

**The Old Dairy, Land behind
3 – 5 Church Road,
Littlehampton,**

BN17 5EL

**Drainage Strategy and
Sustainable Drainage
Management and
Maintenance Plan**

April 2017
Final

Issue No 1
51091

The Old Dairy, Land behind 3-5 Church Road, Littlehampton

Drainage Strategy and Sustainable Drainage Management and Maintenance



Project Title: The Old Dairy, Land behind 3-5 Church Road, Littlehampton, BN17 5EL

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1. INTRODUCTION

- 1.1 Dixon Hurst Limited have been instructed by AJJP Construction Limited to prepare a Drainage Strategy and Sustainable Drainage Management and Maintenance Plan to allow the discharge of Planning Conditions 9 & 10 in support of the proposed redevelopment at The Old Dairy, Land behind 3-5 Church Road Littlehampton, BN17 5EL.
- 1.2 The approved Application Reference No. LU/13/15/PL by Arun District Council is for the demolition of original dairy distribution depot and construction of eight dwellings and ancillary works.
- 1.3 The existing access road will be maintained, with a newly constructed section of private driveway and parking areas. These areas will be managed by the Residents and appointed Management Company.
- 1.4 The surface water runoff at this new development shall be disposed of by means of sustainable urban drainage systems (SUDS), with these SUDS installed prior to the occupation of the new dwellings.

2. EXISTING DRAINAGE

- 2.1 The site is served by a separate private 150mm diameter foul water and 150 mm diameter surface water drains which outfall into the public sewer in Church Road.
- 2.2 Southern Water are the service providers for the area. The sewer maps indicate a 375mm diameter surface water public sewer and a 225mm diameter combined sewer in Church Road.
- 2.3 Southern Water has indicated that there is enough capacity to take the foul flows safely away from the development. A Section 106 Application for a new connection has been approved by Southern Water.
- 2.4 There is an existing public surface water drainage system in the site access road. This may be a possible connection point for the surface water generated at the site, where infiltration methods are not deemed permissible.

3. SITE GEOLOGY AND HYDROGEOLOGY

- 3.1 The British Geological Map for the area, 317/332 (1:50,000 scale), indicates that the site is underlain by the Lewes Nodular Chalk Formation. The map also shows superficial deposits of River Terrace sand, silt and clay appearing to overlie the north east part of the site and Raised Beach sand and gravel deposits on the south western part. A thin layer of made ground is expected to be covering the site.
- 3.2 An Intrusive soil investigation report by Soils Limited confirms the finding of the geological map. The investigation was undertaken on 26th November 2015 and subsequent winter ground water monitoring undertaken between 30th November 2015 and 12th April 2016.
- 3.3 The highest measured groundwater level was at 3.78m bgl in WS1 (12/02/16) and 3.30m bgl in WS2 (12/04/2016).
- 3.4 BRE Digest 365 Soakaway Test undertaken at the site indicate an average infiltration rate of 4.82×10^{-5} m/s or 0.17m/hr.

4. DEVELOPMENT DRAINAGE PROPOSALS

- 4.1 For the considerations of surface water drainage for this development, the main catchment contributing areas are the new section of access road, parking areas and impermeable roofs for the dwellings.
- 4.2 The proposed site will be accommodating 8 new dwellings which will be served by a new section of access road and parking areas.
- 4.3 The new section of access road and carparking area will be constructed using a tarmacadam surface. The walkways are designed as permeable pavements, allowing this surface water to soak away into the upper strata.
- 4.4 The impermeable roof areas are intended to be drained with conventional roof guttering and downpipes, which will be directed in a surface water drainage system to individual soakaways in rear gardens. Details of these proposals can be seen in the Appendix.
- 4.5 The Soakaways are be designed to accommodate for a 1 in 100 year + 30% annual probability storm event, allowing for climate change.
- 4.6 The access road and carparking area is designed to drain via an attenuation tank fitted with a flow control.
- 4.7 The attenuation tank is designed to cater for the 1 in 100 year critical storm + 30%, discharging surface water at restricted flow rate of 5 litres per second into the existing 150mm surface water drain running within the site access road.

5. DESIGN INFORMATION

- 5.1 Mapping on the Environment Agency's web site confirms that the site is situated outside of any Groundwater Source Protection Zones. Therefore any infiltration at this site would not be deemed a risk to aquifers.
- 5.2 Any infiltration or attenuation systems at this site will be designed to cater for a 1 in 100 year annual probability storm event, allowing an additional 30% for climate change.
- 5.3 The soakaways will be a cellular/crate system wrapped in a geotextile membrane. These soakaways will also be located $\geq 5\text{m}$ from any building or structure as recommended in BRE Digest 365. These systems will also be checked to ensure they half empty within 24 hours, in accordance with BRE Digest 365 as cited in the Approved Document H of the Building Regulations 2010.
- 5.4 Surface water generated from roof area will be collected via conventional roof guttering fitted with leaf guards to reduce risk of litter entering the soakaways. The water may then be directed to the soakaway via 110 mm pipes at a gradient not less than 1:100 gradient to ensure self-cleansing velocities.
- 5.5 The attenuation tank will be a cellular/crate system wrapped in an impermeable geotextile membrane.
- 5.6 Surface water generated from the access road and carparking area will be collected via conventional road gullies and catch pits with trapped outlets to reduce risk of contaminants and/or litter entering the attenuation tank.
- 5.7 Before any surface water runoff enters a soakaway or the attenuation tank, it will pass through a catch-pit/silt trap which will allow the sediment to settle, therefore reducing the amount of silt entering the soakaway/ attenuation tank and increasing the life of the asset.

6. PRINCIPAL OPERATION AND MAINTENANCE REQUIREMENTS

- 6.1 All surface water drainage, roads and features associated with the development will remain private and will be maintained and operated AJJP Construction Limited.
- 6.2 The following sections outline recommended maintenance requirement for the various aspects of the surface water drainage system for the development. If necessary these outline maintenance and management proposals will be refined by the Client once the site is operational to suit specific conditions.

7. MAINTENANCE OF SOAKAWAYS AND ATTENUATION TANKS

- 7.1 The proposed drainage scheme utilises a geocellular crate system to provide soakaways and storage for attenuation of surface water runoff.
- 7.2 To ensure the long term effectiveness of a soakaway/attenuation asset, the sediment that accumulates within the SUDS system must periodically be removed to prevent it from entering the chamber and slowing the infiltration of the system. The frequency of

this maintenance operation will vary depending on the density of the site, vegetation, design of the drainage system, other permeable areas and if the site is pre or post construction.

- 7.3 All maintenance operations are to be carried out in accordance with the manufacturer's recommendations.
- 7.4 The anticipated maintenance and management plan for such storage systems at the site is outlined in the Table 1 below.

Table 1: Typical Underground Geocellular Soakaway/Storage Maintenance Requirements

Maintenance Schedule	Required Action	Minimum Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action. Debris removal from catchment surface (where may cause risks to performance).	Monthly for first 3 months, 6 monthly thereafter. Monthly.
Occasional maintenance	Remove sediment from pre-treatment structures.	Annually (or as required).
Remedial actions	Repair/rehabilitation of 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 and after large storms.

8. ACCESS ROAD

- 8.1 The proposed surface finish to the access road and carparking area will consist of an impermeable tarmacadam surface and will therefore need to be drained via conventional gullies and catch pits.
- 8.2 Where this surface water has been collected, it will be done so via trapped gullies to reduce risk of contaminants and/or litter being allowed to enter the system and discharge to the attenuation or public sewers. Any surface water will also be directed via 150mm pipes at a gradient not less than 1:150 gradient to ensure self-cleansing velocities.
- 8.3 To further reduce the risk of sediment migration into the access road drainage system, it may be necessary to follow a street cleansing regime in line with local authority plans, if the access road has been adopted.
- 8.4 To ensure the long term effectiveness of the drainage asset, the sediment that accumulates within this system must periodically be removed to prevent it from entering key parts of the network and slowing the operation of the system. The frequency of this maintenance operation will vary depending on the density of the site, vegetation, design of the drainage system, other permeable areas and if the site is pre or post construction.

- 8.5 All maintenance operations are to be carried out in accordance with the manufacturer's recommendations.
- 8.6 The anticipated maintenance and management plan for the piped system associated with the surface water drainage system is outlined in Table 2 below:

Table 2: Typical Pipe System (INC Gullies Maintenance Requirements)

Maintenance Schedule	Required Action	Minimum Frequency
Regular maintenance	Ensuring drainage intakes are clear of debris/silt.	Monthly (or as required).
Occasional maintenance	Jet clean sewer lines, to remove grease, grit, sediment and other debris to ensure conveyance capacity is not compromised.	Annually.
Intermittent maintenance	CCTV survey of sewer lines to identify any defects/signs of performance degradation such as: • Cracked/deteriorating pipes; • Leaking joints/seals at manholes; • High water lines showing regular high stage in pipes (sign of lack of capacity or downstream constraint); and • Suspected infiltration or exfiltration.	Every 2 – 5 years.
Remedial actions	Repair defects using suitable methods. Effective temporary repairs may be sufficient in short term until scheduled /capital improvements can be made.	As required.
Monitoring	Record areas of surface ponding/intake bypassing /surcharging (photos, inundated areas, depths) during extreme storm events and investigate the reasoning for this post storm.	As required.

9. PERMEABLE PAVING

- 9.1 The proposed drainage scheme utilises permeable paving to reduce surface water runoff and provide attenuation of surface water runoff to naturally infiltrate into the ground. The anticipated maintenance and management plan for such storage systems at the site is outlined in the Table 3 below.

