

Plot 100 Dunsbury Park

PEREGA

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S2	P1	11/11/2025	Anisha Sahi	Gregory Schmidt	Issued for information
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S2	P3	10/03/2026	Gregory Schmidt	Amy Norman	Updated Drainage and Levels Drawings

1. Introduction

- 1.1 This Drainage Strategy Report has been prepared by Perega Ltd on behalf of Portsmouth City Council to support the planning application for the development of Plot 100 at Dunsbury Park Havant PO9 4EE.
- 1.2 The development Plot 100 is part of the wider development, with construction progressing in distinct parcels. This drainage strategy reports relates to the development of Plot 100 only.
- 1.3 The application boundary covers an area of approximately 0.957 hectares (ha) and was originally a greenfield site. The site has previously been developed, and Plot 100 is currently a level, engineered earthworks platform.
- 1.4 This Drainage Strategy presented in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Technical Guidance.
- 1.5 The key site details are presented in Table 1, below.

Table 1 - Site Summary

Site Name	Plot 100 Dunsbury Park, Portsmouth
Location	Dunsbury Park, Havant PO9 4EE
Grid Reference	SU 69809 09088
Development Site Area	0.957 hectares (ha)
Development Type	Warehouse and Office
Flood Zone	Flood Zone 1 (Low Probability Risk)
Surface Water Flood Risk	Very Low Probability Risk
Local Water Authority	Southern Water
Local Planning Authority	Havant Borough Council
Lead Local Flood Authority	Hampshire County Council

- 1.6 The development area is located in Flood Zone 1 therefore, in line with standing advice, an independent FRA is not required under the guidance of the National Planning Policy Framework (NPPF).
- 1.7 This report has been prepared solely as a Drainage Strategy report. It therefore only addresses any drainage issues to the extent they are impacted by the development plot 100. The findings are based on information evaluated at the time of preparation.
- 1.8 The report is the property of Perega and is produced for the exclusive use of our client and is confidential to that client. The contents may not be made use of by any third party without the express written consent of Perega. Any liability to any third party is expressly excluded.
- 1.9 This report is made on behalf of Perega. By receiving this report and acting on it, the client, or any third party relying on it, accepts that no individual is personally liable in contract, tort, or breach of statutory duty (including negligence).

2. Methodology

- 2.1 This is a desk-based study that utilises existing, publicly held information in the form of mapping and previously undertaken work. Conclusions made about flooding have been made using our expert judgement and knowledge of similar events.
- 2.2 In preparing this report, information has been gathered and referenced from several sources. These are as follows:
- i. The Environment Agency's Flood Map for Planning.
 - ii. The Long-Term Flood Risk Map for England.
 - iii. The National Planning Policy Framework, and.
 - iv. The Planning Practice Guidance.
 - v. As-Built topographical survey information for the property

3. Site Details

Site Setting

- 3.1 The site is an irregular shaped parcel (roughly rectangular) of largely undeveloped land within a wider multi-phase development site. Two parcels situated to the east of Plot 100 have already been completed, while the remaining plots 400 and 600 are planned for development in future phases.
- 3.2 The site discussed in this drainage strategy report primarily relates only on Plot 100. The Dunsbury Park development as a whole is referred to as the wider development site.
- 3.3 Peter Brett Associates was commissioned by Portsmouth City Council in 2015 to prepare supporting documentation in aid for Planning Condition A2, SuDS Masterplan, under the Outline Planning Consent (AP/12/00338) for the wider development site. Peter Brett Associates consequently produced an Outline Drainage Strategy report for the wider development site, which includes Plot 100.
- 3.4 Our drainage strategy builds upon the approved site-wide strategy and design standards prepared by Peter Brett Associates, applying the established principle to the site-specific layout and drainage requirement of Plot 100. The Outline Drainage Strategy prepared by Peter Brett Associates for the wider development site is included in **Appendix I** of this report
- 3.5 The site is accessible via the roundabout in Fitzwygram Way.
- 3.6 A site location plan is included in **Appendix A** of this report.

Topography

- 3.7 The site exhibits a gradual variation in ground levels, ranging from approximately 24.95m AOD at the northern boundary to around 23.00m AOD at the southern boundary, representing an overall fall of approximately 1.95m across the site.
- 3.8 The Topographic survey can be seen in **Appendix D**.

Surface Water Features

- 3.9 The Hermitage Stream runs in close proximity to the site, flowing in a south-eastern direction and running along the outer edge of the site's southern boundary.
- 3.10 Approximately 320m east of the site lies the Park Lane Stream, which is culverted in its lower reaches before it joins the Hermitage Stream downstream of the Middle Park Way. This stream forms part of

wider drainage network and given the distance, the stream is unlikely to be provide any direct surface water outfall for the site.

