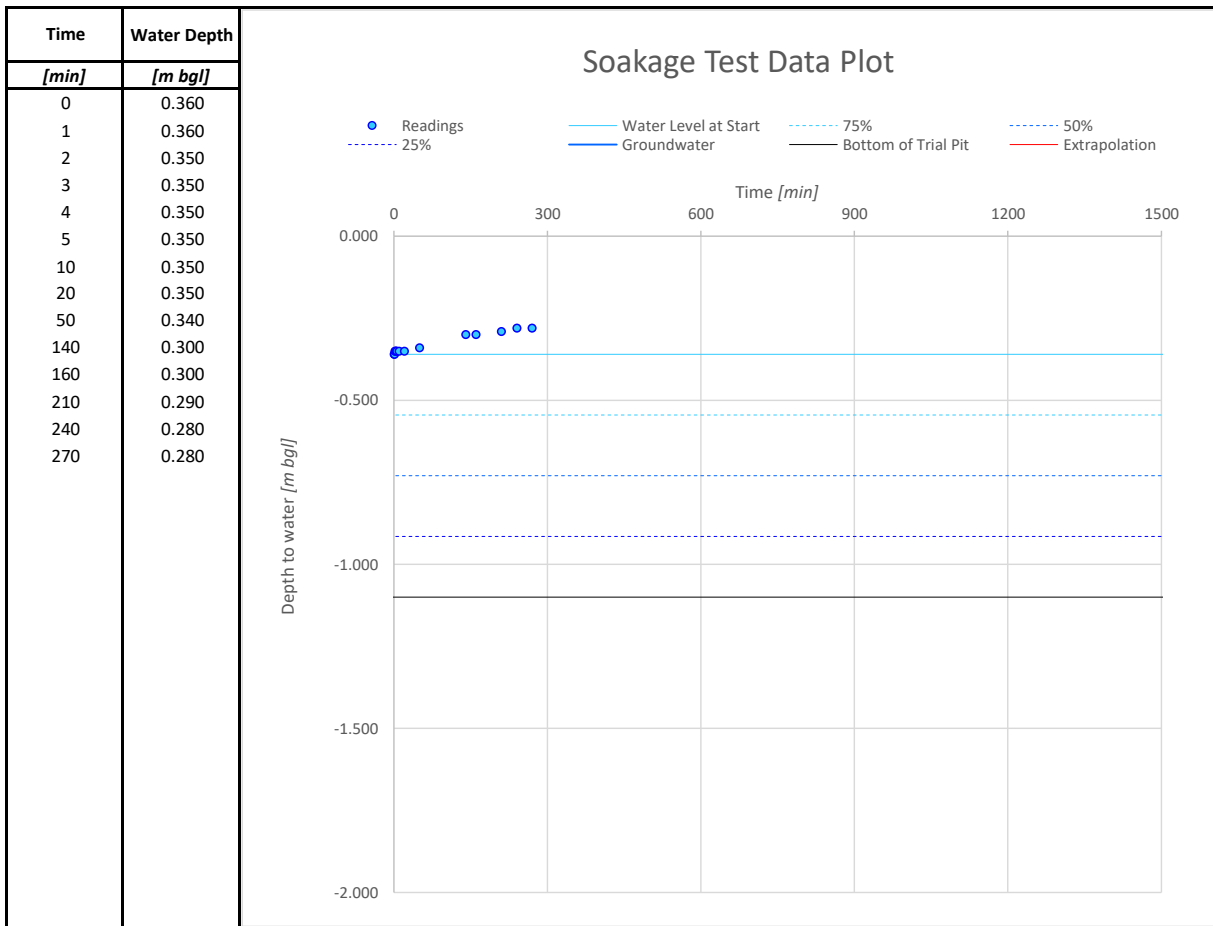
SOIL INFILTRATION RATE

Client: Fortitudo
Project Title: SSE Depot, Harvant
Project No: BRA140.D

Borehole No: TP3A
Test No: 1
Date: 03/03/2020
Logged by: RB

Length [m]: 1.30
Depth [m]: 1.10
Width [m]: 0.70
Groundwater [m bgl]:

Ground	Conditions	from - to [m bgl]		Description
		0.00	0.40	made ground
		0.40	1.00	soft to firm gravelly clay
		1.00	1.10	sandy clay