Table 3: Typical Permeable Paving Walkway Maintenance Requirements

Maintenance Schedule	Required Action	Minimum Frequency
Regular Maintenance	Surface brushing for appearance and to reduce silt accumulation. Brushing and suction sweeping or jet wash and suction sweep in Autumn after leaf fall Mow grass on the edge of paving at 35mm – 50mm and remove weeds and leaves. Check outlets and control structures	Monthly Annually As required Monthly depending on details
Occasional maintenance	Jetting and suction where silt has accumulated in joints or voids. Replace grit and vibrate surface to lock permeable block paving.	As required
Remedial Work	Where sinkage or surface damage occurs uplift blocks, remove grit bedding layer, geotextile if present and reinstate to design profile.	As required.

Appendix A- Client Supplied Data

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Number of children	Percentage of families
0	10
1	40
2	35
3	10
4	5

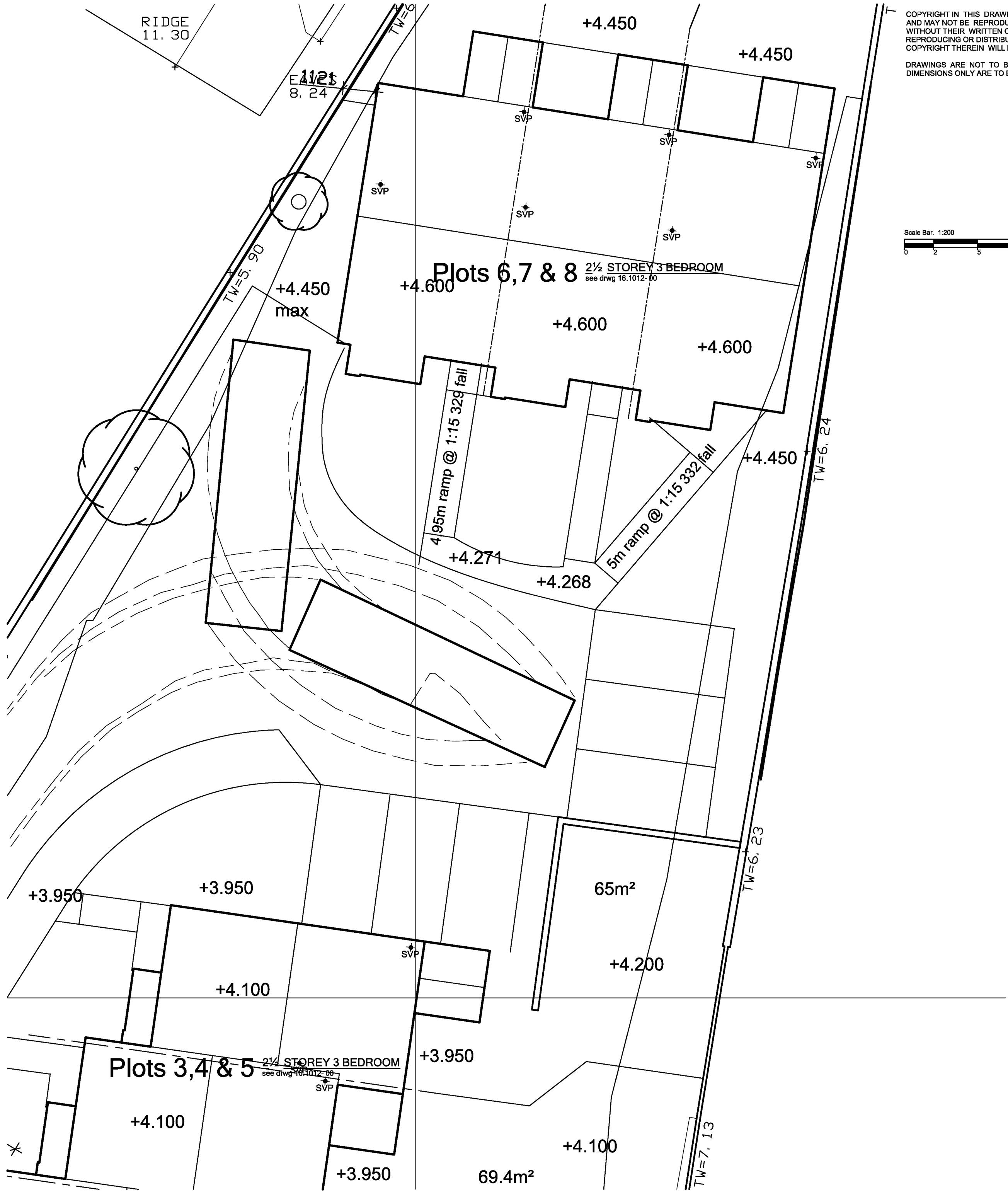
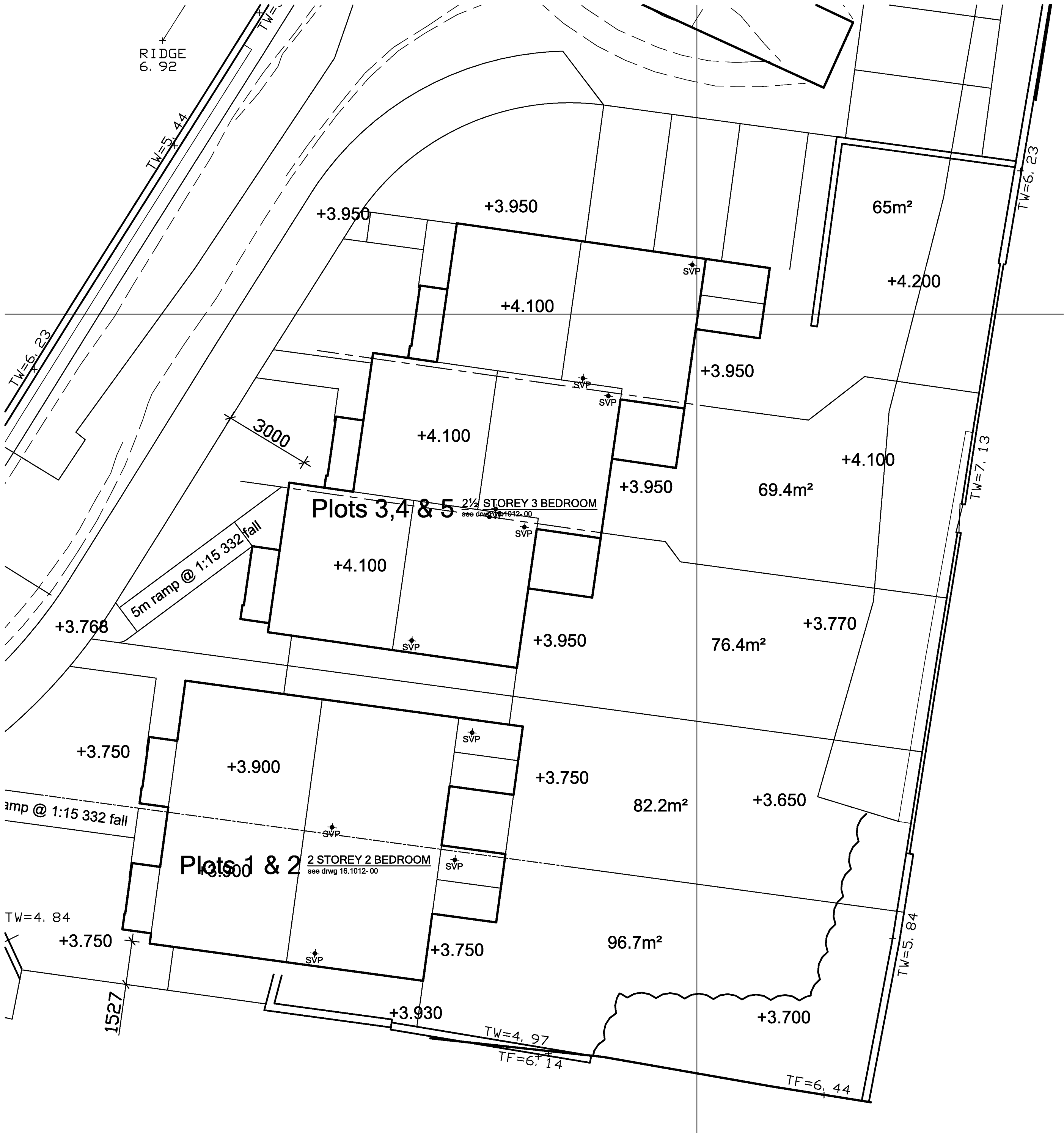
DRAWING
SITE PLAN
Layout

PROJECT NO.
16.1012

DRAWING NO.
SK01

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QUINCEMINUTOS CON UN GUINCHO



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REV DATE DETAILS
DRAWING
SITE PLAN
Plot Layout
PROJECT
THE OLD DAIRY
REAR OF 3 & 5 CHURCH STREET
LITTLEHAMPTON BN17 5EL

