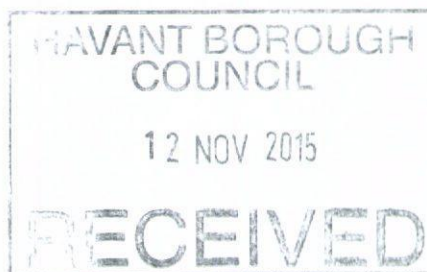




Date: 29/09/2015



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Project No.: EF1696
Project Title: 71 Stakes Hill Road

Concrete Block Permeable Pavement to Interpave design (6th Ed)

Site Location: Purbrook
r = 0.4 (enter 0.2, 0.3 or 0.4)
validation: OK
Design storm 1 in = 100+20% year
Drained Area = 268 m²
Area Ratio = 1.77
Economy indicator: Ratios <3 assumed to be economic
Catchment ID: groos permeable pavement
M5-60 Rainfall = 20 mm (enter 14, 17 or 20)
Water storage area = 151 m²

Is seasonal GWL within 1m of formation?
Are pollutants present in the subgrade?

N

N

Is sealed system C mandatory? N

Site Considerations

How has depth of highest seasonal groundwater level been determined? Site investigation GWL monitoring (Including winter)
Where determined, what is the depth to highest seasonal groundwater level (GWL) from surface 1.60 m
Is the pavement far enough from drainage mounds/fields or soakaways etc to avoid impact? Yes
What Source Protection Zone (SPZ) is the proposed soakaway located in? None
What is known and proposed about potential contaminated ground on the site? EA/LPA accept infiltration after remediation
What usage forms the soakaway catchment? Residential driveways (& roofs)
Where catchment comprises other uses what upstream treatment is agreed? N/A

Technical Assessment

(min 30%) % Void in fill = 35 %
Permeability source = measured
Measured Soil Filtration Rate = 1.24E-06 m/s
Design Soil Filtration Rate = 1.24E-06 m/s
Measured CBR = 4.0 %
Design CBR = 4.0 %
Soil type sand poorly graded
Generic infiltration rate = 1.00E-07 m/s
Generic CBR = 10.0 %

Water storage & attenuation

Use system = A
Table 5 CGA depth = 210 mm for 30% voids
Table 6 CGA depth = 450 mm for 30% voids
T5 actual void CGA depth = 180 mm
T6 actual void CGA depth = 386 mm

Allowing for impermeable area adopt min CGA depth = 386 mm

Structural design

Table 7 loading category = 3 pedestrain 0.015msa
Construction + end use traffic = 1-no construction traffic
blocks = 80 mm
sand = 50 mm
geotextile
DBM refer to construction traffic assesemnt
CGA hydraulically bound = 125 mm
CGA = 250 mm
capping = 0 mm
membrane n/a
TOTAL DEPTH = 516 mm
DBM required = 0
adjusted CGA hydraulically bound = 125 mm
sum CGA = 375 mm
storage check: Increase net CGA to attenuation value
adopt unbound CGA = 261 mm
TOTAL DEPTH = 516 mm

Overall Assessment

Reliability of seasonal GWL determination Good
Pavement base elevation above seasonal high GWL 1.08 m pass
Reliability of effective clearance from other infiltration infrastructure Good pass
Is the location over an SPZ? No
Will the site be clean enough for the EA/LPA to permit infiltration? Yes pass
Is the proposed catchment use a low pollution risk? Yes
If no have the EA/LPA accepted the upstream treatment proposals for runoff to the soakaway? No N/A

**OPUS**

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PROJECT NO: **F1686**SHEET NO: **1**REV: **-**DESIGNED: **ADT**REVIEWED: **-**DATE: **29/09/2015**

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PROJECT: **71 STAMPS HILL RD. PORTSMOUTH****PIT 2.**Pit Dims. **1 x 0.5 x 1.0 d.**Initial Water depth. **0.6m.**Depth reduction **40 mm in 2 hrs. (7200 seconds)****V: 0.02.****A: 2.24.****t: 7200**

