CIVILISTIX

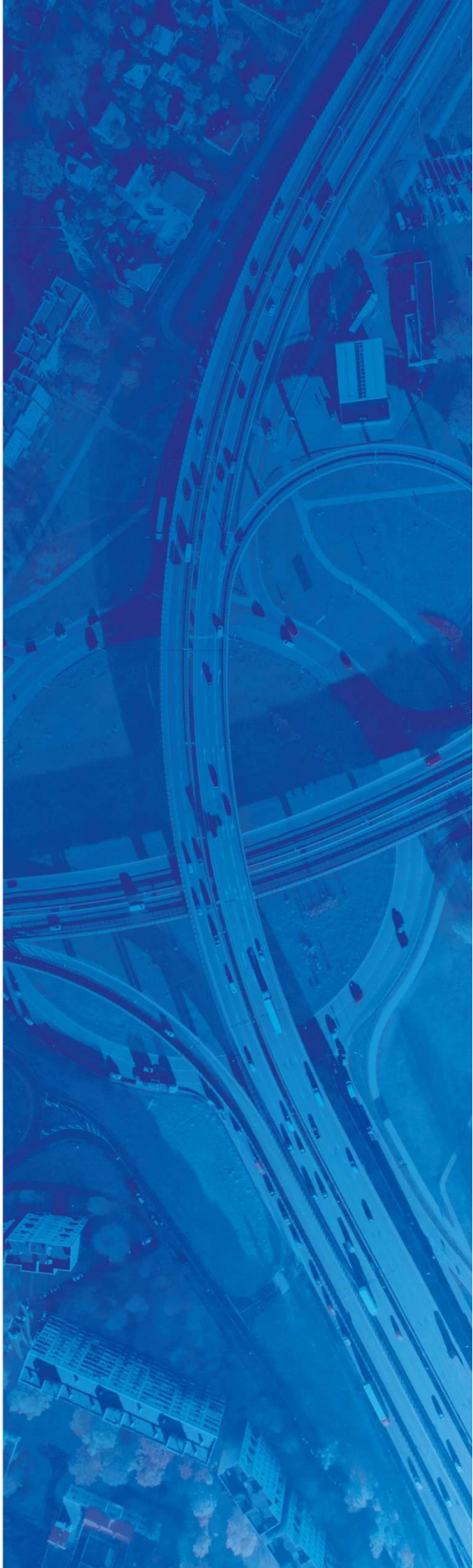
Specialist in Highway,
Drainage & Utility
Infrastructure

Drainage Strategy

Ludmore Barns,
Lovedean (PO8 0SG)

LRQA CERTIFIED ISO 9001-2015

UKAS MANAGEMENT SYSTEMS 0001



Document Control Sheet

Project Name	Ludmore Barns, Lovedean (PO8 0SG)
Report Title	Drainage Strategy
Client	Enliven Developments LTD
Date of Origin	19/09/2025
Project Number	2-238

Revision	Date	Issued for	Prepared by	Approved by
P1	19/09/2025	Planning	RP	DM
P2	23/09/2025	Planning	FR	DM
P3	03/10/2025	Planning	FR	DM
P4	03/10/2025	Planning	FR	DM

Contents

Appendices

1 Introduction

Civilistix Consulting Engineers has been commissioned by Enliven Developments LTD to prepare a Drainage Strategy (DS) report to support a planning application for the creation of a C1 Guesthouse and associated external hardstanding areas.

The site is located at Ludmore Cottages, Broadway Lane, Lovedean (PO8 0SG), and occupies a redline boundary area of 0.078ha. The existing site is currently a brownfield, used as an agricultural barn. A total of 0.061ha within the site redline boundary is currently hardstanding.

Development proposals generate a total impermeable area of 0.061ha when fully constructed. Thus, there is no increase in the impermeable area when compared to the existing site scenario.

The purpose of this DS is to demonstrate how this impermeable area can be satisfactorily drained without increasing flood risk onsite and elsewhere. The strategy has been developed in full accordance with National and Local standards as well as best practice documentation.

Specifically, this DS demonstrates that the proposed development does not lead to an increase in;

- Peak runoff rate of storm water runoff leaving the site.
- Volume of runoff leaving the site.
- Pollution to receiving waters from storm water runoff.
- Flood risk to nearby or neighbouring sites.

2 Existing Site

2.1 Site Location

The site is located at grid reference (468021, 114194) and is 0.078ha in total area.

The address of the existing site is Ludmore Cottages, Broadway Lane, Lovedean (PO8 0SG).

The site is currently a brownfield, used as an agricultural barn. A total of 0.061ha within the site redline boundary is currently hardstanding.

The site is bound by Broadway Lane to the East, Ludmore Cottages to the North, and fields to the South and West.

A site location plan is shown in **Appendix A.**

2.2 Site Hydrology

Based on Southern Water (SW) asset mapping, there are no public sewers in the vicinity of the development.

Based on satellite and Ordnance Survey (OS) mapping, there is a shallow watercourse running southernly along Broadway Lane.

At present, no CCTV drainage survey has been undertaken on the existing site drainage networks. However, based on the Topographical Survey prepared by P. Stubbington Land Surveys Ltd (September 2023), it is believed that surface water from the existing building roof discharges directly to ground via infiltration.

SW sewer records and an Existing General Arrangement Plan are shown in **Appendix B**.

2.3 Site Topography

A Topographical survey of the site and surrounding area has been prepared by P Stubbington Land Surveys LTD, dated September 2023, ref. 10694/01.

The topographical survey indicates that the site slopes from the northern boundary towards the southwest boundary, with a nominal gradient of 1 in 24, with a maximum level of ~108.71m Above Ordnance Datum (AOD) at the northern corner of the single-story garage structure, and a minimum level of ~107.15m AOD at the southern boundary.

The Topographical survey is shown in **Appendix C.**

2.4 Site Geology

BRE 365 infiltration testing was undertaken by Civilistix on 21st August 2025, results are shown below;

- Trial Pit 1 located in the soft landscaping south-east of the existing building identified 0.60m thick topsoil / made ground, on top 400mm of stiff sandy clay with flints. An infiltration rate of 2.17 x 10^{-5} m/s was recorded. Groundwater was not observed during testing.

There is one British Geological Survey (BGS) historic borehole in the vicinity of the site. Borehole Registration number 91-124 has measured a well between February 1953 to October 1968. In the 75.5m observation well the highest that water was recorded was at 54.8m below ground level.

The BGS historic boreholes information is provided in **Appendix D**.

The BRE 365 Infiltration Technical Note is provided in **Appendix G**.

3 Development Proposal

Development proposals are for the creation of a C1 Guesthouse and associated external hardstanding areas.

The site is located at Ludmore Cottages, Broadway Lane, Lovedean (PO8 0SG), and occupies a redline boundary area of 0.078ha.

Development proposals generate a total impermeable area of 0.061ha when fully constructed. Thus, there is no increase in the impermeable area when compared to the existing site scenario.

Development proposals are provided in **Appendix F.**

4 Surface Water (SuDS) Drainage Strategy

4.1 Surface Water Discharge Strategy

Part H of the Building Regulations (2010) recommends surface water run-off shall discharge to one of the following, listed in order of priority:

- An adequate soakaway or some other adequate infiltration system, or where that is not reasonably practicable,
- A watercourse, or, where that is not reasonably practicable,
- A sewer.

Each disposal option has been reviewed in the context of the site below;

Infiltration Disposal

BRE 365 infiltration testing was undertaken by Civilistix on 21st August 2025, results are shown below

- Trial Pit 1 located in the soft landscaping south-east of the existing building identified 0.60m thick topsoil / made ground, on top 400mm of stiff sandy clay with flints. An infiltration rate of 2.17 x 10^{-5} m/s was recorded. Groundwater was not observed during testing.

The BRE 365 Infiltration Technical Note is provided in **Appendix G**.

Disposal of surface water via infiltration to the ground is considered feasible following Trial Pit 1 results due to the infiltration rate 2.17 x 10^{-5} m/s being recorded > 1x 10^{-6} m/s.

4.2 SuDS Strategy

It is proposed that all external hardstanding areas will be permeable (total impermeable area of 0.024ha) utilising Type 3 sub-base for attenuation before infiltrating to the ground.

It is proposed that the development roof areas, equivalent to an impermeable area of 0.037ha, attenuate to a geo-cellular tank, before infiltrating to the ground.

The geo-cellular storage tank and Type 3 Sub-base storage provided will be sufficient to accommodate the critical 1 in 100 years + 45% climate change storm event.

Drainage Strategy plans and associated calculations are shown in **Appendix F**.

4.3 Rainfall Simulation & Climate Change

This drainage strategy uses Flood Estimation Handbook (FEH22) rainfall data.