- 3.11 Several small drainage ditches are also present within or near the site. Notably, two are located just north of the Hermitage Stream, while another two run in a north–south direction in the southern part of the site, also north of the Hermitage Stream. Additional existing ditches lie to the south-east of a planned access road.

Geology & Hydrogeology

- 3.12 A ground investigation report has been undertaken by Hydrock Consultants Limited for the wider site development and the report includes the ground investigation for Plot 100.
- 3.13 BGS Geology Viewer indicates that site is situated between two distinct geological formations: the London Clay Formation along its southern side and the Bognor Sand Member along its northern side. The London Clay Formation is noted to be mainly bioturbated or poorly laminates, blue-grey or grey-brown, slight calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay. The Bognor Sand Member comprises to be glauconitic bioturbated or cross-bedded fine and medium-grained sands, partially cemented. The Superficial deposit is mostly identified as clay, silt, sand and gravel, which is referred to as Head Gravel.
- 3.14 Hydrock Consultants Limited ground investigation report confirms that the site is underlain by Bognor Sand Member (approximately 0.4 m and 5.1 m bgl), comprising silty fine sand and sandy clay/silt, overlaying a weathered zone of the London Clay Formation (to around 5.5 m bgl). Below this, the London Clay Formation extends to at least 30.45 m bgl, consisting of stiff to very stiff, low-permeability silty clay.
- 3.15 BGS GeoIndex provides a borehole log (ref: SU60NE113) located within the southwestern section of the site. The borehole log indicates an upper layer consisting of mottled or brown sandy clay to silty sandy gravel, extending to a depth of approximately 1.52m bgl, which is identified as 'Head' deposits. Below this, a firm mottled grey clay, classified as London Clay, extending 1.52m to 2.45m bgl. The borehole log records that Bognor Sand Member was touched, which confirmed the two geological formations located within the site.
- 3.16 The borehole log SU60NE113 notes that groundwater strikes between 1.98 bgl and 2.44 bgl, which suggest a shallow groundwater table near the interface between the Head deposits and the underlying of London Clay Formation.
- 3.17 Hydrock Consultants Limited reports that groundwater was encountered in the Bognor Sand Member and London Clay Formation between 1.3 -11.5m bgl, with monitored levels generally 1.6–4.2m bgl and slow seepage observed. An infiltration test in the London Clay (to 3.0 m bgl) showed no infiltration, indicating very low permeability.
- 3.18 Defra's Magic Maps indicates that the site is in an area of Medium Groundwater vulnerability.
- 3.19 The borehole log is included in **Appendix E**.
- 3.20 Hydrock Consultants Limited ground investigation report included in **Appendix F** of this report.

Existing Drainage

- 3.21 The incumbent sewage undertaker is Southern Water.
- 3.22 No public foul and surface water sewer records are available at the time of writing this report.

- 3.23 A CCTV Survey was undertaken by Miland Survey LTD for the wider development site, which includes the private drainages within the site (Plot 100). The survey identified a private foul sewer running from the northeastern part of the site towards the south, which is assumed to discharge into the Southern Water public sewers. No private surface water sewers were identified within the site boundary; however, surface water sewers are present offsite adjacent to the northern boundary and to the east of the site. The eastern surface water sewer is understood to discharge further south, where the CCTV survey terminates, and it is assumed that this private drainage ultimately discharges into an existing attenuation pond located downstream.
- 3.24 The CCTV survey is included in **Appendix G** of this report.

Existing Discharge Rate

- 3.25 The existing site is greenfield.
- 3.26 The HR Wallingford tool has been used to calculate the following Greenfield discharge rate per hectare for the site which can be seen in **Appendix H**. This is summarised in Table 2.

Table 2 - Greenfield Runoff rate per ha

Storm Event	Greenfield Rate (l/s/ha)
QBar	4.3
1-year	3.6
30-year	9.8
100-year	13.6

- 3.27 The runoff rate summarised in Table 2 ties in with the proposed Peter Brett discharge rate of 9.3 l/s.

4. The Proposed Development

- 4.1 The proposed development consists of a warehouse building with an associated office area, a substation, car parking with associated private access road, and a service yard.
- 4.2 The proposed development can be seen in **Appendix B**.
- 4.3 The impermeable and permeable areas for the site are summarised in Table 3.