Soil Infiltration Rate [m/s]:
$$f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$$

with:

V_{p75-25} as Effective Storage Volume of water between 75% and 25% effective storage depth [m³] **0.34**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **2.39**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



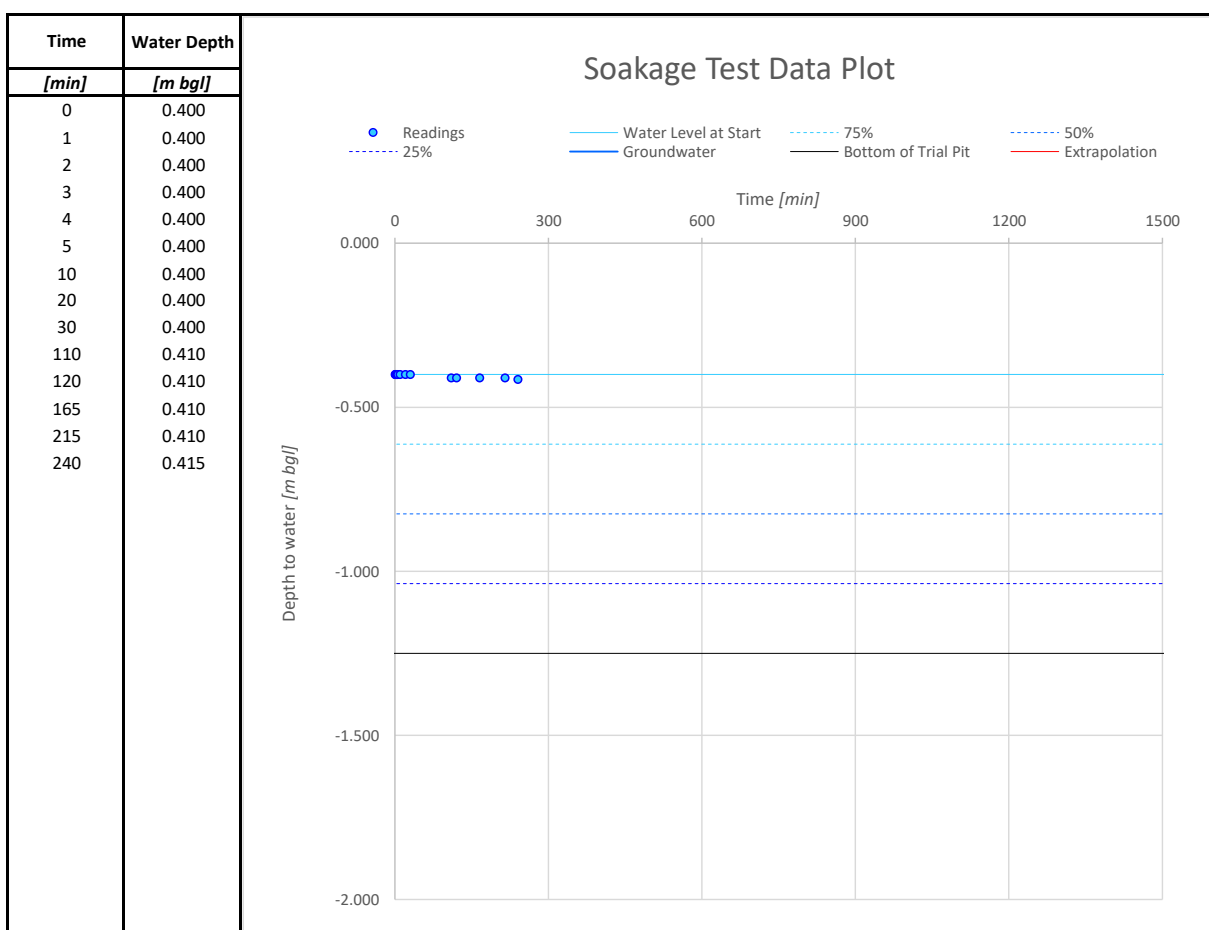
SOIL INFILTRATION RATE

Client: Fortitudo
Project Title: SSE Depot, Harvant
Project No: BRA140.D

Borehole No: TP4
Test No: 1
Date: 03/03/2020
Logged by: RB

Length [m]: 1.60
Depth [m]: 1.25
Width [m]: 0.70
Groundwater [m bgl]:

Ground	Conditions	from - to [m bgl]		Description
		0.00	0.10	brick rubble
		0.10	0.35	Made ground
		0.35	1.25	firm gravelly clay



Soil Infiltration Rate [m/s]:

$$f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$$

with:

V_{p75-25} as Effective Storage Volume of water between 75% and 25% effective storage depth [m³] **0.48**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **3.08**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.