An allowance of +45% for climate change corresponding to the ‘upper end’ of current legislation on climate change published by the EA has been used.

Additionally, a 10% allowance for urban creep has been factored into the impervious areas of the proposed development.

All attenuation structures have been sized based on the 1 in 100 year critical storm event plus an additional 45% allowance for climate change.

4.4 Surface Water Treatment

The SuDS Manual, 2015 identifies pollution hazard levels of new development based off their proposed land use. In line with the SuDS Manual pollution hazard categorisations, a *low* pollution risk for the proposed development has been adopted (residential car parks). **Table 1** shows the total suspended solids, metals and hydrocarbons associated with a low pollution categorization (as provided within the SuDS Manual).

	Total Suspended Solids (TSS)	**Metals**	**Hydro-carbons**
Low pollution hazard index	0.5	0.4	0.4

Table 1: Total suspended solids, and hydrocarbons associated with a low pollution categorization (as provided within the SuDS Manual)

As of the SuDS Manual guidance, conveying runoff through different forms of SuDS features provides varied mitigation values. On the basis the combined mitigation index value is higher than the initial mitigation values associated with a low pollution risk, the drainage system is deemed to have sufficiently mitigated the pollution hazard posed.

All roof will pass through a geo-cellular attenuation tank, while external hardstanding areas will pass through permeable paving before infiltrating to ground. Furthermore, Catchpits will be used prior to entry into the proposed geo-cellular tanks. **Table 2** shows the mitigation indices associated to the proposed SuDS (as provided within the SuDS Manual Table 26.4).

	Total Suspended Solids (TSS)	**Metals**	**Hydrocarbons**
Permeable Paving	0.7	0.6	0.7

Table 2: Mitigation indices associated to the proposed SuDS (as provided within the SuDS Manual Table 26.3)

It can be confirmed the proposed drainage strategy treats runoff over and above the guidance provided within the SuDS Manual (C753).

4.5 Surface Water Management & Maintenance

For any surface water drainage system to operate as originally designed, it is necessary to ensure that it is adequately maintained to ensure its continued performance throughout its design life.

It is proposed the SuDS features used within this development will be fully maintained and managed by a private management company.

Table 3 and 4 stipulates the proposed maintenance activities and frequencies the private management company would carry out over the lifetime of the development.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect and identify 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 risk to performance)	Monthly
	For system 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, outlets, 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

Table 3: Operation and Maintenance Requirements for Geo-cellular Tank

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 glyphosphate 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 50mm 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 hours after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Table 4: Operation and Maintenance Requirements for Pervious Pavements

5 Proposed Foul Water Drainage

In accordance with Building Regulations Part H1 the preferred priority order of foul water disposal is:

H1. (1) An adequate system of drainage shall be provided to carry foul water from appliances within the building to one of the following, listed in order of priority:

a) a public sewer; or, where that is not reasonably practicable,

b) a private sewer communicating with a public sewer; or,

c) where that is not reasonably practicable, either a septic tank which has an appropriate form of secondary treatment or another wastewater treatment system; or,

d) where that is not reasonably practicable, a cesspool.

Based on Southern Water (SW) asset mapping, there are no public sewers in the vicinity of the development.

It is therefore proposed that foul water from the development will be collected and conveyed via gravity to a new sewage treatment plant, ensuring the removal of pollutants prior to infiltration into the ground.

Due to space constraints within the site, it is not feasible to provide a drainage field in accordance with BS 6297. Instead, infiltration is proposed via a ring soakaway, which has been designed to accommodate the foul water flows generated by the development. Discharge of treated effluent to ground will be agreed with the Environmental Agency and a bespoke environmental permit will be obtained prior to any works commencing on site.

The total foul water volume generated by the development have been calculated assuming a total population of 17 people and 120 litres per day per person:

- Minimum Volume Required = 17 x 120 l/p/day= 2,040 l/d

A Drainage Strategy plan and associated documentation are shown in **Appendix F**.

6 Conclusion

Civilistix Consulting Engineers has been commissioned by Enliven Developments LTD to prepare a Drainage Strategy (DS) report to support a planning application for the creation of C1 Guesthouse and associated external hardstanding areas.

The site is located at Ludmore Cottages, Broadway Lane, Lovedean (PO8 0SG), and occupies a redline boundary area of 0.078ha. The existing site is currently a brownfield, used as an agricultural barn. A total of 0.061ha within the site redline boundary is currently hardstanding.

Development proposals generate a total impermeable area of 0.061ha when fully constructed. Thus, there is no increase in the impermeable area when compared to the existing site scenario.

This report makes the following key conclusions;

- Disposal of surface water via infiltration to the ground is considered feasible following Trial Pit 1 results, achieving an infiltration rate of 2.17×10^{-5}.
- It is proposed that all external hardstanding areas will be permeable (total impermeable area of 0.024ha), utilising Type 3 sub-base for attenuation before infiltrating to ground. It is proposed that the development roof areas, equivalent to an impermeable area of 0.037ha attenuate to a geo-cellular tank located within the car parking area, before infiltrating to the ground.
- The geo-cellular storage tank and Type 3 Sub-base storage provided will be sufficient to accommodate the critical 1 in 100 years plus 45% climate change storm event.
- It can be confirmed the proposed drainage strategy treats runoff over and above the guidance provided within the SuDS Manual (C753).
- It is proposed the foul water flows of development will be treated through a Sewage Treatment Plant to remove pollutants before discharging into a ring soakaway via infiltration into the ground.

Appendix A – Site Location Plan


Broadway Ln
Broadway Ln
Site Location

Appendix B – Existing Site Drainage Regime

N

GENERAL LEGEND

Application boundary (0.078 ha)

Extent of land under Client's control (0.116) ha)

EXISTING CATCHMENT PLAN LEGEND:

Catchment Area (ha)	Impermeable Area (ha)	Direct Discharge location
Catchment 1 (Hardstanding)	0.061 ha	Assumed Infiltration

Trial Pit 1:
EGL:108.20m AOD
Highest GWL:Not encountered (Dry)
Topsoil/Made ground:0.60m thick
Stiff sandy clay with flints: 0.40m thick.
Worst Infiltration Rate:2.17x10^{-5}

DO NOT SCALE

GENERAL

1. The contractor shall comply with the health and safety requirements as set out in the CDM Regulations
2. All works are to be undertaken in accordance with the Building Regulations and latest relevant British Standards.
3. Conflicting information between this drawing and information given by others must be referred to the engineer before the works commence.
4. The contractor shall, before commencing the works, verify all existing outfall invert levels and site and setting out dimensions. the contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions, and alignment of all parts of the works. Any discrepancies are to be reported to the Engineer
5. All products used are to be CE marked in accordance with the Construction Products Directive CPD/89/106/EEC.
6. The contractor shall be responsible for locating all existing utilities prior to commencing construction and protecting all existing services affected by the works.
7. Any unidentified hazards discovered during the progress of works are to be reported immediately to the engineer.
8. This drawing should not be used for setting out
9. All land, ownership and asset boundaries / extents, shown on this plan should be assumed to be indicative and should be legally verified prior to any works commencing

REV	DATE	BY	SUMMARY OF CHANGE	CHK	APD
P2	23.09.25	RP	CLIENT'S COMMENTS ADDRESSED	FR	DM
P1	19.09.25	RP	PLANNING ISSUE	FR	DM

DRAWING STATUS:
FOR PLANNING

CIVILISTIX
Allia Future Business Centre, The Guildhall, Cambridge (CB2 3QJ)
Tel: +44 (0)1223 343 277 E: enquiries@civilistix.com
www.civilistix.com

CLIENT:
Enliven Developments LTD

ARCHITECT:
Rheal Architecture

PROJECT:
Ludmore Barns, Lovedean (PO8 0SG)

DRAWING TITLE:
Existing General Arrangement Plan

SCALE @ A1:	CHECKED / APPROVED BY:	DATE:
1:100	FR/DM	Sept 2025

PROJECT No:	DRAWING No:	REV:
2-238	C-001	P2

SEWER RECORDS PAGE 1 OF 2

114329

113752

467720

468660

O.S. REF. SU6814SW	Drawn by: SomDeba	The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determnined on site. WARNING: BAC pipes are constructed of Bonded Asbestos Cement WARNING: Unknown (UNK) materials may Include Bonded Asbestos Cement	N
	Scale: 1:2500		
Title: Land adjacent to Ludmore Cotta	Date: 17/11/2022	Based upon Ordnance Survey Digital Data with the permission of the controller of H.M.S.O. Crown Copyright Reserved Licence No. WU 298530.	Southern Water