SCALE
1:100@A1
PROJECT NO.
16.1012
DATE
Jan 2017
DRAWING NO.
SK02

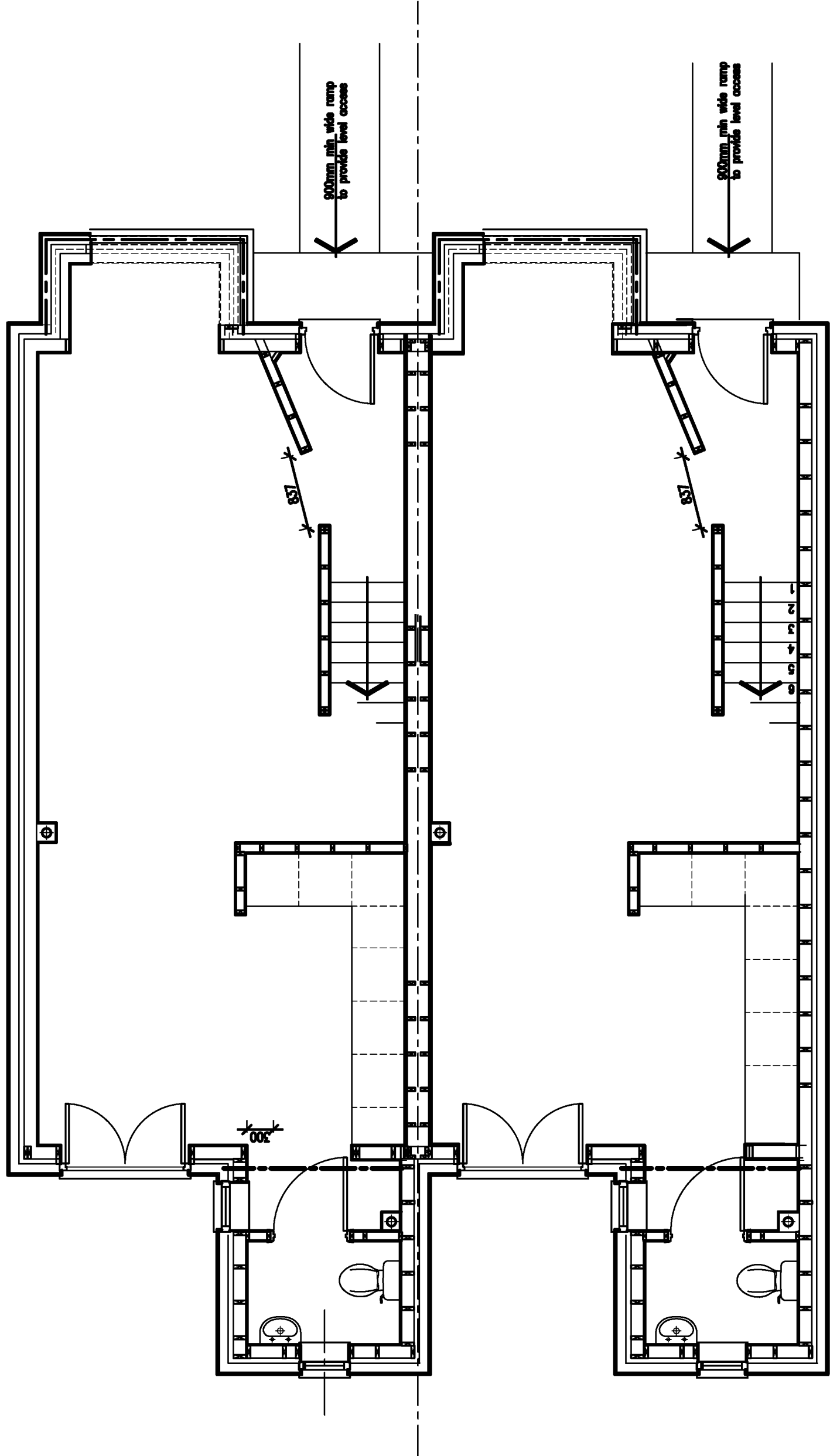
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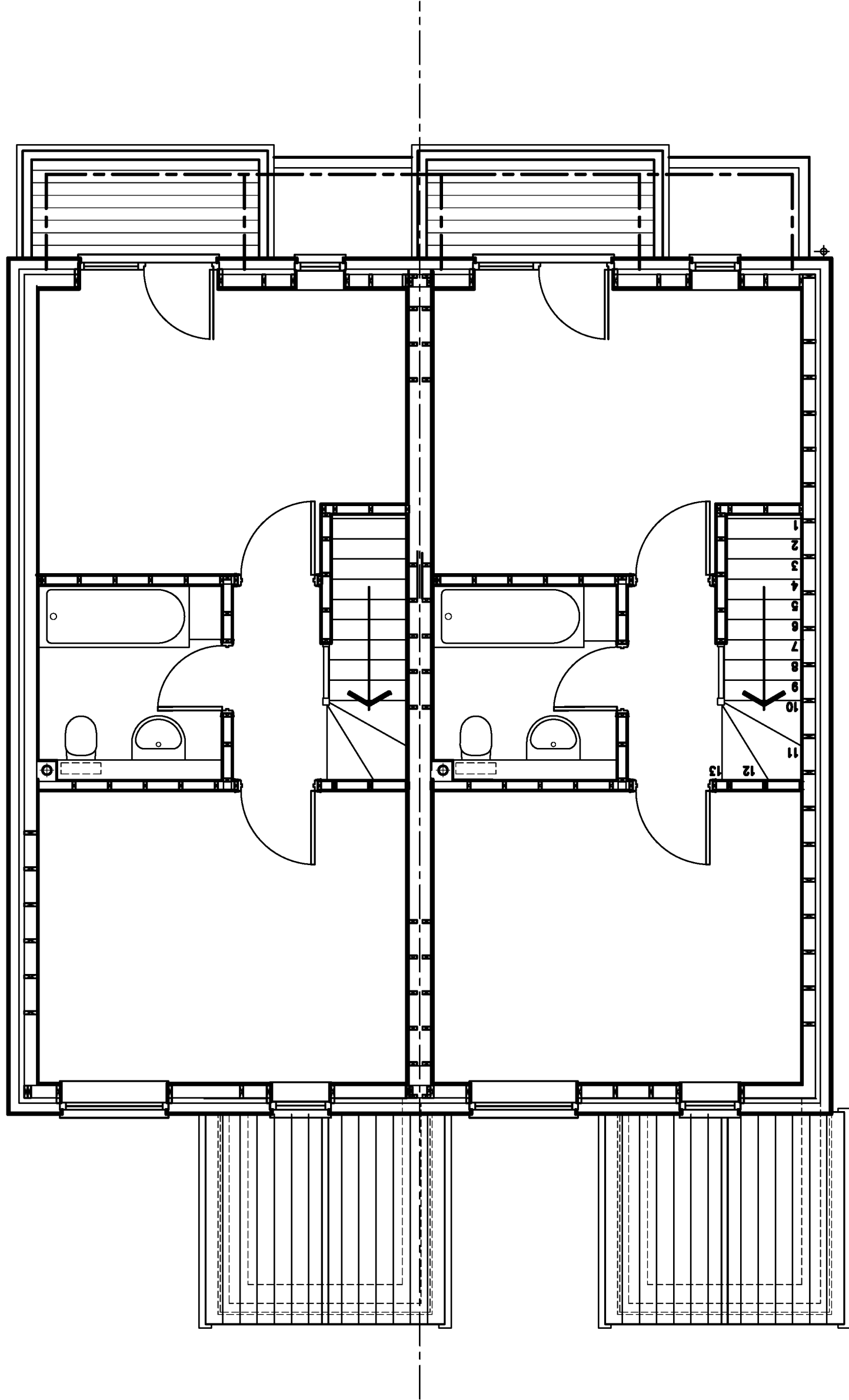
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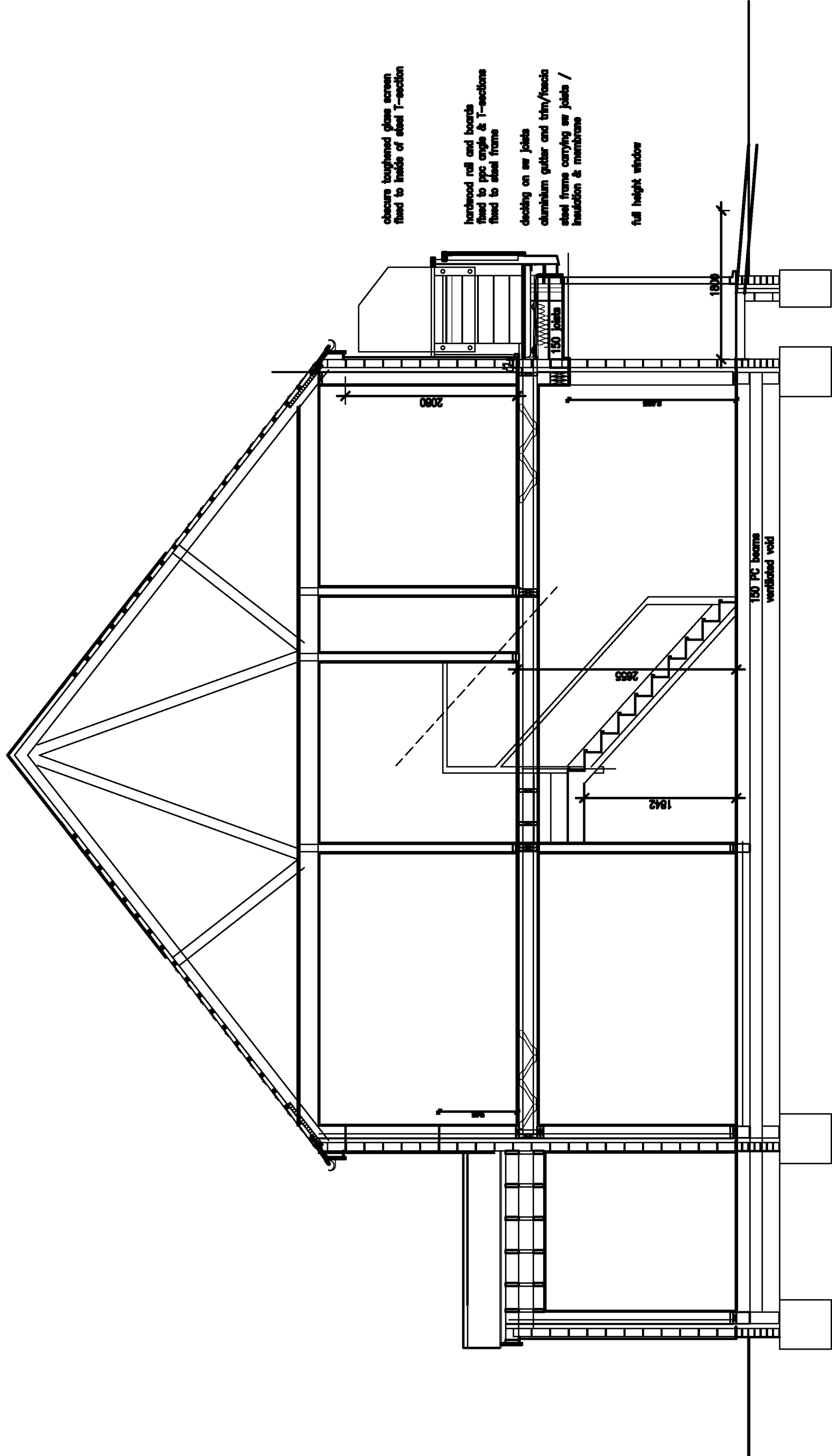
GROUND FLOOR PLAN