$$\frac{0.02}{(2.24 \times 7200)}$$

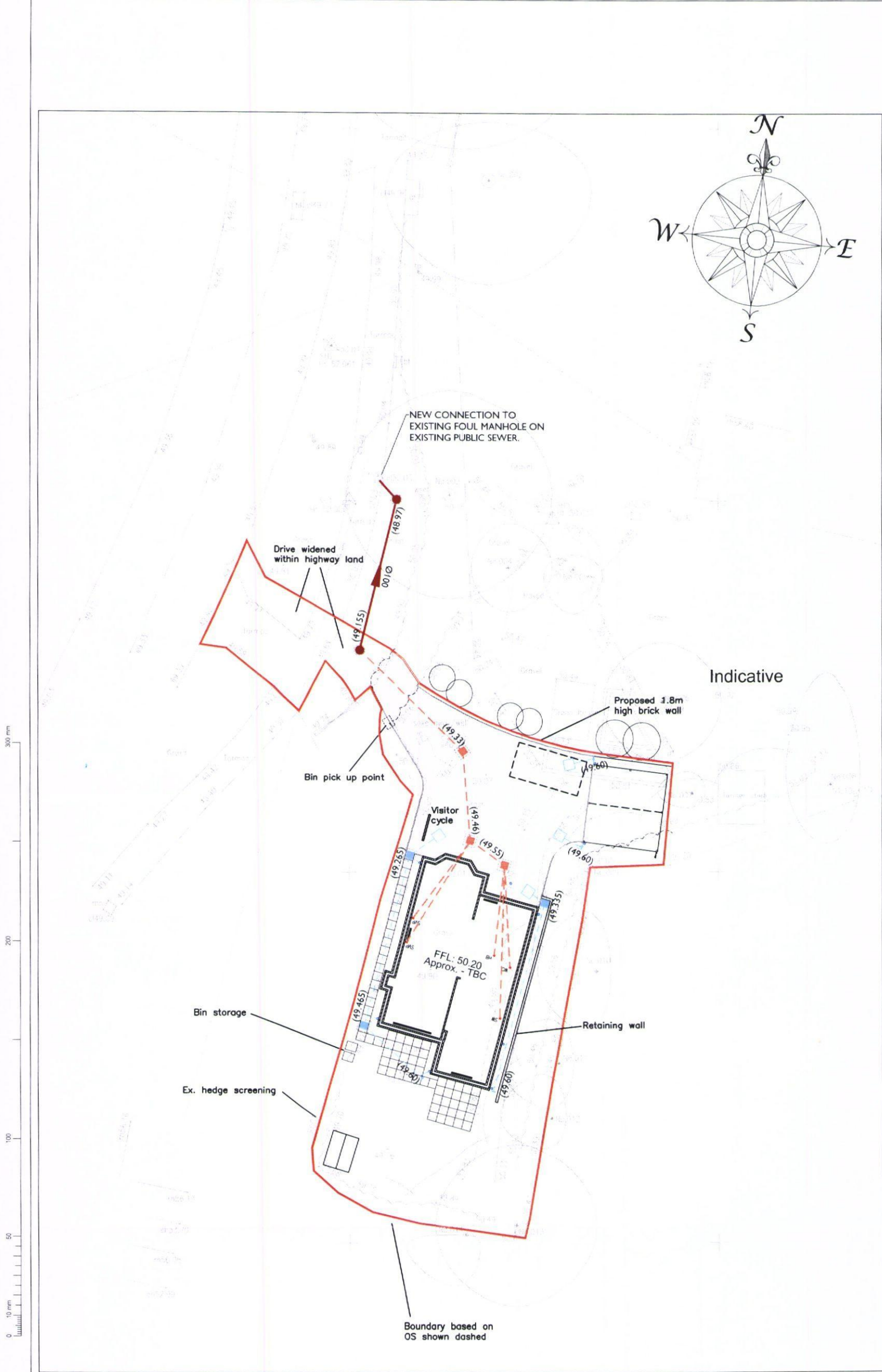
$$\frac{0.02}{16128} = \frac{1.24 \times 10^{-6} \text{ m/s.}}{}$$

FIGURES DERIVED BY ADT. (DLS WRITTEN LEGIBLY. FOR REFERENCE ONLY)