SEWER RECORDS PAGE 2 OF 2

Node	Cover	Invert	Size	Material	Shape	Node	Cover	Invert	Size	Material	Shape	Node	Cover	Invert	Size	Material	Shape	Node	Cover	Invert	Size	Material	Shape
4901X	75.84	74.04	150	UNK	CIRC																		
5801X	72.31	70.91	150	UNK	CIRC																		
6700X	69.45	67.66	225	UNK	CIRC																		

LINE STYLES / COLOURS

Brown	Foul
	Foul Syphon Sewer
	Foul Vacuum Main
	Foul Rising Main
Red	Combined
	Combined Syphon Sewer
	Combined Rising Main
	Lateral Drain
Orange	Building Over Agreement Area
Dark Blue	Treated Effluent
Purple	Sludge
	Sewer Catchment
	Section 104 Area
Light Blue	Surface Water
	Surface Water Rising Main
Yellow	Private
Green	Access Shaft
	Decommissioned

MATERIALS

AK	Alkathene
BAC	Bonded Asbestos Cement
BRC	Brick (Common)
BRE	Brick (Engineering)
CC	Concrete Box Culvert
CI	Cast Iron
CO	Concrete (In-Situ)
CP	Concrete (Pre-Cast)
CSB	Concrete Segments (bolted)
CSU	Concrete Segments (unbolted)
DI	Ductile Iron
GRC	Glass Reinforced Concrete
GRP	Glass Reinforced Plastic
MAC	Masonry in regular Courses
MAR	Masonry in random Courses
PE	Polyethylene
PF	Pitch Fibre
PP	Polypropylene
PVC	Polyvinyl Chlorkde
RPM	Reinforced Plastic Matrix
SI	Spun Iron
ST	Steel
VC	Vitrified Clay
XXX	Other
ZZZ	Unknown

LEGEND - SEWERS

Manhole (SW)	Washout (SW)	Other (s)	Wastewater treatment works
Manhole (F&C)	Washout (F&C)	Other	Martne treatment works
Lamp hole (SW)	Rodding Eye (SW)	Change in sewer (s)	Outfall headworks
Lamp hole (F&C)	Rodding Eye (F&C)	Change in sewer	Vent
Pumping Station (SW)	Gauging point (SW)	Reflux valve	Vent column
Pumping Station (F&C)	Gauging point (F&C)	Flap valve	Tidal storage tank
Side entry manhole (SW)	Intercept chamber (SW)	Cascade	Blank end
Side entry Manhole (F&C)	Intercept chamber (F&C)	Anode	Head of Public Sewer
Blind shaft (SW)	Storm Tank (SW)	Valve	Micro Pumping Station
Blind shaft (F&C)	Storm Tank (F&C)	Closed Valve	
Ejector station (SW)	Vortex chamber (SW)	Air Valve	
Ejector station (F&C)	Vortex chamber (F&C)	Hatch box (SW)	
Watertight door (SW)	Label ellipse	Hatch box (F&C)	
Watertight door (F&C)	Dummy/S24 manhole	Direction arrow	
Flushing ch. Mn-e (SW)	Outfall	Emptying valve	
Flushing ch. Mn-e (F&C)	Penstock chamber	Catchpit	
Flushing ch. No-e (SW)	Damboards	Soakaway	
Flushing ch. No-e (F&C)	Storm Overflow	Inlet	
Demarcation Chamber	Backdrop manhole	Balancing Pond	

SHAPES (S)

A	Arched	R	Rectangular
B	Barrel	S	Square
C	Circular	T	Trapezoidal
E	Egg	U	U Shape
H	Horseshoe	X	Other

NODE REFERENCING SYSTEM

1st digit:	hundred metre easting identifier
2nd digit:	hundred metre northing identifier
3rd digit:	sewer type identifier 0-4 = Foul/Combined 5-9 = Surface Water
4th digit:	next sequential node

Drawn by:	SomDeba
Title:	Land adjacent to Ludmore Cotta
Date:	17/11/2022

Southern Water

Appendix C - Topographical Survey

KEY:

bt	British Telecom
cb	Control Box
cl	Cover Level
ctv	Cable Television
dk	Drop Kerb
el	Electric
ep	Electricity Pole
fh	Fire Hydrant
gu	Gully
gsv	Gas Stop Valve
ht	Height
ic	Inspection Cover
il	Invert Level
lp	Lamp Post
mkr	Marker
o/h	Overhead
pb	Post Box
pxg	Pram Crossing
np	Name Plate
rs	Road Sign
sv	Stop Valve
tb	Telephone Box
tl	Traffic Light
tt	Top of Tree
th	Threshold
tw	Top of Wall
utl	Unable to Lift
vp	Vent pipe
wm	Water Meter
wsv	Water Stop Valve

114225N

114200N

114175N

468000E

468025E

INDICATIVE

NOTES:
LEVELS RELATE TO O.S DATUM
TREE SPECIES SHOULD BE VERIFIED WHERE OF CRITICAL IMPORTANCE
THE ARCHITECT SHOULD SATISFY HIMSELF THAT ALL TREES LIKELY TO AFFECT HIS DESIGN HAVE BEEN SHOWN
INTER CONNECTION OF MANHOLES SHOULD BE VERIFIED WHERE OF CRITICAL IMPORTANCE USING CCTV
PIPE SIZES & INVERTS DETERMINED WITHOUT ENTRY INTO MANHOLE
ALL DIMENSIONS & LEVELS SHOWN IN METRES
ON SITE DIMENSION ACCURACY IS TAKEN RELATIVE TO THE PRINTED SCALE AND SHOULD BE CHECKED ON SITE WHERE OF CRITICAL IMPORTANCE

P STUBBINGTON
LAND SURVEYS LTD

THE MEAD
DURLEY BROOK ROAD
DURLEY
SOUTHAMPTON
HAMPSHIRE
SO32 2AR

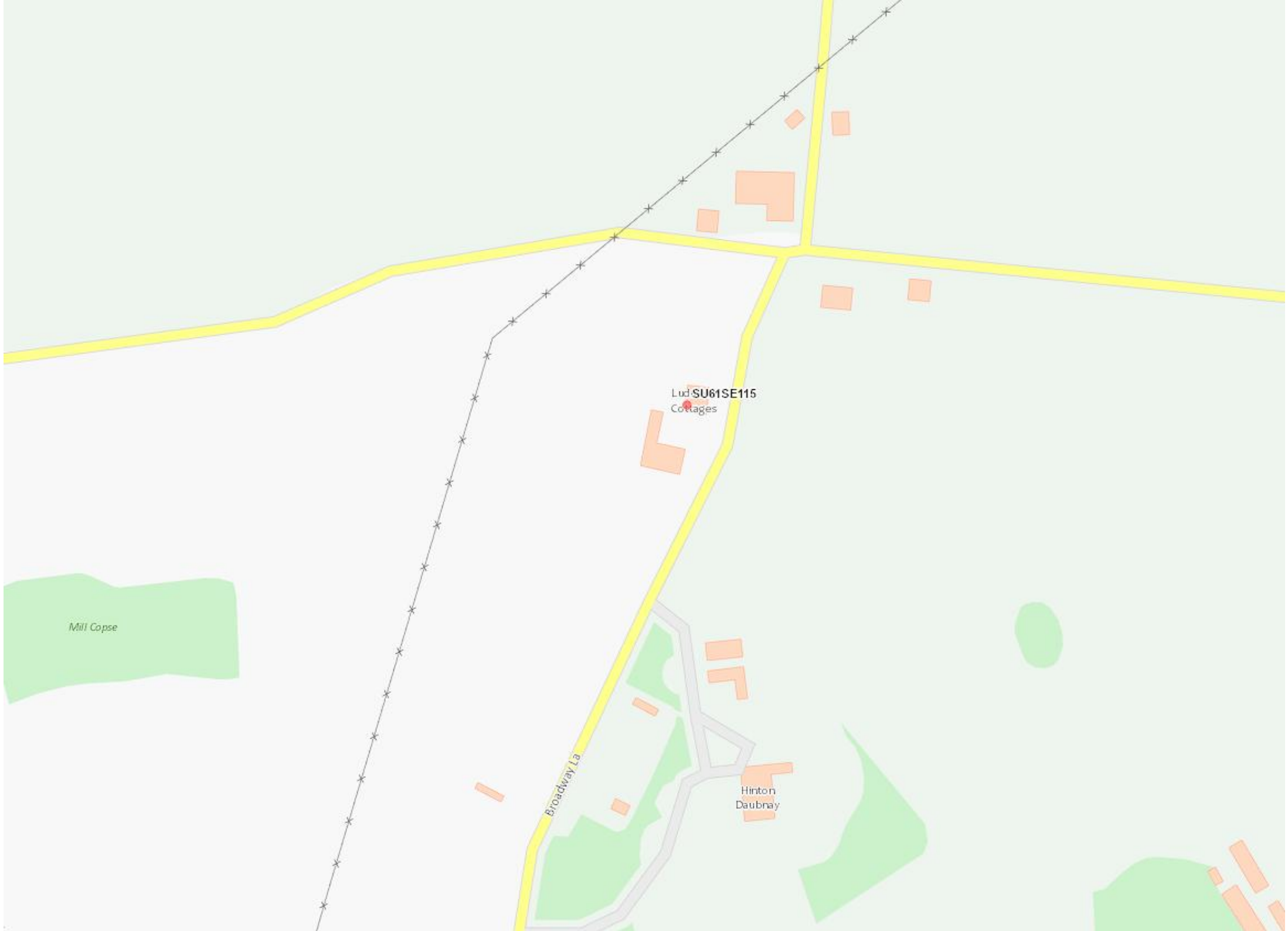
TEL : 023 8060 1876

MOBILE: -
07973 348165

EMAIL: -
PAUL@PSLANDSURVEYS.COM

CLIENT: -	RHEAL ARCHITECTS
CONTRACT: -	LUDMORE BARN BROADWAY LANE PO8 0SG
TITLE: -	TOPOGRAPHIC SURVEY
SCALE: -	1: 100 @A1
DRAWING NO.	10694/01
DATE: -	SEPTEMBER 2023
SURVEYOR: -	RD