APPENDIX D PORTSMOUTH WATER CORRESPONDANCE

Nick Bosanko

From: Catchment_Management <catchment.management@portsmouthwater.co.uk>
Sent: 09 December 2019 10:57
To: Lizzie Todd-Davies
Subject: FW: Redevelopment Enquiry for land at Bartons Road, Havant, Hampshire
Attachments: BGS scan log for borehole on site.png; Planning and pre application advice
Standard TCs Portsmouth Water.pdf

Good morning Lizzie,

Thank you for your email and the consultation on this development.

The site is located in a Source Protection Zone 1c for the Havant and Bedhampton springs; an essential public water supply source.

The site lies on Bedrock consisting of the Bognor Sand member and London clay overlying the chalk principal aquifer. The SPZ1c relates to subsurface activity only, where the chalk aquifer is confined and may be impacted by deep drilling activities. Subterranean activities such as deep infiltration drainage and/or piling may pose a risk to groundwater quality and our supply at Havant and Bedhampton Springs.

I have found one BGS borehole record for the site which shows the sand geology is to ~12 metres depth- please see attached the borehole scan. There should then be clay geology however BGS do not have any other public records of deeper boreholes in the area.

In terms of infiltration drainage we would have no concerns with shallow infiltration drainage (i.e. within the sand geology), however we would have a presumption against deep bore soakaways into the chalk- if deep bore soakaways were the proposed drainage solution we would require a hydrological risk assessment and pollution prevention measures. We would only agree to the use of deep pit based systems for surface water if the developer can show that all of the following apply:

- there are no other feasible disposal options such as shallow infiltration systems (for surface water) that can be operated in accordance with current British Standards;
- the system is no deeper than is required to obtain sufficient soakage;
- pollution control measures are in place;
- risk assessment demonstrates that no unacceptable discharge to groundwater will take place, in particular that inputs of hazardous substances to groundwater will be prevented; and
- there are sufficient mitigating factors or measures to compensate for the increased risk arising from the use of deep structures.

In addition, for the overall application we would require a land contamination assessment due to it being a brownfield site and we would have a presumption against piling, if piling is the only viable foundation solution we would expect a piling risk assessment and method statement (detailing the depth and type of piling to be undertaken and the methodology by which such piling will be carried out, including measures to prevent and minimise the potential for damage to subsurface water infrastructure, vibration and the programme for the works) to be submitted to and approved in writing by the local planning authority in consultation with Portsmouth Water.

We would ask to be further consultation throughout the planning process (formal planning application stage) and we like to make you aware any further pre-application advice will be chargeable- please see attached our T&CS for pre-application advice.

Many thanks

Kind regards,

Beth Fairley

*Catchment Management Team
Portsmouth Water*



From: Lizzie Todd-Davies [mailto:Lizzie.Todd-Davies@vectos.co.uk]
Sent: 05 December 2019 10:15
To: Catchment_Management <catchment.management@portsmouthwater.co.uk>
Subject: [EXTERNAL] Redevelopment Enquiry for land at Bartons Road, Havant, Hampshire

Good Morning,

We are in the process of preparing a drainage strategy for a redevelopment proposal.

The site is brownfield and is located within a Source Protection Zone (1 and 1c), and as such we are seeking your advice as per the Havant Local Plan 2036 guidelines.

At this stage, we are uncertain of how surface water will be disposed; it could be via infiltration (if site investigation indicates a reasonable infiltration rate), but given it is located within an SPZ, we wanted to consult with yourselves.

Would you be concerned with this? If so, what information would you require in order to ensure you are satisfied with protection of groundwater etc.? Are there any special measures you would require us to undertake?

The proposed development will replace the existing brownfield site (a former Travis Perkins site) with a three-storey building providing around 174 residential apartments, in addition a care home is also proposed.

The site (approximately 1.66 ha) is located on Bartons Road, Havant, Hampshire with approximate grid reference of SU721080 and postcode of PO9 5TH

Rough site location plan is given below.