Plots 1 & 2 2 STOREY 2 BEDROOM

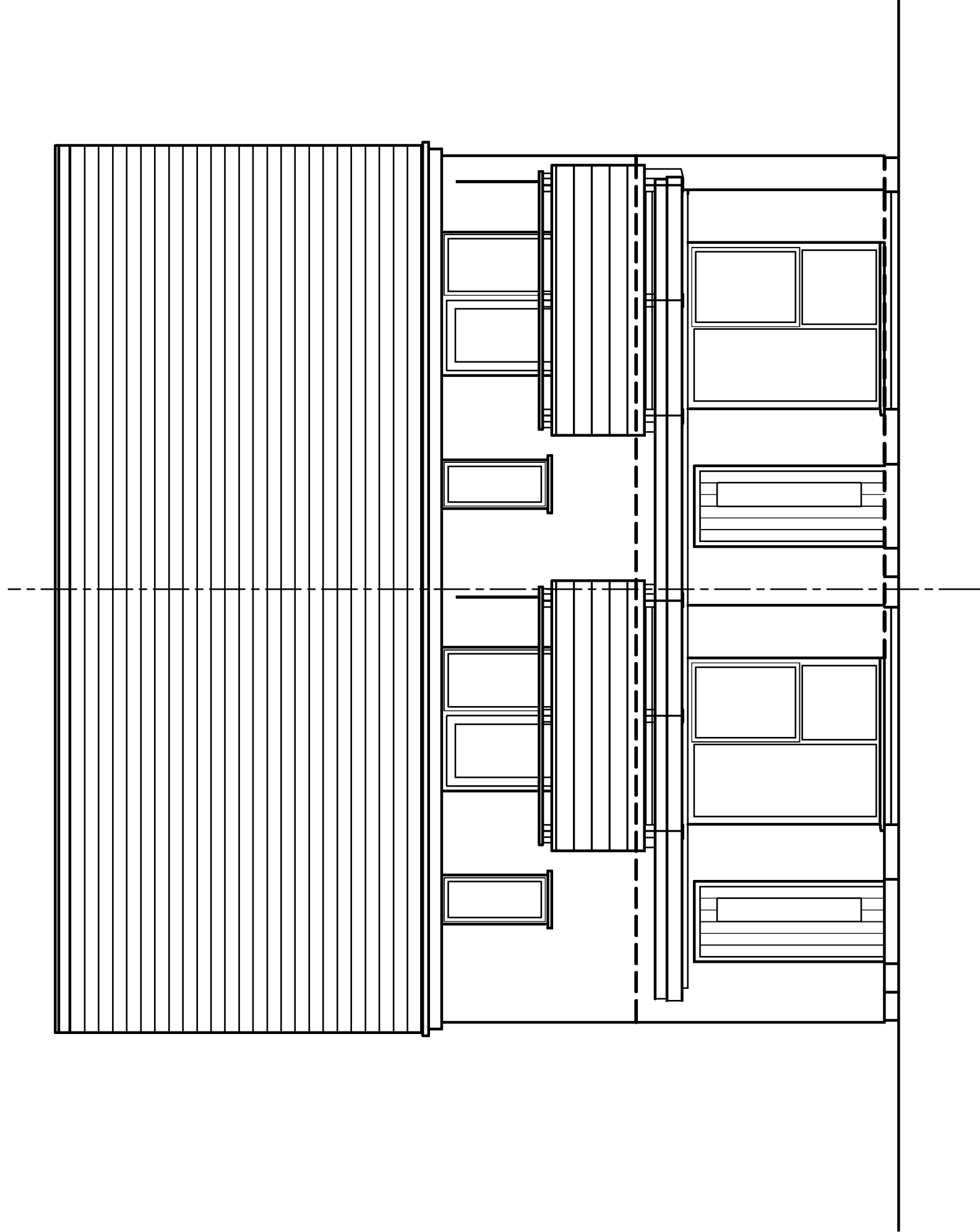
from GN dwg 030114/FP03/03



FIRST FLOOR PLAN



section through 2 storey



Front Elevation - Plots 1 & 2

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REV

DATE

DETAILS

DRAWING

PLOT 1 & 2 - DETAIL PROPOSALS

2 Storey / 2 Bedroom units

PROJECT

THE OLD DAIRY,
REAR OF 3 & 5 CHURCH STREET,
LITTLEHAMPTON BN17 5 EL

SCALE

as shown@A1

DATE

Jan 2017

PROJECT NO.

16.1012

DRAWING NO.

SK03

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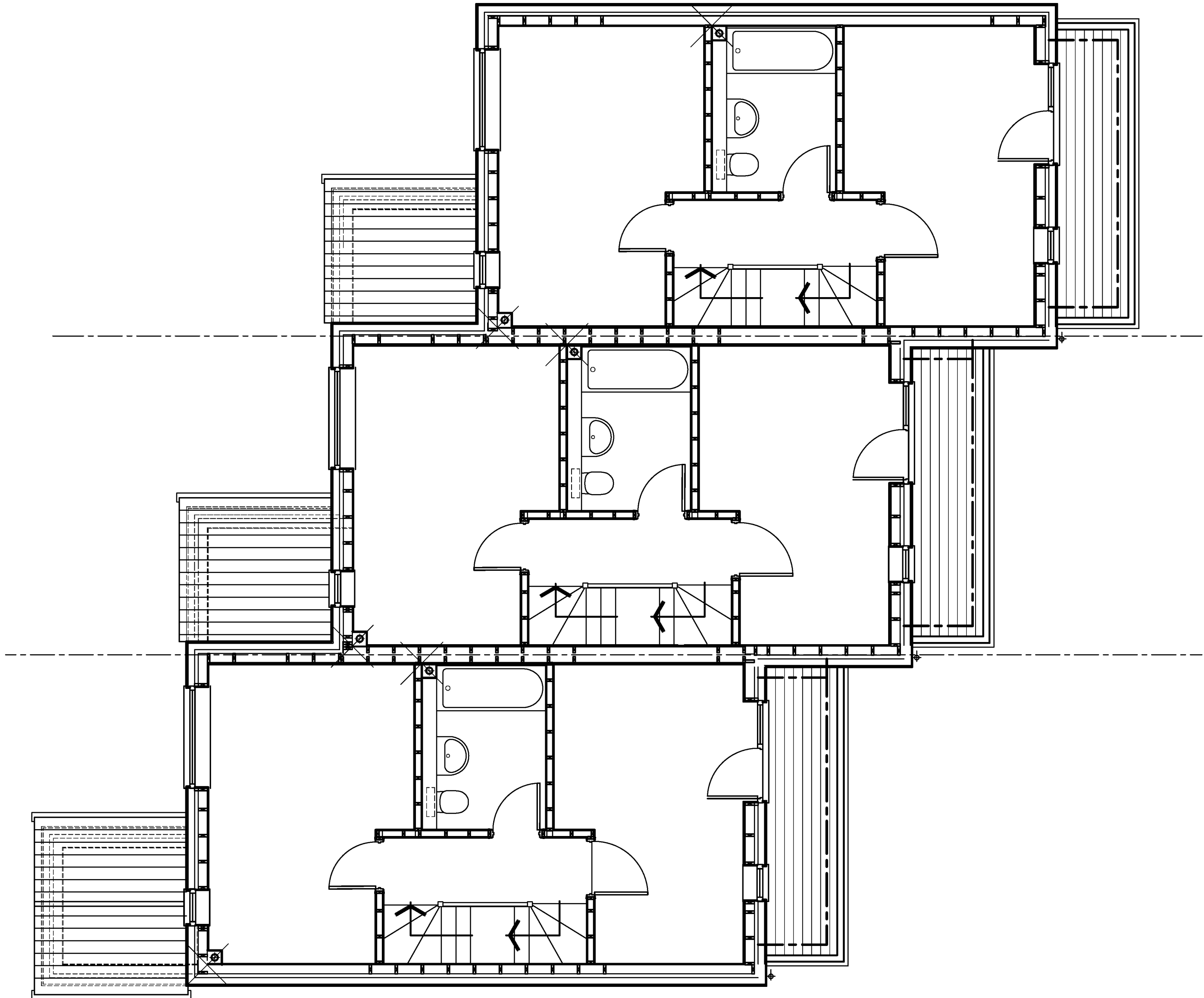
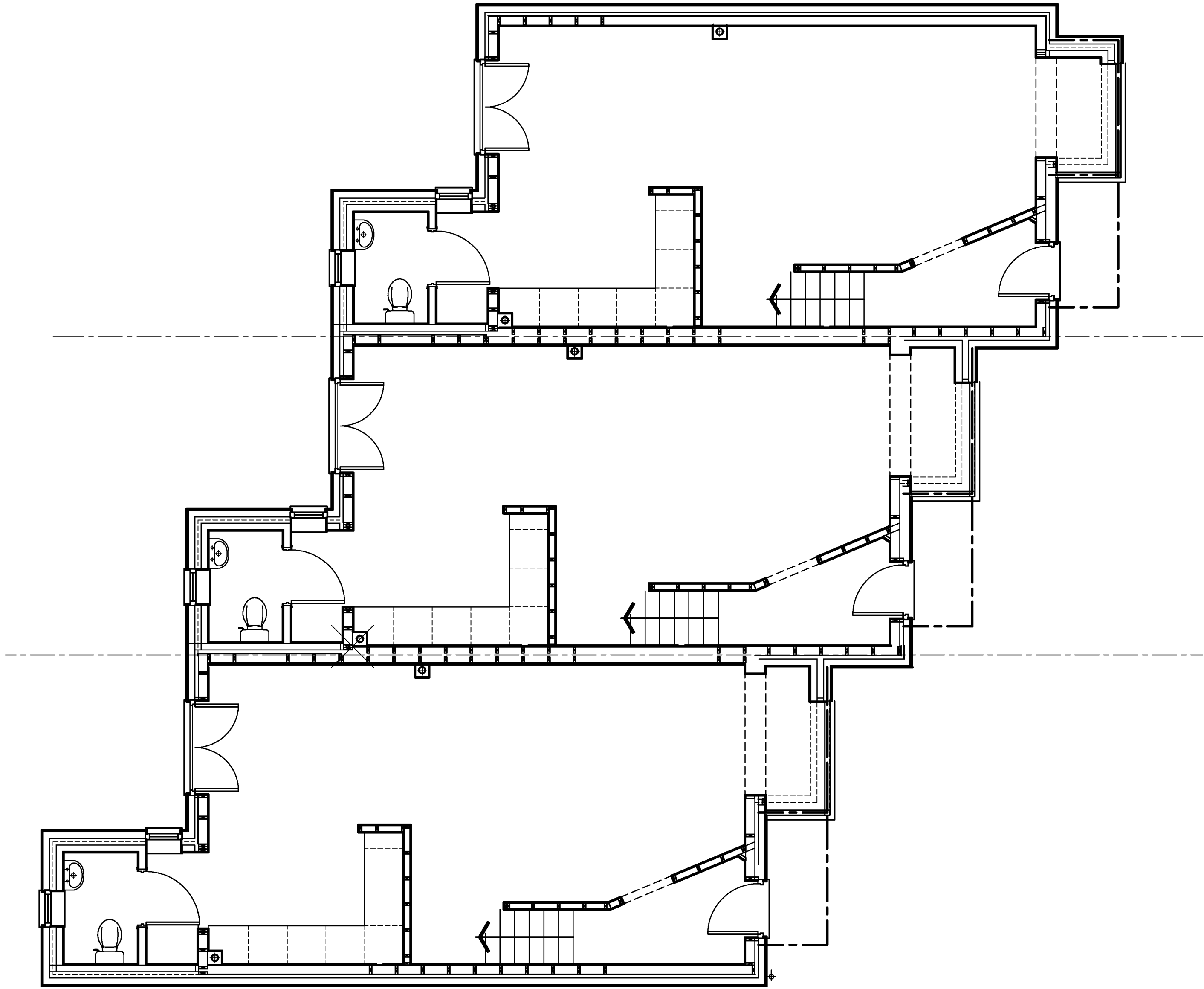
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FIRST FLOOR PLAN