DESIGN SOAKAGE RATE **1.24 x 10⁻⁶ m/s.**HAVANT BOROUGH
COUNCIL

12 NOV 2015

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- STANDARD NOTES:**
1. This drawing is to be read in conjunction with all other OPUS drawings, and with all relevant Architect's and Engineer's drawings and specifications.
 2. No dimensions are to be scaled from this drawing. Unless noted otherwise, all dimensions are in millimeters and all levels are in meters from the sea datum. All dimensions to be checked on site. All details and dimensions relating to sub-contractor work must be checked and agreed between the sub-contractor or supplier and the main contractor.
 3. The electronic information from this drawing cannot be guaranteed as dimensionally drawn exists. Figured dimensions must be used for setting out and detailing. OPUS logos and company information must be removed from copies if information is reused.
 4. The main contractor is responsible for the design of all temporary works, and is also responsible for the safe maintenance and stability of existing buildings at all times.
 5. The main contractor is responsible for the mitigation of all occurrences of ground water during the construction period.
 6. Any information given regarding existing underground services is given in good faith, also consultation with the relevant authorities, however, accuracy is not guaranteed. The main contractor is responsible for checking all information on site prior to work commencing and taking due care and attention whilst undertaking the works.
 7. The contractor must comply with all current legislation relating to Health & Safety.
- DRAINAGE NOTES:**
1. All works to be constructed in strict accordance with specification of the Local Authority, BS6091:1985 & BSEN 752-1.
 2. All pipes run near buildings to comply with the Building Regulations 2002 Part H1. Where a pipe is within 1m of a foundation the trench shall be filled with class GBN2 concrete up to the lowest level of the foundation. Where the trench is further than 1m from the foundation, the trench shall be filled with class GBN2 concrete to a level below the lowest level for the foundation equal to the distance from the foundation less 150mm. In both cases the pipe shall be bedded and surrounded in 150mm thick class GBN2 concrete.
 3. Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class GBN2 concrete encasement (150mm thick).
 4. Where a pipe, under a cartway, has a depth of cover of less than 1.2m the pipe shall be laid in a class Z bedding.
 5. Where pipes are bedded and surrounded in concrete, flexible pipes should be provided. Concrete bed boards (timberboard or polypropylene) shall be provided to a maximum of 6m centres (including with pipe joints). The boards shall be placed to pipe diameter and to a height and width equal to the concrete cross section. A board thickness of 18mm for pipes up to 450mm nominal diameter and 30mm for pipes over 450mm nominal diameter.
 6. All private building drainage shall be constructed in strict accordance with BSEN 752-1.
 7. Unless otherwise specified, building drainage to be 100mm external diameter.
 8. Minimum gradients for foul drainage pipes:
Ø100mm: 1:40 where flow is less than 10l/s, or where no WCs are connected.
Ø150mm: 1:78 where flow is 10l/s or greater, or where at least 1WC is connected.
Ø150mm: 1:135 where flow is less than 50l/s, or where up to 5WCs are connected.
Ø150mm: 1:130 where flow is 50l/s or greater, or where 5WCs, or more WCs are connected.
 9. Minimum gradients for foul drainage pipes:
Ø100mm: 1:40 where flow is less than 10l/s, or where no WCs are connected.
Ø150mm: 1:78 where flow is 10l/s or greater, or where at least 1WC is connected.
Ø150mm: 1:135 where flow is less than 50l/s, or where up to 5WCs are connected.
Ø150mm: 1:130 where flow is 50l/s or greater, or where 5WCs, or more WCs are connected.
 10. All gullies not connected to inspection chambers are to be roddable.
 11. All gully connections other than those to manholes to be made via 'Y' junctions.
 12. Gullies connected with pedestrian crossings to have pedestrian type gully covers.
 13. All road gully connections to be 150mm diameter.
 14. All soak stacks to be fitted with air admittance valves where branch drain exceeds 12m length at the head of the run. Soil vent pipes located at the head of a run to be installed with roof air vents.
 15. All connections to be made from soffit to soffit.
 16. Trench temporary formwork is required to all excavations exceeding 1.2m depth to provide adequate support and stability at all times.
 17. Sewers are to be constructed in single sections between manholes only. Trenches to be backfilled prior to excavating the succeeding sewer run.
 18. All concrete and concrete products to be in accordance with BRE 363 for subbases.
 19. Where sewers or drains are to be installed they shall be protected or sealed by grouting in accordance with the Civil Engineer Specification for the Water Industry 7th Edition, clause 5.13.

Revision	Amendment	Approved	Revision Date
P1	FIRST ISSUE	APT	25.03.2015

WILSON+HOUSE

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Drawn	Design	Approved	Revision Date
DLS	DLS	APT	30.09.2015

Project No. FA E-F1696.00
Scale 1:150
Project 71 Stakes Hill Road
Waterlooville.

Sheet **DRAINAGE**

Drawing No.	Sheet No.	Revision
300	1 of 1	P1

- LEGEND:**
- PROPOSED TYPE 3 FOUL INSPECTION CHAMBER WITH INVERT LEVEL ON PRIVATE DRAIN.
 - PROPOSED TYPE 4 FOUL PPIC ON PRIVATE DRAIN.
 - PROPOSED SPOT LEVEL.
 - PROPOSED TYPE 4 STORM PPIC WITH INVERT LEVEL ON PRIVATE DRAIN.
 - PROPOSED HANSON DISTRIBUTION BOX.
 - PROPOSED RODDING EYE WITH INVERT LEVEL ON PRIVATE DRAIN.
 - PROPOSED BLOCK PAVED SURFACE (124m²).

PRELIMINARY

HAVANT BOROUGH COUNCIL
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