Best wishes,
Lizzie.



Lizzie Todd-Davies
Assistant Flood Risk Consultant



(T) 0117 905 8888
Lizzie.Todd-Davies@vectos.co.uk

Broad Quay House, Prince Street, Bristol, BS1 4DJ



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**BEATING LEAKAGE
BE OUR EYES AND EARS**

📞 0800 434 6104

💻 www.portsmouthwater.co.uk

🐦 @portsmouthwater

APPENDIX E ENVIRONMENT AGENCY CORRESPONDANCE

From: PlanningSSD <PlanningSSD@environment-agency.gov.uk>
Sent: 13 December 2019 11:20
To: Lizzie Todd-Davies
Subject: RE: Redevelopment Enquiry for land at Bartons Road, Havant, Hampshire
Attachments: SSD Pre-app advice note September 2019.pdf

Dear Lizzie,

Thank you for consulting the Environment Agency on the above pre-application.

Having reviewed your proposal we are providing you with a preliminary opinion, which outlines the key environmental issues within our remit and provides guidance on any actions you need to undertake. It also provides hyperlinks to where you can obtain further information and advice to support your planning application. We offer one free preliminary opinion per site, per applicant /developer.

The Environmental Constraints identified on the site include:

- Source Protection Zone 1c

Based on the information currently available, the development raises some environmental concerns that you will need to address as part of your planning application. Further work will be needed to show how these issues can be satisfactorily addressed to ensure no environmental impacts.

Should you wish us to review any technical documents or want further advice to address the environmental issues, we can do this as part of our charged for service.

Further engagement at the pre-application stage will speed up our formal response to your planning application and provide you with certainty as to what our response to your planning application will be. It should also result in a better quality and more environmentally sensitive development. As part of our charged for service we will provide a dedicated project manager to act as a single point of contact to help resolve any problems.

We currently charge £100 per hour plus VAT. We will provide you with an estimated cost for any further discussions or review of documents. The terms and conditions of our charged for service are available [here](#).

Please note: This response is based on the information you have made available at this time. It is based on current national planning policy, associated legislation and environmental data / information. If any of these elements change in the future then we may need to reconsider our position.

We trust that the above information is of assistance. If you'd like further detailed advice, please don't hesitate to contact us.

Kind regards,

Sustainable Places Team

Environmental Planning and Engagement | Solent and South Downs



From: Lizzie Todd-Davies [<mailto:Lizzie.Todd-Davies@vectos.co.uk>]
Sent: 05 December 2019 10:17
To: SSD Enquiries <SSDEnquiries@environment-agency.gov.uk>
Subject: Redevelopment Enquiry for land at Bartons Road, Havant, Hampshire

Good Morning,

We are in the process of preparing a drainage strategy for a redevelopment proposal.

The site is brownfield and is located within a Source Protection Zone (1 and 1c), and as such we are seeking your advice as per the Havant Local Plan 2036 guidelines.

At this stage, we are uncertain of how surface water will be disposed; it could be via infiltration (if site investigation indicates a reasonable infiltration rate), but given it is located within an SPZ, we wanted to consult with yourselves.

Would you be concerned with this? If so, what information would you require in order to ensure you are satisfied with protection of groundwater etc.? Are there any special measures you would require us to undertake?

The proposed development will replace the existing brownfield site (a former Travis Perkins site) with a three-storey building providing around 174 residential apartments, in addition a care home is also proposed.

The site (approximately 1.66 ha) is located on Bartons Road, Havant, Hampshire with approximate grid reference of SU721080 and postcode of PO9 5TH

Rough site location plan is given below.

Best wishes,
Lizzie.



Lizzie Todd-Davies
Assistant Flood Risk Consultant



(T) 0117 905 8888
Lizzie.Todd-Davies@vectos.co.uk

Broad Quay House, Prince Street, Bristol, BS1 4DJ



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INFRASTRUCTURE
DESIGN



MICROSIMULATION
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FLOOD RISK &
DRAINAGE



ROAD SAFETY
AUDITS (1-4)

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APPENDIX F SOUTHERN WATER INFORMATION

Your Search Results :
Scottish and Southern Energy Plc
Bartons Road
Havant
Hampshire
PO9 5EY



LandSearches



Searchflow
42, Kings Hill Avenue

West Malling
Kent
ME19 4AJ

Your Ref
SF21978156000 SSB/838/92
Our Ref
LS/U1080242/A.C.
Date
3 Mar 2015
Contact
searches@southernwater.co.uk

Dear Sir/Madam

Your Search Results: Scottish and Southern Energy Plc, Bartons Road

Please find enclosed the results of your property search request. If you have any questions arising from the results please call our helpline on 0330 303 0276, which is open from 08.00 to 17.00hrs or send your enquiry to the following email address: Searches@southernwater.co.uk.