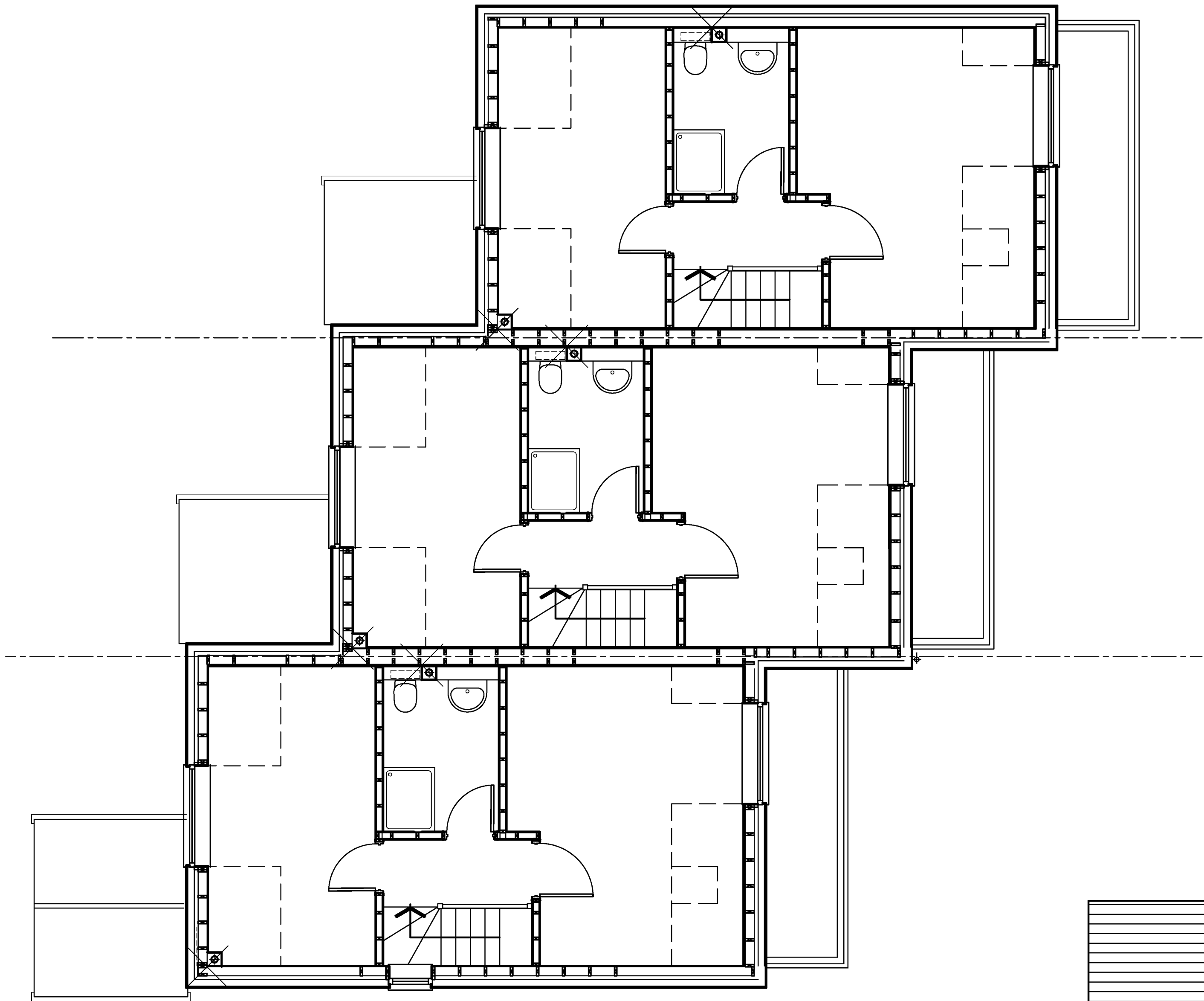
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DRAWING		
PLOTS 3,4 & 5 - DETAIL PROPOSAL		
2.5 Storey / 3 Bedroom units		
PROJECT		
THE OLD DAIRY,		
REAR OF 3 & 5 CHURCH STREET,		
LITTLEHAMPTON BN17 5 EL		
SCALE		
as shown@A1		
DATE		
Jan 2017		
PROJECT NO.		
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DRAWING NO.		
SK04		

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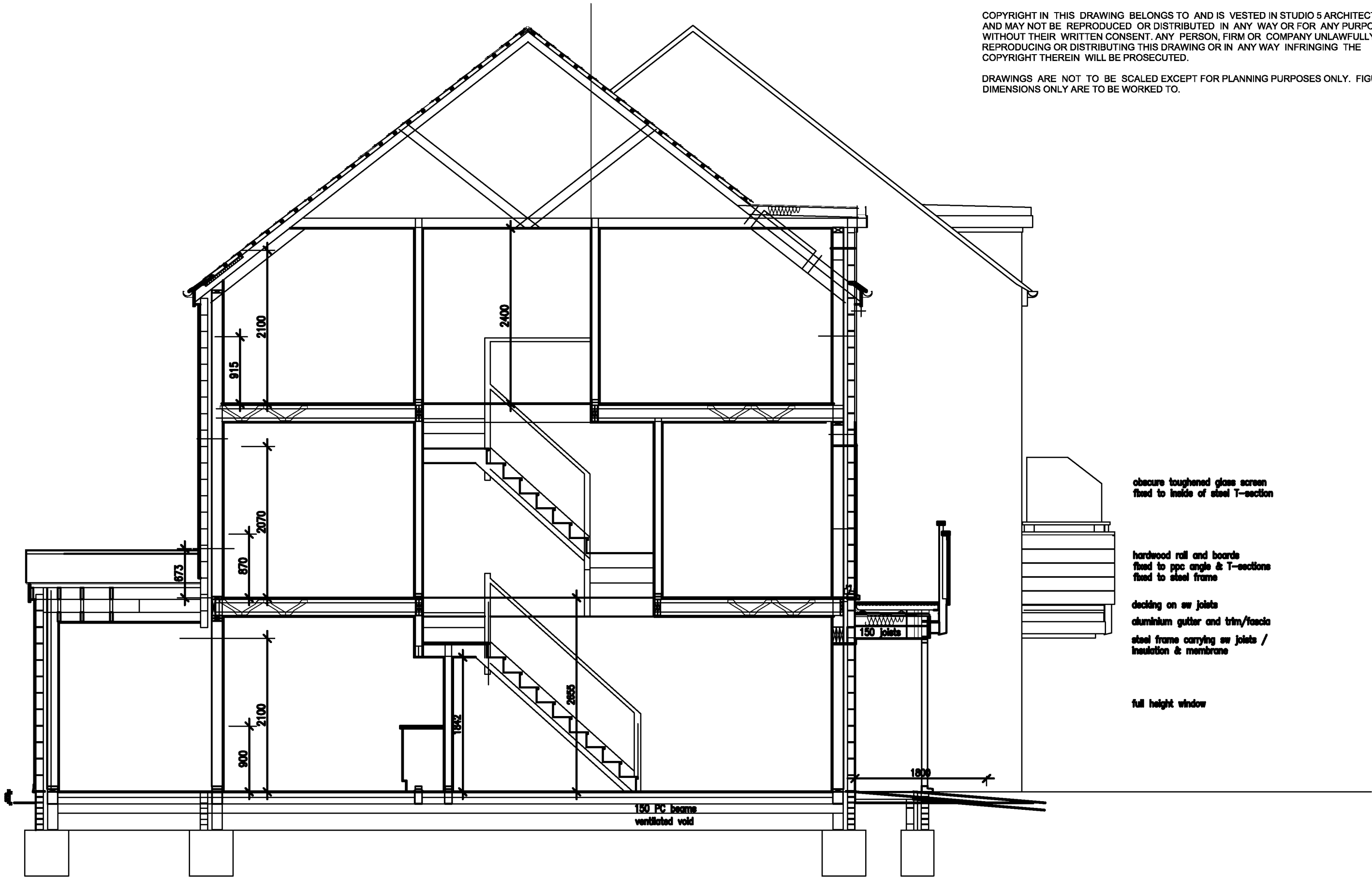
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SECOND FLOOR PLAN