Table 3 - Impermeable and Permeable Areas

Description	Impermeable Area (m ²)	Permeable Area (m ²)
Roof Area	3162	
Public/Private Highway + Parking	1532	
Hardstanding / Courtyard	3108	
Soft Landscaping		1767
Total Area	7803	

4.4 Peak Rainfall Intensity

With climate change it is becoming more common to see rainfall events of higher intensity. Increased rainfall intensity affects river levels and drainage systems, with the result being an increase in surface water flooding and sewerage surcharge.

- 4.5 The NPPF states that for flood risk assessments for developments with a lifetime beyond 2100, the upper end allowances should be used. Table 4 and Table 5 summarises the data attributed the *East Hampshire Management Catchment*.

Table 4: Catchment Peak Rainfall Flow Allowances - 3.3% annual exceedance rainfall event

Epoch	Central Allowance	Upper End Allowance
2050s	20%	35%
2070s	25%	40%

Table 5: Catchment Peak Rainfall Flow Allowances - 1% annual exceedance rainfall event

Epoch	Central Allowance	Upper End Allowance
2050s	20%	40%
2070s	25%	45%

- 4.6 The emerging surface water strategy for the proposed development should be designed to accommodate and discharge peak rainfall flows up to the 1 in 100-year event, including a 45% increase in rainfall for climate change, as identified by the East Hampshire Catchment Peak Rainfall allowance for the 1% AEP. Similarly, the 3.3% AEP shall be designed using an increased rainfall uplift of 40%

Hierarchy of Surface Water Discharge

- 4.7 The Hierarchy for the discharge of surface water looks at the most sustainable ways to discharge surface water from most preferred to least preferred options.
- 4.8 The most preferred option is to discharge to ground, then discharge to surface water body, then discharge to surface water sewer, then discharge to combined sewers.
- 4.9 The proposed development is a greenfield, where infiltration to ground would typically present the most suitable discharge option. However, the ground investigation undertaken by Hydrock indicates low infiltration rates base on the onsite testing. As such, use of soakaways or infiltration systems is considered as unsuitable for this site.
- 4.10 There are no surface water bodies in close proximity to the site that could provide suitable outfall for surface water discharge.
- 4.11 There are no private surface water sewers within the site boundary. However, the CCTV survey undertaken by Miland Survey identified offsite surface water sewers adjacent to the northern boundary and to the east of the site. The eastern surface water sewer is understood to discharge further south, where the CCTV survey terminates, and it is assumed that this private drainage ultimately discharges into an existing attenuation pond downstream, which in turn outfalls into Hermitage Stream. On basis of this, discharge to the existing surface water sewer is considered most viable and appropriate option for this development.

5. Proposed Drainage Strategy

- 5.1 Based on the above assumptions and constraints, a proposed drainage strategy has been developed which can be seen in **Appendix C**. The calculations modelled for the proposed drainage strategy can also be found within **Appendix C** of this report.

Surface Water

- 5.2 Following from the drainage hierarchy, the preferred method of surface water discharge is via connection to the nearby off-site surface water system, which is assumed to discharge into the Southern Water public sewers located further south of the wider development site.

- 5.3 The surface water is to be attenuated and stored on site, with the discharge rate of 9.3 l/s. This discharge rate has been derived from the approved site-wide drainage strategy prepared by Peter Brett Associates for the wider development site. The Plot 100 drainage strategy therefore is accordingly with the principles and design principles set out within the wider development site strategy, ensuring consistency in runoff management across the masterplan.
- 5.4 The discharge rate concluded by Peter Brett Consultants, within their 'Surface Water Drainage and SuDS Strategy' report for the wider development site is included in **Appendix I** of this report.
- 5.5 The runoff from the roof of the building is proposed to be collected through siphonic drainage system, which would discharge into the site drainage network. Surface water runoff from the car park, access road and the service yard is proposed to be collected via a series of gullies and linear drainage channel, as appropriate. This runoff is proposed to pass through a petrol interceptor prior to entering the attenuation tank.
- 5.6 A below-ground cellular attenuation tank of 760m² (40m x 19m) x 0.8m deep is proposed. The attenuation tank would provide an approximate storage volume of 608m³, designed to accommodate the runoff from the 0.78 ha of impermeable area within the site. The surface water collected in the tank would then be discharged at a controlled rate of 9.3 l/s via a Hydrobrake flow control. The attenuated flows would then be discharged offsite to the existing offsite eastern surface water sewer.
- 5.7 The proposed route of the surface water from the Hydrobrake to the connection into the existing offsite surface water is to be confirmed. This is due to insufficient topographical data and absence of invert levels for the existing sewer. Further surveys are required to accurately determine the sewer alignments and connection point levels.
- 5.8 The surface water drainage strategy is subject to confirmation of any public sewer on site, as well as pre-planning applications with Southern Water.
- 5.9 Different areas of hardstanding pose different risks of pollution. Table 6 is replicated from CIRIA's C753: The SuDS Manual.