Yours faithfully

Southern Water Land Searches

**Scottish and Southern Energy Plc
Bartons Road
Havant
Hampshire
PO9 5EY**

Land Search: Scottish and Southern Energy Plc, Bartons Road, Havant, Hampshire, PO9 5EY
Ref: LS/U1080242/A.C.
Date: 3 Mar 2015
Contact: Southern Water Services
Tel: 0330 303 0276
Email: searches@southernwater.co.uk

MAPS

Public Sewer Map

1.1 Q: Where relevant, please include a copy of an extract from the public sewer map.

A: A copy of the statutory sewer map is provided

1. The Water Industry Act 1991 defines Public sewers as those which The Company have responsibility for. Other assets and rivers, watercourses, ponds, culverts or highway drains may be shown for information purpose only.

2. Any Private Sewers or Lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Map of Waterworks

1.2 Q: Where relevant, please include a copy of an extract from the map of waterworks.

A: The water supply for this area is provided by Portsmouth Water Plc, PO Box 8, West Street, Havant, Hants, PO9 1LG. Tel No: 02392 499888 and a copy of the map of waterworks is provided.

1. Assets other than vested water mains may be shown on the plan, for information only.

2. The company is not responsible for private supply pipes connecting the property to the public water main and does not hold details of these. These may pass through land outside of the control of the seller, or may be shared with adjacent properties. The buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.

3. If an extract of the public water main record is enclosed. This will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

DRAINAGE

Foul Water

2.1 Q: Does foul drainage from the property drain to a public sewer?

A: The company's records indicate that foul water from the property does not drain to the public sewerage system.

- 1. The company is not responsible for those private drains and sewers which connect the property to the public sewerage system, and does not hold details of these. The property owner will normally have sole responsibility for private drains serving the property and may have shared responsibility, with other users, if the property is served by a private sewer which also serves other properties. These may pass through land outside of the control of the seller, the buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.*
- 2. An extract from the public sewer map is enclosed. This will show known public sewers in the vicinity of the property and it should be possible to estimate the likely length and route of any private drains and/or sewers connecting the property to the public sewerage system.*
- 3. If foul water does not drain to the public sewerage system the property may have private facilities in the form of a cesspit, septic tank or other type of treatment plant.*

Surface Water Drainage

2.2 Q: Does surface water from the property drain to a public sewer?

A: The company's records indicate that surface water from the property does not drain to the public sewerage system.

- 1. The company is not responsible for private drains and sewers that connect the property to the public sewerage system and does not hold details of these. The property owner will normally have sole responsibility for private drains serving the property and may have shared responsibility, with other users, if the property is served by a private sewer which also serves other properties. These may pass through land outside of the control of the seller, the buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.*
- 2. An extract from the public sewer map is enclosed. This will show known public sewers in the vicinity of the property and it should be possible to estimate the likely length and route of any private drains and/or sewers connecting the property to the public sewerage system.*
- 3. In some cases company records do not distinguish between foul and surface water connections to the public sewerage system. If on inspection the buyer finds that the property is not connected for surface water drainage, the property may be eligible for a rebate of the surface water drainage charge. Details can be obtained from the company.*
- 4. If surface water does not drain to the public sewerage system the property may have private facilities in the form of a soakaway or private connection to a watercourse*

Surface Water Drainage Charges

2.3 Q: Is a surface water drainage charge payable?

A: Records confirm that a surface water drainage charge is not payable for the property.