Plots 3, 4 & 5 **2½ STOREY 3 BEDROOM**
from GN drwg 030114/TP03/04



SECTION

opaque toughened glass screen
fixed to inside of steel T-section

hardwood roll and boards
fixed to ppc angle & T-sections
fixed to steel frame

cladding on steel joists
aluminium gutter and trim/soffit
steel frame carrying steel joists /
insulation & membrane

full height window



FRONT ELEVATION

REV DATE DETAILS

DRAWING
PLOTS 3,4 & 5 - DETAIL PROPOSAL
2.5 Storey / 3 Bedroom units

PROJECT
THE OLD DAIRY,
REAR OF 3 & 5 CHURCH STREET,
LITTLEHAMPTON BN17 5 EL

SCALE
as shown@A1

DATE
Jan 2017

PROJECT NO.
16.1012

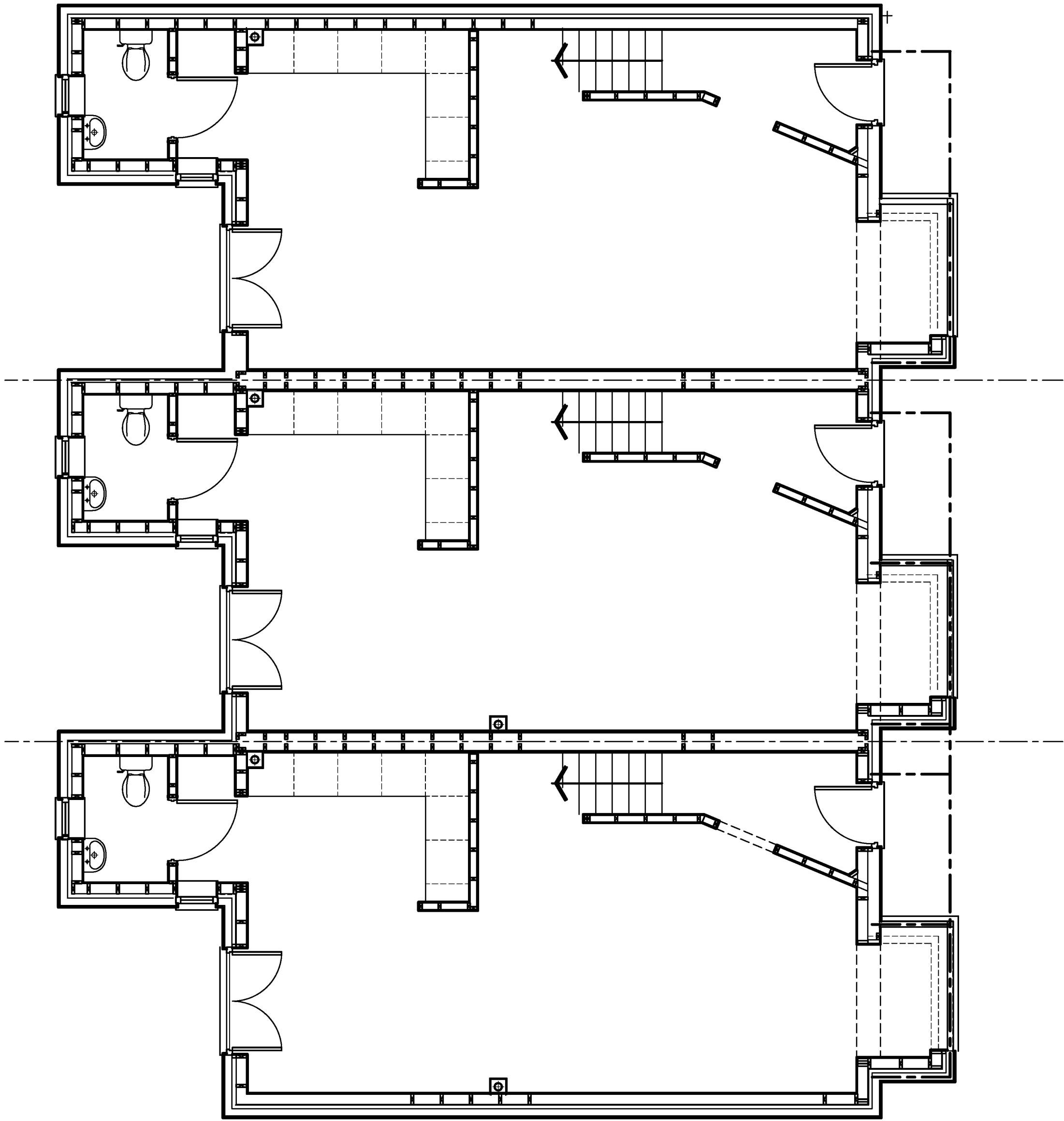
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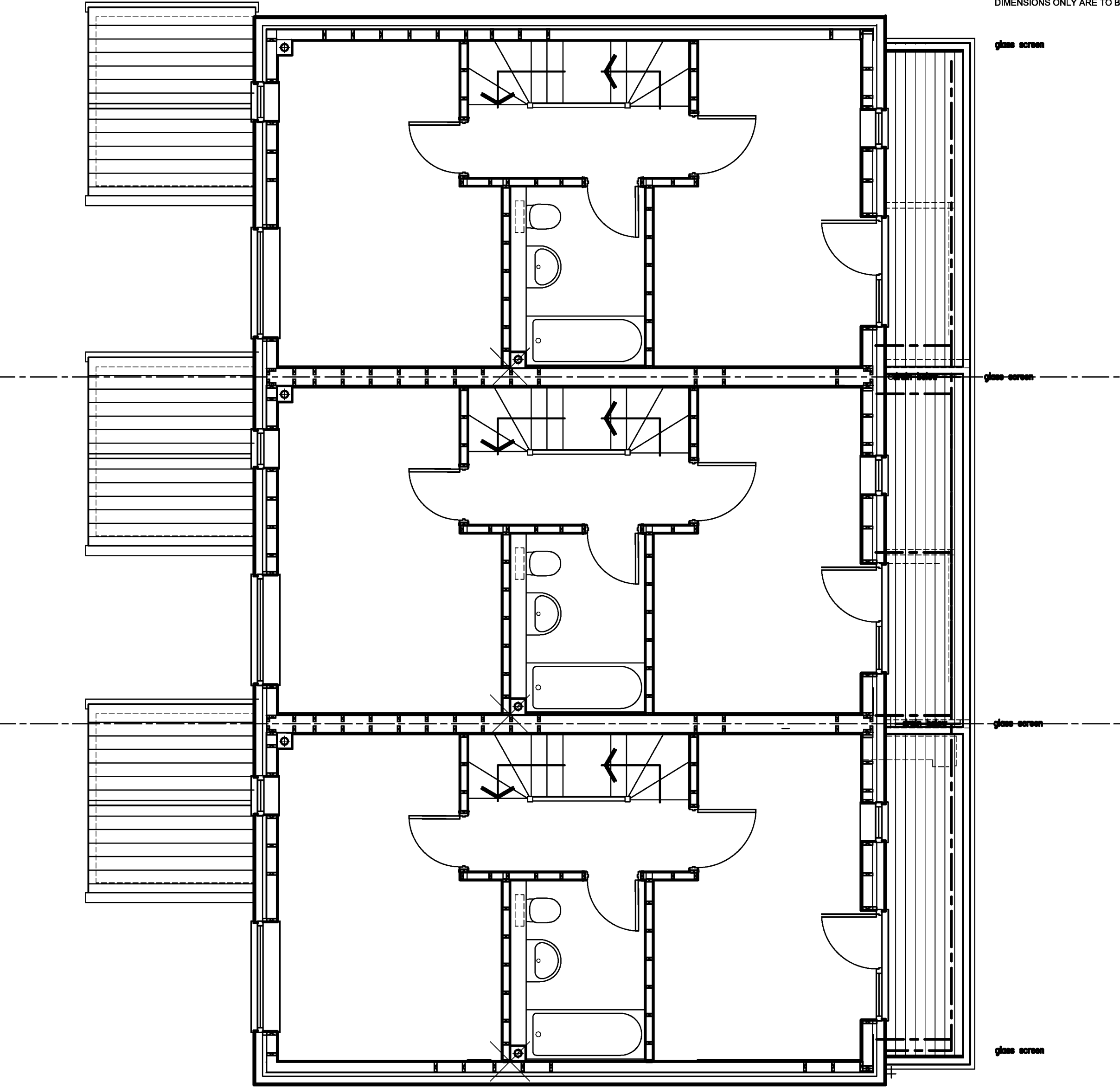
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GROUND FLOOR PLAN