Appendix D – Geological Information


SU61SE115
Lud
Cottages
Mill Copse
Broadway La
Hinton
Daubnay

NGRC

BOREHOLE RECORDS

ADJUSTMENT FORM

QUARTER SHEET SU61SE

BH REGISTRATION NUMBER 91 — 124

RECORDS ENTERED AND HELD BY WALLINGFORD

BH REGISTRATION NUMBER(S)

RECORD OF WELL (SHAFT OR BORE)

For Survey use only SU61/38 N

316/270

Licence No.

EXACT SITE OF WELL

At Hinton Daubnay Farm
SU 6802 1423

Town or Village Catherington

County Hants

Six-inch quarter sheet 68 NW/W

For Portsmouth Water Co. Observation Well

State whether owner, tenant, builder, contractor, consultant, etc.:—

Address (if different from above)

Level of ground surface above sea-level (O.D.) 360·05 * ft.

If well-top is not at ground level, state how far above: / below; ft.

SHAFT 247·75 ft.; diameter ft.; Full details of headings (dimensions and directions)

BORE ft.; diameter of bore: at top ins.; at bottom ins.

Full details of permanent lining tubes (position, length, diameter, plain, slotted etc.)

Water struck at depths of ft. below well-top.

TEST CONDITIONS

Rest level of water ft. above / below well-top. Suction at ft. Yield on hours' / days' test pumping at galls. per with depression to ft. below well-top.

Recovery to rest-level in mins. / hours Capacity of pump g.p.h. Date of measurements

NORMAL CONDITIONS

DESCRIPTION OF PERMANENT PUMPING EQUIPMENT:

Make and/or type Motive power

Capacity gallons per hour. Suction at ft.

Amount pumped galls. per day. Estimated consumption galls. per week.

Well made by Date of well

Information from

ADDITIONAL NOTES

ANALYSIS (please attach copy if available) R.W.L. 218' 11" b.s.

Date

Visited. Concrete slab 6×6 with central 6 in. square access.
Depth 245 ft. R.W.L. 218 ft. 1½ in. below concrete.
Tenant: Mr. R. Davis. Owner: Mr. Hull, Hinton Daubney.

Disused. wooden slab behind house
Visited & sited as ⊙ on 6" Hants 68 NW-W
20/10/59 G-BW

Automatic water level recorder installed 16:3:66 K[illegible]

* Visited and levelled.
Concrete = ground level = +358·76 O.D. (N)
Recorder datum = +360·62 O.D. (N) 6·10·66 ASR

Recorder removed 12·9·68. Access hole covered by concrete slab. M.J.B.

LOG OF STRATA OVERLEAF.

Geological Survey and Museum, South Kensington, London, S.W.7.		Section 6.	Date Received	1" O.S. Map No.	Site marked on 1" Map	(use symbol) on 6" Map

(1527) Dd574/Wt37583 12,000 8/54 JC&S Gp569

(*For Survey use only*) GEOLOGICAL CLASSIFICATION	NATURE OF STRATA If measurements start below ground surface, state how far . .	THICKNESS Feet . .	 Inches . .	DEPTH Feet	 Inches

Additional Information Reference SU 61/38

316/270

Hinton Daubray Farm,
Homdean.

Used by Portsmouth Water Co. as observation borehole since Feb 1953 and by I.G.S. Recorder removed. Sept. 1968.

Groundwater Year Book 72/73 gives

NGR SU 6802 1422

Surface datum c 109.7 M O.D.

Measuring datum 109.74 M O.D.

Strat. Drift. Upper Chalk

Depth 75.5 M.

RH. Sept. 79.

WDU No. SU6138 Southern WA (Hants) No. 26

Data Bank

IGS recorder installed 16-MAR-1966, removed 12-SEP-1968

Southern Water Authority Observation Well (dipped by P.W.C)
Portsmouth Ref No: Portsmouth No. 33
Hinton Daubray Farm

Well head at +109.744 m A.O.D.

Monthly water levels available from manual water level file

DMT 27-SEP-1979

Data Bank

CODE 18-77

1953-6

SU61/38

316

270

STATION ..... Hinton Daubnay Farm .....

DATUM POINT ..... O.D. ..360·05'.....

Date and Time	Water Level Ft.		Rate G.P.H.	Notes	Date and Time	Water Level Ft.		Rate G.P.H.	Notes
4·2·53	168	1	——	Ft. To O.D.	30·3·55	166·	6	——	Ft. To O.D..
4·3·53	166	6			27·4·55	162·	1		
1·4·53	161·	6			25·5·55	156·	9		
29·4·53	157·	0			22·6·55	154·	4		
27·5·53	152·	6			20·7·55	155·	6		
17·6·53	150·	1			17·8·55	152·	1		
22·7·53	145·	5			14·9·55	148·	0		
19·8·53	146·	1			12·10·55	146·	2		
16·9·53	142·	1			9·11·55	142·	6		
21·10·53	139·	1			7·12·55	148·	2		
11·11·53	137·	7			4·1·56	154·	8		
9·12·53	144·	7			1·2·56	170·	1		
6·1·54	148·	1			29·2·56	169·	1		
10·2·54	147·	5			28·3·56	166·	7		
3·3·54	152·	3			25·4·56	160·	1		
31·3·54	167·	9			23·5·56	154·	8		
28·4·54	168·	8			20·6·56	149·	9		
2·6·54	161·	2			18·7·56	145·	9		
23·6·54	157·	4			15·8·56	142·	1		
21·7·54	157·	2			12·9·56	139·	0		
18·8·54	154·	2			10·10·56	138·	6		
15·9·54	153·	1			7·11·56	138·	9		
13·10·54	151·	3			5·12·56	138·	8		
10·11·54	150·	8			2·1·57	137·	7		
8·12·54	168·	3			30·1·57	166·	6		
5·1·55	168·	1			27·2·57	179·	3		
2·2·55	167·	2							
2·3·55	167·	2							
23·3·55	167·	7							

Date Book

Continued.

SU61/38 316/270

STATION ...Hinton Daubnay Farm.....

DATUM POINT ..... O.D. 360.05 .....

Date and Time	Water Level Ft.	In.	Rate G.P.H.	Notes	Date and Time	Water Level Ft.	In.	Rate G.P.H.	Notes
2.1.57	137	7	—	Ft. To O.D.	28.1.59	168	6		
30.1.57	166	6			25.2.59	168	2		
27.2.57	179	3			25.3.59	165	4		
27.3.57	179	5			22.4.59	161	1		
24.4.57	169	2			20.5.59	160	7		
22.5.57	163	4			17.6.59	157	3		
17.7.57	151	8			15.7.59	153	7		
14.8.57	146	6			12.8.59	149	5		
11.9.57	142	6			9.9.59	145	2		
9.10.57	139	1			7.10.59	141	8		
6.11.57	136	2			4.11.59 & 16.11.59	139	3		
4.12.57	140	4			2.12.59 & 14.12.59	135	8		
1.1.58	146	1			30.12.59	154	7		
29.1.58	158	6			27.1.60	169	9		
26.2.58	—				24.2.60	169	8		
26.3.58	169	6			23.3.60	169	8		
23.4.58	167	6			20.4.60	169	4		
21.5.58	161	4			18.5.60	165	0		
18.6.58	155	9			15.6.60	158	2		
16.7.58	152	7			13.7.60	154	3		
13.8.58	149	8			10.8.60	150	1		
10.9.58	148	1			7.9.60	149	5		
8.10.58	152	9			5.10.60	150	9		
5.11.58	168	9							
3.12.58	169	1							
31.12.58	168	8							