- 1. Where surface water from a property does not drain to the public sewerage system no surface water drainage charges are payable.*
- 2. Where surface water drainage charges are payable but if on inspection the buyer finds that the property is not connected for surface water drainage, the property may be eligible for rebate of the surface water drainage charge. Details can be obtained from the Sewerage Undertaker.*

Location of Sewers

2.4 Q: Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundaries of the property?

A: The public sewer map included indicates that there is a public sewer, disposal main or lateral drain within the boundaries of the property. However, from the 1st October 2011 there may be additional public sewers, disposal mains or lateral drains which are not recorded on the public sewer map but which may further prevent or restrict development of the property. For further information please go to: <http://www.southernwater.co.uk/BusinessCustomers/propertySearches/faqPropertySearches.asp>

1. The Company has a statutory right of access to carry work on its assets. Employees of The Company or its contractors may, therefore, need to enter the property to carry out work.

2. The Approximate boundary of the property has been determined by reference to the Ordnance Survey record or the map supplied.

Sewer within 100 feet

2.5 Q: Does the public sewer map indicate any public sewer within 30.48 meters (100 feet) of any buildings within the property?

A: The public sewer map included indicates that there is a public sewer within 30.48 metres (100 feet) of a building within the property.

1. From the 1st October 2011 there may be additional lateral drains and/or public sewers which are not recorded on the public sewer map but are also within 30.48 meters (100 feet) of a building the property.

2. The presence of a public sewer within 30.48 metres (100 feet) of the building(s) within the property can result in the Local Authority requiring a property to be connected to the public sewer.

3. The measure is estimated from the Ordnance Survey record, between the building(s) within the boundary of the property and the nearest public sewer.

Adoption Agreements

2.6 Q: Are any sewers or lateral drains serving or which are proposed to serve the property the subject of an existing adoption agreement or an application for such an agreement?

A: The company's records indicate that the sewers serving the development, of which this property forms part, are not the subject of an application for adoption under S104 of the Water Industry Act 1991. Where the property is part of an established development it would not normally be subject to an adoption agreement under Section 104 of the Water Industry Act 1991.

1. Where the property is part of a very recent or ongoing development and the sewers are not the subject of an adoption application, buyers should consult with the developer to ascertain the extent of private drains and sewers for which they will hold maintenance and renewal liabilities.

2. Final adoption is subject to the developer complying with the terms of the adoption agreement under Section 104 of the Water Industry Act 1991.

Building Over Agreement

2.7 Q: Has the sewerage undertaker approved or been consulted about any plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain?

A: The company's records indicate that there is not a statutory agreement or consent in respect of building over a public sewer at this property. For historical reasons the company may not be aware of some agreements or consent's which have been entered into by the local authority.

Risk of Flooding Due to Overloading Public Sewers

2.8 Q: Is any building which is or forms part of the property at risk of internal flooding due to overloaded public sewers?

A: The property is not recorded as being at risk of internal flooding due to overloaded public sewers. From the 1st October 2011 private sewers, disposal mains and lateral drains were transferred into public ownership. It is therefore possible that a property may be at risk of internal flooding due to an overloaded public sewer which the sewerage undertaker is not aware of. For further information it is recommended that enquiries are made of the vendor.

1. A sewer is "overloaded" when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Flooding as a result of temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded.

2. "Internal flooding" from the public sewers is defined as flooding, which enters a building or passes below a suspended floor. For reporting purposes, buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.

3. "At Risk" properties are those that the water company is required to include in the Regulatory Register that is reported annually to the Water Services Regulatory Authority. These are defined as properties that have suffered or are likely to suffer internal flooding from the public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant reference period (either once or twice in ten years) as determined by the Sewerage Undertaker's reporting procedure.

4. Flooding as a result of storm events proven to be exceptional and beyond the reference period of one in ten years are not included on the at Risk register.

5. Properties may be at risk of flooding but not included on the Register where flooding incidents have not been reported to the Sewerage Undertaker.

6. Public Sewers are defined as those for which the Sewerage Undertaker holds statutory responsibility under the Water Industry Act 1991.

7. It should be noted that flooding can occur from private sewers and drains which are not the responsibility of the Sewerage Undertaker. This report excludes flooding from the private sewers and drains and the Sewerage Undertaker makes no comment upon this matter.

Sewerage Treatment Works

2.9 Q: Please state the distance from the property to the nearest boundary of the nearest sewage treatment works.

A: The nearest sewage treatment works is 2.62 kilometres South South West of the property. The name of the sewage treatment works is BUDDS FARM HAVANT WTW, which is responsibility of Southern Water Services, Southern House, Capstone Road, Chatham, Kent ME5 7QA company.