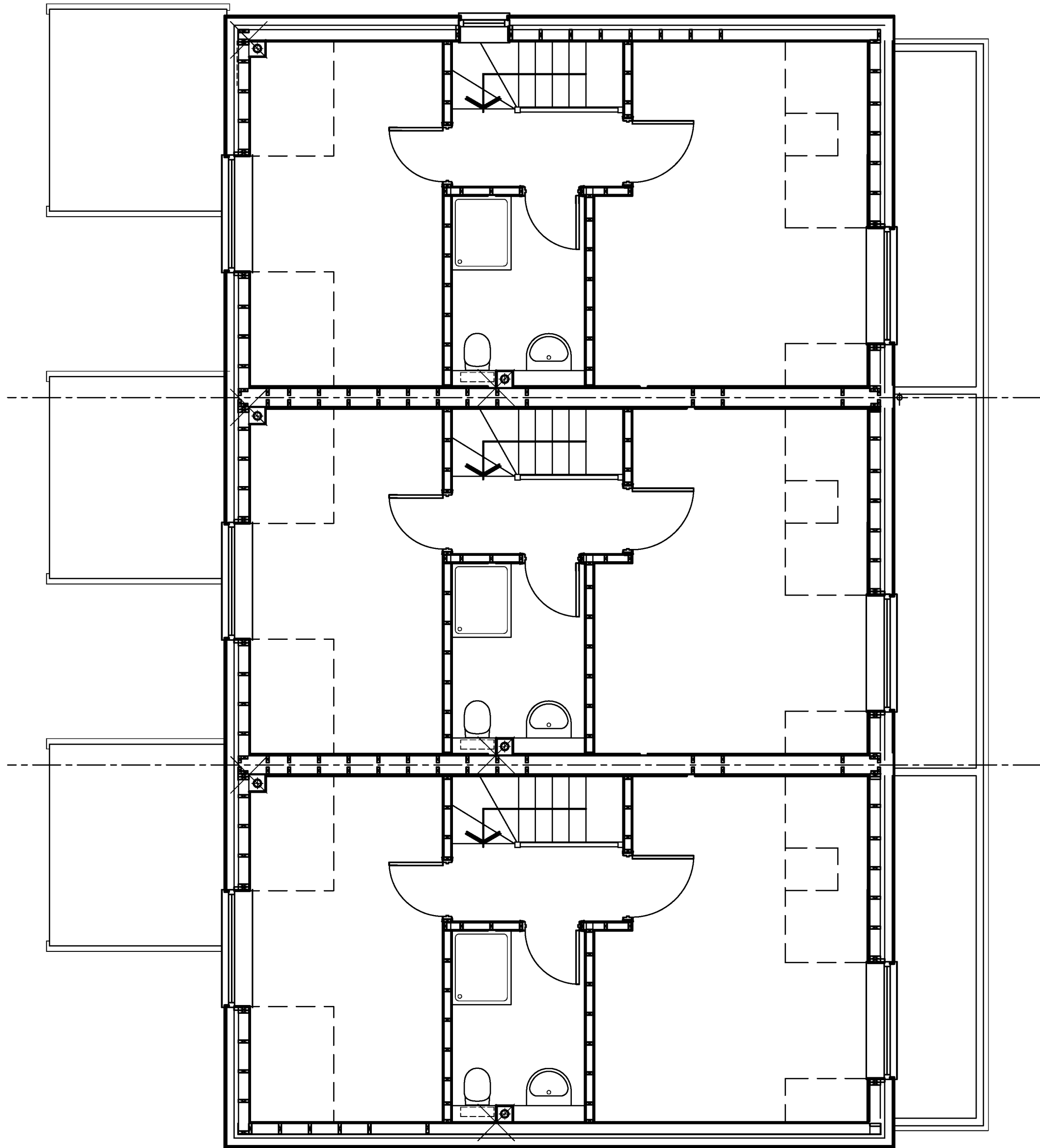
FIRST FLOOR PLAN



REV	DATE	DETAILS
DRAWING		
PLOTS 6,7 & 8 - DETAIL PROPOSAL		
2.5 Storey / 3 Bedroom units		
PROJECT		
THE OLD DAIRY,		
REAR OF 3 & 5 CHURCH STREET,		
LITTLEHAMPTON BN17 5 EL		
SCALE		
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PROJECT NO.		
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SK06		

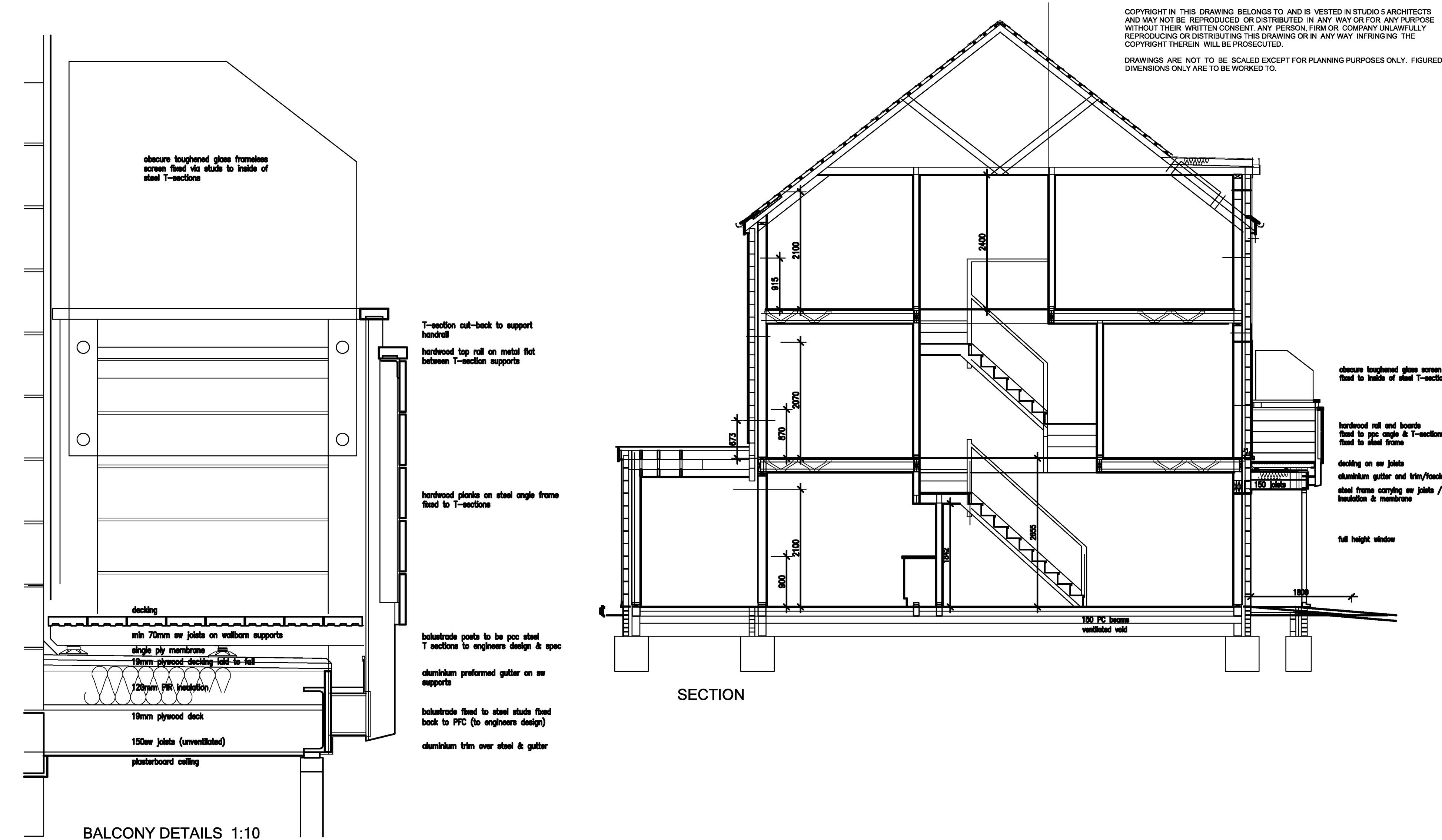
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SECOND FLOOR PLAN

Plots 6, 7 & 8 2½ STOREY 3 BEDROOM
from GN drwg 030114/TP03/04



BALCONY DETAILS 1:10

SECTION



FRONT ELEVATION

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REV DATE DETAILS
DRAWING
PLOTS 6,7 & 8 - DETAIL PROPOSALS
2.5 Storey / 3 Bedroom units
PROJECT
THE OLD DAIRY,
REAR OF 3 & 5 CHURCH STREET,
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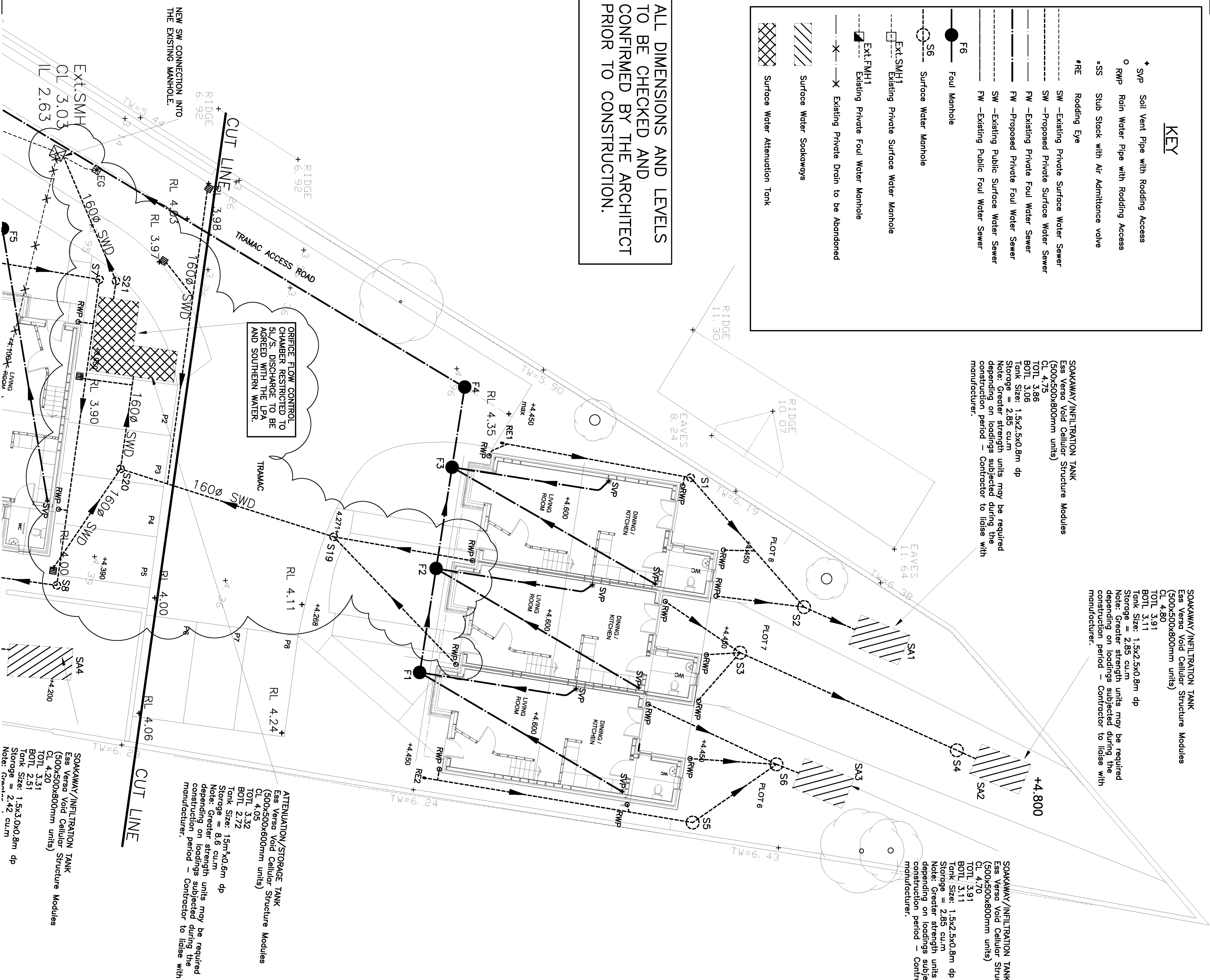
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Appendix B- Drainage Design