Data Bank

(to be lined when sheet is full)

316/2 SU61/38

316/270

Station Hinton Daubnay Farm

Datum point O.D. 360.05

Observation well during test on /

Date and Time	Water Level ft	Rate G.P.H.	Notes	Date and Time	Water Level ft	Rate G.P.H.	Notes
2.11.60	169.5		R.W.L. to O.D.	20.3.63	150.6		R.W.L. to O.D.
30.11.60	182.8			17.4.63	169.6		
28.12.60	174.7			15.5.63	169.4		
26.1.61	172.1			12.6.63	169.1		
22.2.61	169.6			10.7.63	162.8		
22.3.61	169.1			7.8.63	156.6		
19.4.61	168.1						
17.5.61	169.4						
14.6.61	167.1						
12.7.61	160.1						
9.8.61	154.6						
6.9.61	149.1						
4.10.61	143.9						
1.11.61	139.6						
29.11.61	137.1						
27.12.61	137.6						
24.1.62	147.1						
21.2.62	169.9						
21.3.62	168.6						
18.4.62	162.1						
16.5.62	158.1						
13.6.62	154.6						
11.7.62	150.2						
8.8.62	145.9						
5.9.62	141.4						
3.10.62	137.5						
31.10.62	136.2						
28.11.62	137.0						

D 022752/1/3671 4m 6/62 DL

Data Bank

WORKING SHEET 1967

I.G.S. Ref. No. SU61/38 316/270

Site Hinton Daubnay Farm

Measuring point (O.D.) 360.62

Date	R.W.L. at beginning of trace	Rising trace	Falling trace	Weekly W.L. (below datum)	Weekly W.L. (O.D.)	Weekly W.L. to +140 O.D.	Weekly W.L. to
1-1	192.15	0.25		191.90	168.72	+28.72	
8	191.90	-	-	191.90	168.72	+28.72	
15		-	-	191.90	168.72	+28.72	
22		-	-	191.90	168.72	+28.72	
29		0.07		191.83	168.79	+28.79	
5-2	191.81		0.01	191.82	168.80	+28.80	
12			0.04	191.85	168.77	+28.77	
19			0.06	191.87	168.75	+28.75	
26			0.06	191.87	168.75	+28.75	
5-3	191.87	0.01		191.86	168.76	+28.76	
12		0.02		191.85	168.77	+28.77	
19		0.02		191.85	168.77	+28.77	
26		0.02		191.85	168.77	+28.77	
2-4	191.85	-	-	191.85	168.77	+28.77	
9			0.02	191.87	168.75	+28.75	
16			0.04	191.89	168.73	+28.73	
23			0.15	192.00	16862	+28.62	
30	192.26		0.60	192.86	167.76	+27.76	
7-5			2.00	194.26	166.36	+26.36	
14			3.60	195.86	164.76	+24.76	
21			5.25	197.51	163.11	+23.11	
28	198.09		0.95	199.04	161.58	+21.58	
4-6			2.20	200.29	160.33	+20.33	
11			2.80	200.89	159.73	+19.73	
18			2.80	200.89	159.73	+19.73	
25	200.89		0.20	201.09	159.53	+19.53	

Over .....

Contd. WORKING SHEET 1967

SITE. HINTON DAUBNAY FARM

I.G.S. REF. NO. 316/270

(O.D). 360·62

Date	R.W.L. at beginning of trace	Rising trace	Falling trace	Weekly W.L. (below datum)	Weekly W.L. (O.D.)	Weekly W.L. to +140 O.D.	Weekly W.L. to
2-7	~~200·89~~		1·00	201·89	158·73	+18·73	
9			1·95	202·84	157·78	+17·78	
16			2·90	203·79	156·83	+16·83	
23	204·13		0·70	204·83	155·79	+15·79	
30			1·80	205·93	154·69	+14·69	
6-8			2·95	207·08	153·54	+13·54	
13			4·10	208·23	152·39	+12·39	
20	208·75		0·65	209·40	151·22	+11·22	
27			1·95	210·70	149·92	+9·92	
3-9			3·20	211·95	148·67	+8·67	
10			4·50	213·25	147·37	+7·37	
17	213·81		0·90	214·71	145·91	+5·91	
24			2·25	216·06	144·56	+4·56	
1-10			3·55	217·36	143·26	+3·26	
8			4·75	218·56	142·06	+2·06	
15	218·95		0·65	219·60	141·02	+1·02	
22			1·40	220·35	140·27	+0·27	
29			1·60	220·55	140·07	+0·07	
5-11			0·55	219·50	141·12	+1·12	
12							
19							
26							
3-12	no visits made due to Foot & Mouth Outbreak						
10							
17							
24							
31							

WORKING SHEET 1968

I.G.S. Ref. No. SU 61/38 316/270

Site HINTON DAUBNAY FARM.

Measuring point (O.D.) 360.62'

Date	R.W.L. at beginning of trace	Rising trace	Falling trace	Weekly W.L. (below datum)	Weekly W.L. (O.D.)	Weekly W.L. to +140 O.D.	Weekly W.L. to
7 - 1							
14	no visits made due to foot & mouth outbreak						
21							
28							
4 - 2	191.84		0.00	191.84	168.78	+28.78	
11			0.05	191.89	168.73	+28.73	
18			0.05	191.89	168.73	+28.73	
25			0.05	191.89	168.73	+28.73	
3 - 3	191.88		0.00	191.88	168.74	+28.74	
10			0.10	191.98	168.64	+28.64	
17			1.00	192.88	167.54	+27.54	
24			2.55	194.43	166.19	+26.19	
31							
7 - 4							
14							
21							
28							
5 - 5							
12							
19							
26							
2 - 6							
9							
16							
23							
30							

Over .....

BGS ID: 421469 : BGS Reference: SU61SE115
British National Grid (27700) : 468020,114230

Contd. WORKING SHEET 1968

Date	R.W.L. at beginning of trace	Rising trace	Falling trace	Weekly W.L. (below datum)	Weekly W.L. (O.D.)	Weekly W.L. to +140 O.D.	Weekly W.L. to
7 - 7							
14							
21							
28							
4 - 8							
11							
18							
25							
1 - 9							
8							
15							
22							
29							
6 - 10							
13							
20							
27							
3 - 11							
10							
17							
24							
1 - 12							
8							
15							
22							
29							

SU 61/88

WORKING SHEET 1968

I.G.S. REF. NO. 316/270

SITE Hinton Daubney Farm.

MEASURING POINT (O.D) 109.917 metres

Date	No. of drum revs.	Correction to trace datum	Trace datum	Rising trace	Falling trace	Weekly water level (below datum)
31 Mar.			59.463		0.33	59.793
7 Apr.					0.86	60.323
14	1	+ 1.25			0.13	60.843
21	1	+ 1.25			0.61	61.323
28			61.527		0.23	61.757
5 May					0.56	62.087
12					0.83	62.357
19					0.99	62.517
26			62.529	0.03		62.499
2 June				0.17		62.359
9				0.30		62.229
16				0.38		62.149
23			62.152		0.03	62.182
30					0.16	62.312
7 July					0.26	62.412
14					0.17	62.322
21			62.302	0.13		62.172
28				0.31		61.992
4 Aug.				0.38		61.922
11				0.26		62.042
18			62.157		0.12	62.277
25					0.40	62.557
1 Sept.					0.67	62.827
8					0.97	63.127
15						
22		Recorder	Removed	12.9.68		
29						
6 Oct.						
13						
20						
27						
3 Nov.						
10						
17						
24						
1 Dec.						
8						
15						
22						
29						

Maximum recorded level ..... metres below datum. Date .....

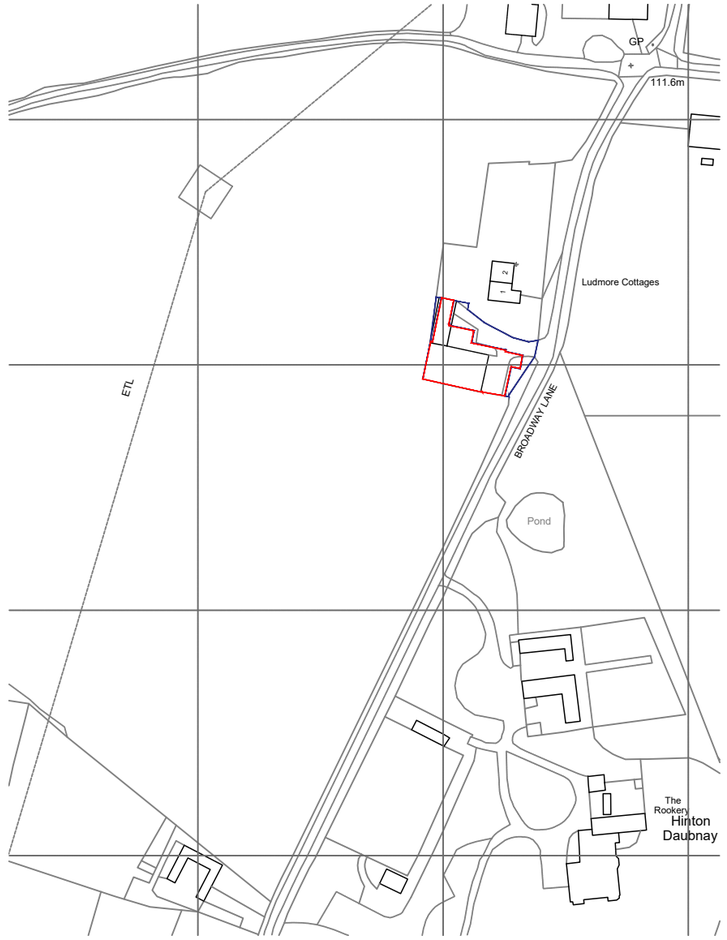
Minimum recorded level ..... metres below datum. Date .....