Table 6: Pollution hazard indices for different land use classifications - reproduced from CIRIA C753: The SuDS Manual

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very Low	0.2	0.2	0.05
Other roofs (typically commercial/industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (e.g. cul-de-sacs, home zones and general access roads) and non-residential car parking with infrequent change (e.g. schools, offices) i.e. < 300 traffic movements/day	Low	0.5	0.4	0.4

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Commercial yard and delivery areas, non-residential car parking with frequent change (e.g. hospitals, retail), all roads except low traffic roads and trunk roads/motorways ¹	Medium	0.7	0.6	0.7
Sites with heavy pollution (e.g. haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways ¹	High	0.8 ²	0.8 ²	0.9 ²

Notes

1 Motorways and trunk roads should follow the guidance and risk assessment process set out in Highways Agency (2009)

2 These should only be used if considered appropriate as part of a detailed risk assessment – required for all these land use types (Table 4.3). When dealing with high hazard sites, the environmental regulator should first be consulted for pre-permitting advice. This will help determine the most appropriate approach to the development of a design solution.

- 5.10 Based on Table 6, the site is classified as High pollution hazard level due to the presence of the service yard where heavy goods vehicles will operate.
- 5.11 The site comprises a car park in the northern area and a service yard in the southern area. Given the high potential for pollutant runoff for this site, a petrol interceptor is proposed within the surface water drainage strategy. All surface water from the car park, access road and service yard would pass through the petrol interceptor, before entering the attenuation tank and discharges into the existing offsite surface water sewer. This is to attempt to remove any pollutants or hydrocarbons from the runoff, reducing the risk of contamination to the attenuation tank and the existing offside surface water sewer.

Foul Water

- 5.12 There is an existing foul sewer located within the site which runs close to the proposed development building. Therefore, the foul sewer is proposed to be diverted around the building, offsite and connect back into the existing foul sewer to the south of the site.
- 5.13 A foul water system is proposed to run along the northern part of the site, serving the office area and connecting into the existing foul sewer by gravity within the site. It is assumed that SVPs are located with the office areas only, however if SVPs are to be located within the warehouse area, additional foul water sewer is to be proposed around the development building and connect into the new diverted foul sewer.
- 5.14 The foul water drainage strategy will be developed subject to confirmation of any public foul sewer on site, as well as pre-planning applications with Southern Water.

6. Conclusion

- 6.1 This Drainage Strategy Report has been prepared by Perega Ltd on behalf of Portsmouth City Council to support the planning application for development Plot 100 at Dunsbury Park Havant PO9 4EE. The site comprises of a warehouse building with an associated office area, a substation, car parking with associated private access road, and a service yard.
- 6.2 Hydrock Consultants Limited ground investigation report confirms that the site is underlain by Bognor Sand Member (approximately 0.4 m and 5.1 m bgl), comprising silty fine sand and sandy clay/silt, overlaying a weathered zone of the London Clay Formation (to around 5.5 m bgl). Below this, the London Clay Formation extends to at least 30.45 m bgl, consisting of stiff to very stiff, low-permeability silty clay. The report records that groundwater was encountered in the Bognor Sand Member and London Clay Formation between 1.3 -11.5m bgl, with monitored levels generally 1.6–4.2m bgl and slow seepage observed. An infiltration test in the London Clay (to 3.0 m bgl) showed no infiltration, indicating very low permeability. As such, use of soakaways or infiltration systems is considered as unsuitable for this site. However, the recorded infiltration rates could potentially assist with attenuation as part of the SuDS for the site.
- 6.3 The site is located in Flood Zone 1 and at low risk from surface water flooding.
- 6.4 The surface water is proposed to be attenuated and stored on site within a below-ground attenuation tank located in the southeastern part of the site. The runoff from the roof, car park, access road and service yard is proposed to be collected via a siphonic drainage, gullies and linear drainage channels and pass through a petrol interceptor before being attenuated on site. The surface water would then be discharged at controlled rate of 9.3 l/s via Hydrobrake to the existing offsite surface water sewer by gravity.
- 6.5 The final surface water sewer route offsite will be confirmed following further topographical and drainage surveys (invert levels).
- 6.6 An existing foul sewer located within the site is to be diverted around the building, offsite and connect back into the existing foul sewer to the south of the site. A foul water system is proposed to run along the northern part of the site, serving the office area and connecting into the existing foul sewer by gravity within the site.
- 6.7 The foul and surface water drainage strategy is subject to the confirmations of any public sewers on site, as well as pre-planning applications with Southern Water.