1. The nearest sewerage treatment works will not always be the sewerage treatment works serving the catchment within which the property is situated.

2. The Sewerage undertaker's records were inspected to determine the nearest sewerage treatment works.

3. It should be noted therefore that there may be private sewerage treatment works closer than the one detailed above that have not been identified.

WATER

Connection to Mains Water Supply

3.1 Q: Is the property connected to mains water supply?

A: The water supply for this area is provided by Portsmouth Water Plc, PO Box 8, West Street, Havant, Hants, PO9 1LG. Tel No: 02392 499888 whose records indicate that the property is connected to mains water supply.

Location of Water Mains

3.2 Q: Are there any water mains, resource mains or discharge pipes within the boundaries of the property?

A: The water supply for this area is provided by Portsmouth Water Plc, PO Box 8, West Street, Havant, Hants, PO9 1LG. Tel No: 02392 499888 whose records indicate that there is a vested water main within the boundary of the property.

1. The boundary of the property has been determined by reference to the Ordnance Survey record.

2. The presence of a vested water main within the boundary of the property may restrict further development within it. The company has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of the company or its contractors needing to enter the property to carry out work.

Adoption of Water Mains and Services Pipes

3.3 Q: Is any water main or service pipe serving or which is proposed to serve the property the subject of an existing adoption agreement or an application for such an agreement?

A: Records confirm that water mains or service pipes serving the property are not the subject of an existing adoption agreement or an application for such an agreement.

1. This enquiry is of interest to purchasers of new homes who will want to know whether or not the property will be linked to the mains water supply.

Risk of Low Water Pressure or Flow

3.4 Q: Is the property at risk of receiving low water pressure or flow?

A: Records confirm that the property is not recorded on a register kept by the water undertaker as being at risk of receiving low water pressure or flow.

1. The boundary of the property has been determined by reference to the Ordnance Survey record.

2. "Low water pressure" means water pressure below the regulatory reference level which is the minimum pressure when demand on the system is not abnormal.

3. Water Companies are required to include in the Regulatory Register that is reported annually to the Water Services Regulatory Authority properties receiving pressure below the reference level, provided that allowable exclusions do not apply (i.e. events which can cause pressure to temporarily fall below the reference level).

4. The reference level of service is a flow of 9 litres/minute at a pressure of 10metres head on the customers side of the main stop tap (mst). The reference level of service must be applied on the customers side of a meter or any other company fittings that are on the customers side of the main stop tap.

The reference level applies to a single property. Where more than one property is served by a common service pipe, the flow assumed in the reference level must be appropriately increased to take account of the total number of properties served.

For two properties, a flow of 18 litres/minute at a pressure of 10metres head on the customers' side of the mst is appropriate. For three or more properties the appropriate flow should be calculated from the standard loadings provided in BS6700 or Institute of Plumbing handbook.

5. Allowable exclusions

The Company is required to include in the Regulatory Register properties receiving pressure below the reference level, provided that allowable exclusions listed below do not apply

6. Abnormal demand:

This exclusion is intended to cover abnormal peaks in demand and not the daily, weekly or monthly peaks in demand which are normally expected.

Companies should exclude from the reported DG2 figures properties which are affected by low pressure only on those days with the highest peak demands. During the report year companies may exclude, for each property, up to five days of low pressure caused by peak demand.

7. Planned maintenance:

Companies should not report under DG2 low pressures caused by planned maintenance.

It is not intended that companies identify the number of properties affected in each instance. However, companies must maintain sufficiently accurate records to verify that low pressure incidents that are excluded from DG2 because of planned maintenance are actually caused by maintenance.

8. One-off incidents:

This exclusion covers a number of causes of low pressure; mains bursts; Failures of company equipment (such as PRVs or booster pumps);

Firefighting; and Action by a third party. However, if problems of this type affect a property frequently, they cannot be

classed as one-off events and further investigation will be required before they can be excluded.

9. Low pressure incidents of short duration:

Properties affected by low pressures which only occur for a short period, and for which there is evidence that incidents of a longer duration would not occur

during the course of the year, may be excluded from the reported DG2 figures.

Water Quality Analysis

3.5 Q: Please include details of a water quality analysis made by the water undertaker for the water supply zone in respect of the most recent calendar year.