Appendix E – Development Masterplan

GENERAL NOTES:

1. This drawing is the copyright of Rheal Architecture Ltd and may not be copied, altered or reproduced in any form or passed on to a third party without written consent. If in doubt ASK.
2. The drawing reflects current standards and legislation agreed for this project at the time of original issue.

Site Plan 1:200



Location Plan 1:1250

Rheal Architecture	PROJECT Ludmore Barn Broadway Lane Lovedean PO8 0SG	DRAWING TITLE SITE PLAN PROJECT NO. | DRAWING NO. 065 PD301C	0 2 4 10 20 SCALE 1:200 @ A3	REVISION A - 31.12.2024 - First Issue B - 07.01.2025 - Minor amendment C - 14.01.2025 - Minor amendment

Appendix F – Drainage Strategy Plans & Calculations

N

Permeable Car Park
Plan Area = 63.5m²
Depth = 0.450m
Porosity = 30%
Volume = 8.57m³
Cover Level ≈ 108.100
Infiltration Rate = 2.17x10⁻⁵m/s

Underground Cellular Storage Soakaway
Tank Plan Area = 30.0m²
Tank Depth = 1.2m
Tank Porosity = 95%
Tank Volume = 34.3m³
Cover Level ≈ 108.100
Top of Tank Level = 107.35
Tank Invert Level = 106.15
Min Tank Cover = 0.75m
Infiltration Rate = 2.17x10⁻⁵m/s

Permeable Car Park
Plan Area = 13.5m²
Depth = 0.450m
Porosity = 30%
Volume = 1.822m³
Cover Level ≈ 108.100
Infiltration Rate = 2.17x10⁻⁵m/s

SWMH 01
CL: 108.20
IL: 107.45

SWMH 02
CL: 108.10
IL: 106.99

SWMH 03
CL: 108.27
IL: 107.52

SWMH 04
CL: 108.30
IL: 107.25

FWMH 01
CL: 108.29
IL: 107.54

FWMH 02
CL: 108.15
IL: 106.59

FWMH 03
CL: 108.14
IL: 107.24

FWMH 04
CL: 108.30
IL: 106.75

FWMH 05
CL: 108.30
IL: 106.34

FFL
+108.31m*

(1.000)
(1.001)
(2.001)
(2.000)

Catchpit Manhole

Existing RWP to connect at high level

Existing SW network to be surveyed to ensure no live connections. If proved no live connections, the it can be abandoned and grubbed out or removed.

Proposed cover for access and maintenance of ring soakaway

Sewage Treatment Plant With High Level Alarm

Min. Volume required = (17p x 120 l/p/day)= 2,040 l/d (based on a population of 17 people and 120 l/p/day)

- Ground Level 108.20*
- Top of unit level; 108.20
- Inlet IL 106.32m AOD (TBC by Manufacturer)
- Outlet IL 105.95m AOD (TBC by Manufacturer)

To be installed and maintained as of manufacturer instruction. Concrete surround to tank to be used to prevent floatation (refer to manufacturer details for further information)

Screening of foul water treatment centre to landscape architect specification

Electricity connection by contractor, emergency alarm to be fitter within/nearby dwelling

Size, specification and dimensions of proposed foul water treatment plant to be confirmed by supplier.

Proposed chamber for maintenance of sewage treatment plan.

Proposed Foul Water Ring Soakaway

- Soakaway Depth = 2.237m
- Ring Diameter = 1.20mø
- Volume = 2.237m³
- Cover level = 108.15
- Invert Level = 105.913
- Infiltration Rate = 2.17x10⁻⁵m/s

Min. Volume required = (17p x 120 l/p/day) = 2,040 litres/day (based on a population of 17 people and 120 l/p/day)

Treated foul discharge to ground to be agreed with EA via a bespoke environmental permit.

DRAINAGE LEGEND

SWMH — Proposed Private Surface Water Drainage (Pipe diameter / FLOW reference as shown).

FWMH — Proposed Private Foul Water Drainage (Pipe diameter to be 150ø unless otherwise shown)

* Indicates Cover level is indicative and to match proposed finished surface level

RWP — Proposed Rain Water Pipe (RWP), 100ø, Min. gradient 1:80. (Based on Architects General Arrangement Plan Dated)

Proposed Permeable paving construction

Proposed Underground Geo-cellular storage crates for Infiltration

Exceedence Flow Arrow (Storm Events greater than the 100yr + 40% climate change event

Soakaway 5m Easement Extent

GENERAL LEGEND

Application boundary (0.078 ha)

Extent of land under Client's control (0.116 ha)

FFL +108.31 — Indicitive Finished Floor Level (FFL to be confirmed by Architect)

DO NOT SCALE

GENERAL

1. The contractor shall comply with the health and safety requirements as set out in the CDM Regulations
2. All works are to be undertaken in accordance with the Building Regulations and latest relevant British Standards.
3. Conflicting information between this drawing and information given by others must be referred to the engineer before the works commence.
4. The contractor shall, before commencing the works, verify all existing outfall invert levels and site and setting out dimensions. the contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions, and alignment of all parts of the works. Any discrepancies are to be reported to the Engineer
5. All products used are to be CE marked in accordance with the Construction Products Directive CPD/89/106/EEC.
6. The contractor shall be responsible for locating all existing utilities prior to commencing construction and protecting all existing services affected by the works.
7. Any unidentified hazards discovered during the progress of works are to be reported immediately to the engineer.
8. This drawing should not be used for setting out
9. All land, ownership and asset boundaries / extents, shown on this plan should be assumed to be indicative and should be legally verified prior to any works commencing

REV	DATE	BY	SUMMARY OF CHANGE	CHK	APD
P4	03.10.25	FR	DRAINAGE REVISED	FR	DM
P3	03.10.25	FR	TANK SIZE REVISED	FR	DM
P2	23.09.25	RP	CLIENT'S COMMENTS ADDRESSED	FR	DM
P1	19.09.25	RP	PLANNING ISSUE	FR	DM

DRAWING STATUS: FOR PLANNING

CIVILISTIX
Allia Future Business Centre, The Guildhall, Cambridge (CB2 3QJ)
Tel: +44 (0)1223 343 277 E: enquiries@civilistix.com
www.civilistix.com

CLIENT: Enliven Developments LTD

ARCHITECT: Rheal Architecture

PROJECT: Ludmore Barns, Lovedean (PO8 0SG)

DRAWING TITLE: Proposed Drainage General Arrangement Plan

SCALE @ A1:	CHECKED / APPROVED BY:	DATE:
1:100	FR/DM	Sept 2025

PROJECT No:	DRAWING No:	REV:
2-238	C-002	P4

PROPOSED SURFACE WATER CATCHMENT PLAN LEGEND:

Catchment Area (ha)	Impermeable Area (ha)	Direct Discharge location
Catchment 1 (Roofs)	0.039 ha	Soakaway
Catchment 2 (Hardstanding)	0.022 ha	Type 3
	Total 0.061 ha	

GENERAL LEGEND

- Application boundary (0.078 ha)
- Extent of land under Client's control (0.116) ha)

SWMH 01
CL: 108.20
IL: 107.45

SWMH 02
CL: 108.10
IL: 106.99

SWMH 03
CL: 108.27
IL: 107.52

SWMH 04
CL: 108.30
IL: 107.25

Node=SWMH 01
Area =0.011ha

Node=SWMH 02
Area =0.009ha

Node=SWMH 03
Area =0.018ha

FFL
+108.31m*

PV panels

BROADWAY LANE

DO NOT SCALE

GENERAL

1. The contractor shall comply with the health and safety requirements as set out in the CDM Regulations
2. All works are to be undertaken in accordance with the Building Regulations and latest relevant British Standards.
3. Conflicting information between this drawing and information given by others must be referred to the engineer before the works commence.
4. The contractor shall, before commencing the works, verify all existing outfall invert levels and site and setting out dimensions. the contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions, and alignment of all parts of the works. Any discrepancies are to be reported to the Engineer
5. All products used are to be CE marked in accordance with the Construction Products Directive CPD/89/106/EEC.
6. The contractor shall be responsible for locating all existing utilities prior to commencing construction and protecting all existing services affected by the works.
7. Any unidentified hazards discovered during the progress of works are to be reported immediately to the engineer.
8. This drawing should not be used for setting out
9. All land, ownership and asset boundaries / extents, shown on this plan should be assumed to be indicative and should be legally verified prior to any works commencing

REV	DATE	BY	SUMMARY OF CHANGE	CHK	APD
P2	03.10.25	FR	TANK SIZE REVISED	FR	DM
P1	19.09.25	RP	PLANNING ISSUE	FR	DM

DRAWING STATUS: FOR PLANNING

CIVILISTIX
Allia Future Business Centre, The Guildhall, Cambridge (CB2 3QJ)
Tel: +44 (0)1223 343 277 E: enquiries@civilistix.com
www.civilistix.com

CLIENT: Enliven Developments LTD

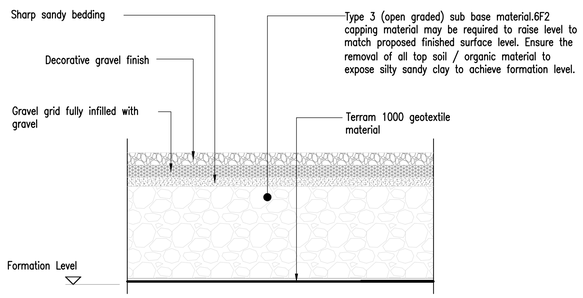
ARCHITECT: Rheal Architecture

PROJECT: Ludmore Barns, Lovedean (PO8 0SG)

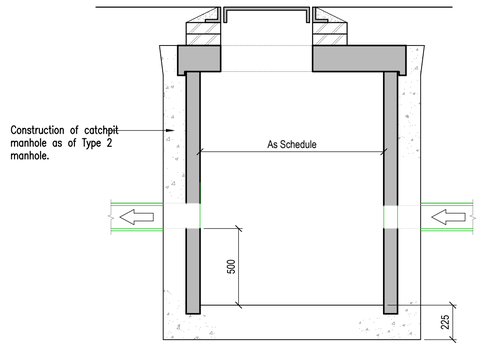
DRAWING TITLE: Proposed Catchment Plan

SCALE @ A1:	CHECKED / APPROVED BY:	DATE:
1:100	FR/DM	Sept 2025

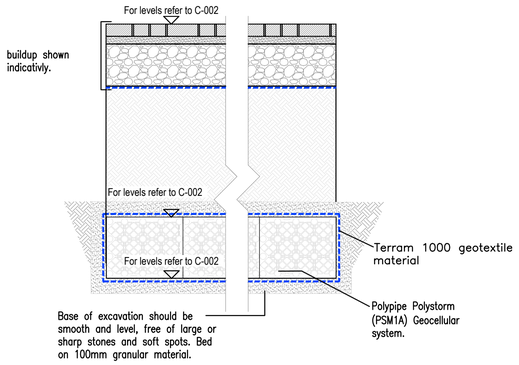
PROJECT No:	DRAWING No:	REV:
2-238	C-003	P2



Proposed Permeable Gravel Driveway Construction Detail (1:10)



Typical Catchpit Detail - Type 2 (1:20)
(Max depth from cover level to soffit of pipe of 3.0m)
Manhole construction shall comply with Sewers for Adoption 7th Edition



Section A-A - Typical Geo-Cellular Soakaway Tank Detail
(1:20)

DO NOT SCALE

GENERAL

1. The contractor shall comply with the health and safety requirements as set out in the CDM Regulations
2. All works are to be undertaken in accordance with the Building Regulations and latest relevant British Standards.
3. Conflicting information between this drawing and information given by others must be referred to the engineer before the works commence.
4. The contractor shall, before commencing the works, verify all existing outfall invert levels and site and setting out dimensions. the contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions, and alignment of all parts of the works. Any discrepancies are to be reported to the Engineer
5. All products used are to be CE marked in accordance with the Construction Products Directive CPD/89/106/EEC.
6. The contractor shall be responsible for locating all existing utilities prior to commencing construction and protecting all existing services affected by the works.
7. Any unidentified hazards discovered during the progress of works are to be reported immediately to the engineer.
8. This drawing should not be used for setting out
9. All land, ownership and asset boundaries / extents, shown on this plan should be assumed to be indicative and should be legally verified prior to any works commencing

REV	DATE	BY	SUMMARY OF CHANGE	CHK	APD
P2	23.09.25	RP	CLIENT'S COMMENTS ADDRESSED	FR	DM
P1	19.09.25	RP	PLANNING ISSUE	FR	DM

DRAWING STATUS: FOR PLANNING

CIVILISTIX
Allia Future Business Centre, The Guildhall, Cambridge (CB2 3QJ)
Tel: +44 (0)1223 343 277 E: enquiries@civilistix.com
www.civilistix.com

CLIENT: Enliven Developments LTD

ARCHITECT: Rheal Architecture

PROJECT: Ludmore Barns, Lovedean (PO8 0SG)

DRAWING TITLE: Proposed Construction Typical Drainage Details

SCALE @ A1:	CHECKED / APPROVED BY:	DATE:
As Shown	FR/DM	Sept 2025

PROJECT No:	DRAWING No:	REV:
2-238	C-004	P1

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SWMH 01	0.011	5.00	108.200	600	467999.093	114210.969	0.750
SWMH 02			108.100	600	468006.754	114209.387	1.104
SWMH 04	0.009	5.00	108.300	600	468021.607	114206.060	1.047
SWMH 03	0.018	5.00	108.270	600	468018.544	114190.835	0.750
Soakaway			108.100	1	468007.257	114211.893	1.147

Links (Input)

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
2.000	SWMH 01	SWMH 02	7.823	0.600	107.450	106.996	0.454	17.2	150	5.05	50.0
1.000	SWMH 03	SWMH 04	15.530	0.600	107.520	107.261	0.259	60.0	150	5.20	50.0
1.001	SWMH 04	SWMH 02	15.221	0.600	107.253	106.999	0.254	60.0	150	5.39	50.0
1.002	SWMH 02	Soakaway	2.556	0.600	106.996	106.953	0.043	60.0	150	5.43	50.0

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	1440	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	10	0
30	35	10	0
100	45	10	0

Node Soakaway Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.07812	Invert Level (m)	106.150	Depth (m)	1.200
Side Inf Coefficient (m/hr)	0.07812	Time to half empty (mins)	1440	Inf Depth (m)	
Safety Factor	5.0	Pit Width (m)	3.000	Number Required	1
Porosity	0.95	Pit Length (m)	10.000		

Results for 1 year +10% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SWMH 01	10	107.470	0.020	1.6	0.0056	0.0000	OK
15 minute summer	SWMH 02	11	107.053	0.056	5.4	0.0160	0.0000	OK
15 minute summer	SWMH 04	11	107.295	0.041	3.9	0.0117	0.0000	OK
15 minute summer	SWMH 03	10	107.555	0.035	2.6	0.0098	0.0000	OK
600 minute summer	Soakaway	450	106.401	-0.552	1.1	7.1585	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	SWMH 01	2.000	SWMH 02	1.6	0.564	0.037	0.0290
15 minute summer	SWMH 02	1.002	Soakaway	5.4	0.973	0.235	0.0142
15 minute summer	SWMH 04	1.001	SWMH 02	3.8	0.805	0.167	0.0730
15 minute summer	SWMH 03	1.000	SWMH 04	2.6	0.850	0.112	0.0468
600 minute summer	Soakaway	Infiltration		0.2			

Results for 30 year +35% CC +10% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SWMH 01	10	107.492	0.042	7.5	0.0120	0.0000	OK
15 minute summer	SWMH 02	11	107.203	0.207	25.3	0.0585	0.0000	SURCHARGED
15 minute summer	SWMH 04	11	107.364	0.111	18.2	0.0313	0.0000	OK
15 minute summer	SWMH 03	10	107.600	0.080	12.2	0.0226	0.0000	OK
960 minute summer	Soakaway	945	107.092	0.139	2.4	26.8540	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	SWMH 01	2.000	SWMH 02	7.5	0.823	0.173	0.0848
15 minute summer	SWMH 02	1.002	Soakaway	25.1	1.428	1.094	0.0443
15 minute summer	SWMH 04	1.001	SWMH 02	17.8	1.061	0.776	0.2400
15 minute summer	SWMH 03	1.000	SWMH 04	12.1	1.115	0.528	0.1732
960 minute summer	Soakaway	Infiltration		0.2			