A: The analysis confirmed that all tests met the standards prescribed by the 2000 Regulations or the 2001 Regulations

1. Water companies have a duty to provide wholesome water that meets the standards of the Water Supply (Water Quality) Regulations 2000.

However, the householder is responsible for any deterioration in water quality that is a result of the domestic distribution system (the supply pipe and the plumbing within the property) that results in the standards not being met.

2. In England and Wales these Regulations implement the requirements of the European Drinking Directive 98/83/EC. The 2000 Regulations impose standards for a range of parameters, which are either health based to ensure the water is safe to drink or to ensure the water is aesthetically acceptable. They also require that drinking water should not contain any element, organism or substance (whether or not a parameter) at a concentration or value which would be detrimental to public health.

3. Water quality is normally tested at the tap used for domestic consumption normally the kitchen. However, the householder is responsible for any of deterioration in water quality that is a result of the domestic distribution system (the supply pipe and the plumbing within the property) that results in the standards not being met.

4. If there are concerns that lead pipes within the property may be causing high levels of lead in your drinking water please contact your water company (give contact details) for further advice.

5. The water company undertakes a monitoring programme to establish water quality that includes random sampling from domestic properties. It will notify the consumers of any failures to meet the water quality standards that are due to the condition or maintenance of the domestic distribution system.

6. The data collected by the company is subject to external review by the drinking water inspectorate (DWI) and by local and health authorities. In addition to reviewing quality data the DWI also carry out audits during which any area of the company's operational can be examined.

7. If there are concerns that lead pipes within the property may be causing high levels of lead in your drinking water please contact the company (see below) for further advice.

Water Quality Standards

3.6 Q: Please include details of any departures authorised by the Secretary of State or National Assembly for Wales under Part 6 of the 2000 Regulations from the provisions of Part 3 of those Regulations.

A: There are no such authorised departures for the water supply zone.

1. Authorised departments are not permitted if the extent of the departure from the standard is likely to constitute a potential danger to human health.

2. Please contact your water company if you require further information.

Water Meters

3.7 Q: Please include details of the location of any water meter serving the property.

A: Records indicate that the property is served by a water meter, which is not located within the dwelling –house which is or forms part of the property, and in particular is located outside

*1. Where the property is not served by a water meter and the customer wishes to consider this method of charging they should contact:
Portsmouth Water Plc, PO Box 8, West Street, Havant, Hants, PO9 1LG. Tel No: 02392 499888*

CHARGING

Sewerage And Water Undertakers

4.1 Q: Who are the sewerage and water undertakers for the area?

A: The sewerage undertaker for the area is Southern Water Services, Southern House, Yeoman Road, Worthing, Sussex BN13 3NX

Portsmouth Water Plc, PO Box 8, West Street, Havant, Hants, PO9 1LG. Tel No: 02392 499888

Sewerage Bills

4.2 Q: Who bills the property for sewerage services?

A: The property is not billed for sewerage services.

Water Bills

4.3 Q: Who bills the property for water services?

A: The property is billed for water services by Portsmouth Water Plc, PO Box 8, West Street, Havant, Hants, PO9 1LG. Tel No: 02392 499888

Current Basis for Sewerage and Water Charges

4.4 Q: What is the current basis for charging for sewerage and/or water services at the property?

A: Where no change of use is made, on change of occupation charges will be made on a measured basis

1. Measured (metered) charges can apply where the buyer makes a change of use of the property or where the buyer uses water

- where the principal use of the premises is not as a home*
- where there is garden watering other than by hand*
- which automatically replenishes a pond or swimming pool with a capacity in excess of 10,000litres*
- in a bath with a capacity in excess of 230Litres*
- in a power shower*
- in a reverse osmosis unit*

2. If a property is measured (metered) upon change of occupation this property will remain as a metered property.

3. Water and sewerage companies full charges are set out in their charges schemes which are available from the company free of charge upon request.

Trade Effluent Information

4.5 Q: Is there a Consent, on this property, to discharge Trade Effluent under S118 of the Water Industry Act (1991) into the public sewerage system?

A: The trader operating at this commercial property does not hold either a Trade Effluent Consent, or an acknowledgement of a trade effluent discharge, as issued by Southern Water.

1. Please note any existing consent is dependant on the business being carried out at the property and will not transfer automatically upon change of ownership.