Results for 100 year +45% CC +10% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	SWMH 01	930	107.698	0.248	0.6	0.0702	0.0000	SURCHARGED
960 minute winter	SWMH 02	930	107.698	0.702	2.1	0.1986	0.0000	SURCHARGED
960 minute winter	SWMH 04	930	107.698	0.445	1.5	0.1259	0.0000	SURCHARGED
15 minute summer	SWMH 03	11	107.722	0.202	16.4	0.0572	0.0000	SURCHARGED
960 minute winter	Soakaway	930	107.698	0.745	3.1	34.2143	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
960 minute winter	SWMH 01	2.000	SWMH 02	0.6	0.363	0.014	0.1377
960 minute winter	SWMH 02	1.002	Soakaway	3.1	0.765	0.133	0.0450
960 minute winter	SWMH 04	1.001	SWMH 02	1.5	0.655	0.065	0.2680
15 minute summer	SWMH 03	1.000	SWMH 04	15.8	1.111	0.688	0.2734
960 minute winter	Soakaway	Infiltration		0.3			

Appendix G – BRE Infiltration Technical Note

Our Ref; 2-238-TN-001
29 August 2025

LUDMORE BARNS, LOVEDEAN (PO8 0SG)

BRE 365 INFILTRATION TECHNICAL NOTE

Introduction

This technical note summarises the findings of 1no. British Research Establishment (BRE) 365 infiltration test undertaken at Ludmore Barns, Lovedean (PO8 0SG).

The purpose of this technical note is to determine if infiltration disposal of surface water from a proposed development on the site would be technically feasible and in accordance with current guidance and legislation.

BRE 365 Testing

Trial Pit 1

A trial pit measuring 0.40m (wide) by 1.30m (long) by 1.00m (deep) was excavated onsite. Groundwater was not encountered.

As of BRE 365 infiltration methodology, the pit was filled three times with water to a depth of 0.75m and the time subsequently recorded for the pit to drain.

A BRE Location Plan is shown in **Appendix A.**

The soil strata recorded at the location of each trial pit is shown in **Appendix B**.

BRE 365 Methodology

As of BRE 365 infiltration methodology, soil infiltration rate can be determined as follows;

$$f = \frac{V_{p75-25}}{\partial_{s50} . t_{p75-25}}$$

Where;

f : soil infiltration rate

V_{p75-25}: effective storage volume of water in the soakage trial pit between 75% and 25% effective storage depth.

∂_{s50} : internal surface area of the soakage trial pit up to 50% effective storage depth, including the base area.

t_{p75-25} the time for the water level to fall from 75% to 25% effective storage depth.

Infiltration test results are shown in **Appendix C.**

Pictures of the trial pit before and during infiltration testing are shown in **Appendix D.**

Conclusion

This note has reviewed the feasibility of disposal of surface water and makes the following conclusion;

- **Trial Pit 1:** Disposal of surface water via infiltration to the ground is considered feasible at this location due to an infiltration rate of 2.17×10^{-5} m/s being recorded > 1×10^{-6} m/s*.

  * 1×10^{-6} m/s is the rate at which half drain downs times of soakaway structures begin to exceed 24 hours. As of CIRIA C753 guidance, soakaways should be designed to half drain down within 24 hours.

Appendix A – BRE 365 Location Plan

Appendix B – Soil Strata Records

CIVILISTIX	Trial Pit Log				Trial Pit No. **TP01** Sheet 1 of 1
Project Name:	Ludmore Barns, Lovedean (PO8 0SG)	Project Number:	2-238	Coordinates: Not surveyed Level: Not surveyed	Date: 21/08/2025
Location:	Ludmore Barns, Lovedean (PO8 0SG)			Pit Dimensions (LxWxD): 1.30m x 0.40m x 1.00m	Prepared by: FR
Client:	Enliven Developments LTD				

Water Strike	Samples & Situ Testing			Depth (m)	Level (m)	Legend	Strata Description
	Depth	Type	Results				
				0.60			Topsoil / Made ground
				1.00			Stiff sandy clay with flints

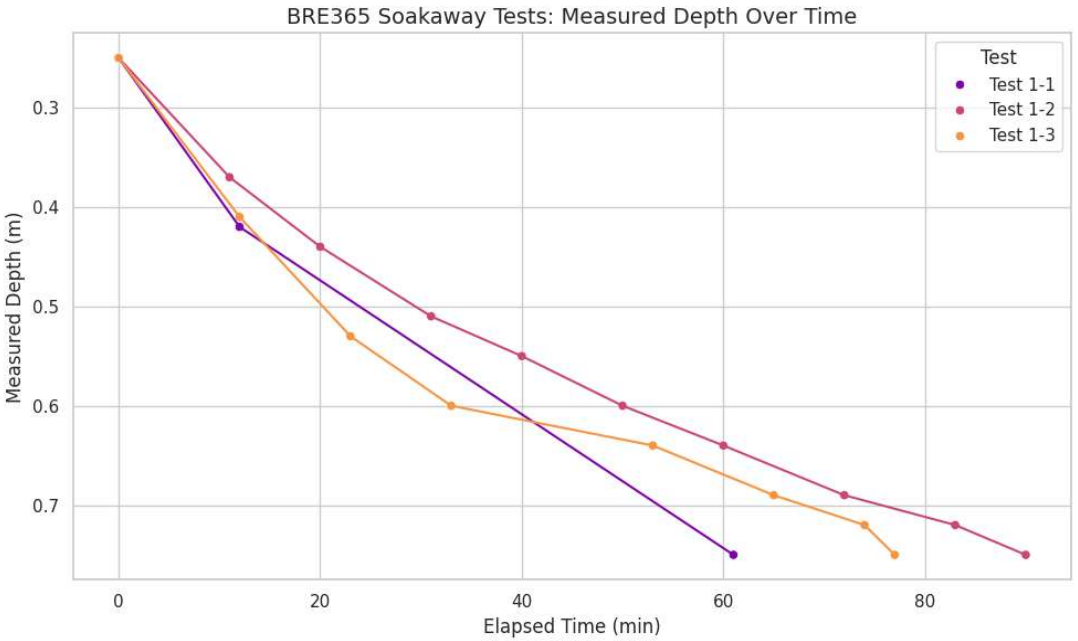
Notes: No groundwater encountered

Appendix C – Infiltration Test Results

CIVILISTIX	Project Name:	Ludmore Barns, Lovedean (PO8 0SG)	Projct Number:	2-238
	Location:	Ludmore Barns, Lovedean (PO8 0SG)		
	Client:	Enliven Developments LTD		

Trial Pit No:	**TP01**
Effect. Depth (m)	1.00
Length (m)	1.30
Width (m)	0.40

	Time	Time Elapsed	Elapsed time (min)	Measured depth (m)
Test 1-1	13:32	13:32	0	0.25
	13:32	13:44	12	0.42
	13:44	14:33	61	0.75
Test 1-2	14:43	14:43	0	0.25
	14:43	14:54	11	0.37
	14:54	15:03	20	0.44
	15:03	15:14	31	0.51
	15:14	15:23	40	0.55
	15:23	15:33	50	0.60
	15:33	15:43	60	0.64
	15:43	15:55	72	0.69
	15:55	16:06	83	0.72
	16:06	16:13	90	0.75
Test 1-3	16:21	16:21	0	0.25
	16:21	16:33	12	0.41
	16:33	16:44	23	0.53
	16:44	16:54	33	0.60
	16:54	17:14	53	0.64
	17:14	17:26	65	0.69
	17:26	17:35	74	0.72
	17:35	17:38	77	0.75



	Test 1	Test 2	Test 3
75% effective depth (mbgl):	0.25	0.25	0.25
Elapsed time at 75% depth (min):	0.00	0.00	0.00
25% effective depth (mbgl):	0.75	0.75	0.75
Elapsed time at 25% depth (min):	61.00	90.00	77.00
$V_{p75\text{-}25}$ (m3):	0.26	0.26	0.26
∂_{s50} (m2):	2.22	2.22	2.22
$t_{p75\text{-}25}$ (s):	3,660	5,400	4,620
Infiltration rate (m/s):	**3.20E-05**	**2.17E-05**	**2.54E-05**

Appendix D – Site Photographs

Trial Pit 1


21 Aug 2025 at 14:43:40
1 North Ludmore Cottages, Broadway Lane,
Waterlooville
England
PO8 0SG,
United Kingdom


21 Aug 2025 at 16:13:28
1 North Ludmore Cottages, Broadway Lane,
Waterlooville
England
PO8 0SG,
United Kingdom