KEY

- Soil Vent Pipe with Rodding Access
 - RWP Rain Water Pipe with Rodding Access
 - SS Slub Stock with Air Admittance valve
- RE Rodding Eye
- SW –Existing Private Surface Water Sewer
- SW –Proposed Private Surface Water Sewer
- FW –Existing Private Foul Water Sewer
- FW –Proposed Private Foul Water Sewer
- SW –Existing Public Surface Water Sewer
- FW –Existing Public Foul Water Sewer
- F6 Foul Manhole
- S6 Surface Water Manhole
- Ext.SMH1 Existing Private Surface Water Manhole
- Ext.FMH1 Existing Private Foul Water Manhole
- Existing Private Drain to be Abandoned
- Surface Water Sockways
- Surface Water Attenuation Tank

ALL DIMENSIONS AND LEVELS TO BE CHECKED AND CONFIRMED BY THE ARCHITECT PRIOR TO CONSTRUCTION.



SOAKAWAY/INFILTRATION TANK
Ess Verso Void Cellular Structure Modules
(500x500x800mm units)
CL 4.80
TOLL 3.91
BOLL 3.11
Tank Size: 1.5x2.5x0.8m dp
Storage = 2.85 cum
Note: Greater strength units may be required depending on loadings subjected during the construction period – Contractor to liaise with manufacturer.

SOAKAWAY/INFILTRATION TANK
Ess Verso Void Cellular Structure Modules
(500x500x800mm units)
CL 4.73
TOLL 3.06
BOLL 3.06
Tank Size: 1.5x2.5x0.8m dp
Storage = 2.85 cum
Note: Greater strength units may be required depending on loadings subjected during the construction period – Contractor to liaise with manufacturer.

SOAKAWAY/INFILTRATION TANK
Ess Verso Void Cellular Structure Modules
(500x500x800mm units)
CL 4.70
TOLL 3.91
BOLL 3.11
Tank Size: 1.5x2.5x0.8m dp
Storage = 2.85 cum
Note: Greater strength units may be required depending on loadings subjected during the construction period – Contractor to liaise with manufacturer.

ATTENUATION/STORAGE TANK
Ess Verso Void Cellular Structure Modules
(500x500x800mm units)
CL 4.05
TOLL 3.32
BOLL 2.72
Tank Size: 1.5m x0.6m dp
Storage = 8.6 cum
Note: Greater strength units may be required depending on loadings subjected during the construction period – Contractor to liaise with manufacturer.

SOAKAWAY/INFILTRATION TANK
Ess Verso Void Cellular Structure Modules
(500x500x800mm units)
CL 4.20
TOLL 3.31
BOLL 2.51
Tank Size: 1.5x3.0x0.6m dp
Storage = 2.42 cum
Note: Greater strength units may be required depending on loadings subjected during the construction period – Contractor to liaise with manufacturer.

SURFACE WATER MANHOLE SCHEDULE						
M/H REF	APPROX. COVER LEVEL	INVERT LEVEL	DEPTH (M)	M/H TYPE	COVER TYPE	COMMENTS
RE1	4.45	3.90	0.55	RODDING EYE	–	
S1	4.45	3.80	0.65	3	A15	
S2	4.45	3.71	0.74	3	–	
S3	4.45	3.85	0.60	3	A15	
S4	4.80	3.73	1.07	500Ø SILT TRAP	B125	
RE2	4.45	3.90	0.55	RODDING EYE	–	
S5	4.45	3.77	0.68	3	A15	
S6	4.45	3.72	0.73	500Ø SILT TRAP	B125	
S7	3.95	3.35	0.60	3	B125	
S8	3.95	3.20	0.75	3	B125	
S9	3.95	3.11	0.79	3	A15	
S10	4.20	3.12	1.08	500Ø SILT TRAP	B125	
S11	4.10	3.40	0.70	3	B125	
RE3	4.00	3.45	0.55	RODDING EYE	–	
S12	4.00	3.39	0.61	3	A15	
S13	3.95	3.27	0.68	3	A15	
S14	3.77	3.11	0.66	500Ø SILT TRAP	B125	
RE4	3.75	3.20	0.55	RODDING EYE	–	
S15	3.75	3.07	0.68	3	A15	
S16	3.70	3.01	0.69	500Ø SILT TRAP	B125	
RE5	3.75	3.20	0.55	RODDING EYE	–	
S17	3.75	3.09	0.66	3	A15	
S18	3.70	3.01	0.69	500Ø SILT TRAP	B125	
S19	4.27	3.47	0.80	3	D400	
S20	3.95	2.94	1.01	500Ø SILT TRAP	D400	
S21	4.05	2.70	1.35	500Ø FLOW CONTROL CHAMBER	D400	
FOUL WATER MANHOLE SCHEDULE						
M/H REF	APPROX. COVER LEVEL	INVERT LEVEL	DEPTH (M)	M/H TYPE	COVER TYPE	COMMENTS
F1	4.50	3.90	0.60	3	A15	
F2	4.50	3.83	0.67	3	A15	
F3	4.50	3.76	0.74	3	B125	
F4	4.40	3.70	0.70	3A	D400	
F5	4.00	3.40	0.60	3	B125	
F6	4.00	3.30	0.70	3	B125	
F7	4.00	3.20	0.80	3	B125	
F8	3.75	3.20	0.55	3	B125	
F9	3.75	3.14	0.61	3	B125	
F10	3.75	3.10	0.65	3	B125	
F11	3.70	3.00	0.70	3A	D400	

In addition to these notes, reference shall be made to the specification of works and the relevant Architect's and Specialist's drawings and specifications. The Contractor is responsible for verifying all site dimensions before commencing work.
All dimensions are in millimetres unless noted otherwise.
This drawing has been produced electronically and may have been slightly reduced or enlarged when printed or copied. Dimensions on this drawing shall not be scaled. Work only to be reported to the engineer immediately. Levels are in metres unless noted otherwise to Ordnance Survey datum. The Contractor is responsible for the stability of the building whilst the works are in progress.

NOTES

- THIS DRAWING IS BASED ON DRAWING NO. 16.1012 GA01A BY STUDIO 5 ARCHITECTS LIMITED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE FOLLOWING DRAWING:
51091/11 DRAINAGE LAYOUT 2 OF 2
51091/12 DRAINAGE DETAILS
- CONTRACTOR IS TO TAKE NECESSARY PRECAUTIONS TO ENSURE THAT TRENCHES ARE KEPT CLEAR OF GROUND WATER DURING CONSTRUCTION.
- ALL DRAINAGE WORKS TO BE CARRIED OUT IN ACCORDANCE WITH "SEWERS FOR ADOPTION" 7TH EDITION.
- ALL PIPEWORK TO BE 100Ø CLAY UNLESS NOTED OTHERWISE.
- ALL PIPEWORK THROUGH WALLS TO BE IN ACCORDANCE WITH THE BUILDING REGULATIONS.
- ALL PIPEWORK UNDER ROADS WITH LESS THAN 900MM COVER TO HAVE 150MM CONCRETE SURROUND.
- MINIMUM GRADIENT TO DRAINS TO BE 1:80 FOR 100Ø OR 1:50Ø FW AND 1:100 FOR 110Ø SW.
- POSITIONS OF MANHOLES SHOWN ON THIS DRAWING ARE INDICATIVE ONLY. ACTUAL LOCATIONS TO BE FINALIZED ON SITE.
- PROVIDE CONCRETE LINTELS OVER OPENINGS WHERE PIPES PASS THROUGH WALLS. ALLOW FOR 150MM CLEARANCE ALL ROUND PIPE.

A	AS CLOUED	07/04/17JS
0	ORIGINAL ISSUE –	23/03/17JS
REV	DESCRIPTION	DATE BY

DIXON HURST

CONSULTING CIVIL & STRUCTURAL ENGINEERS

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Registered in England No. 3438720 – Registered Office 4 Foreworks, Trenches, Brighton BN1 1XK

CONTRACT

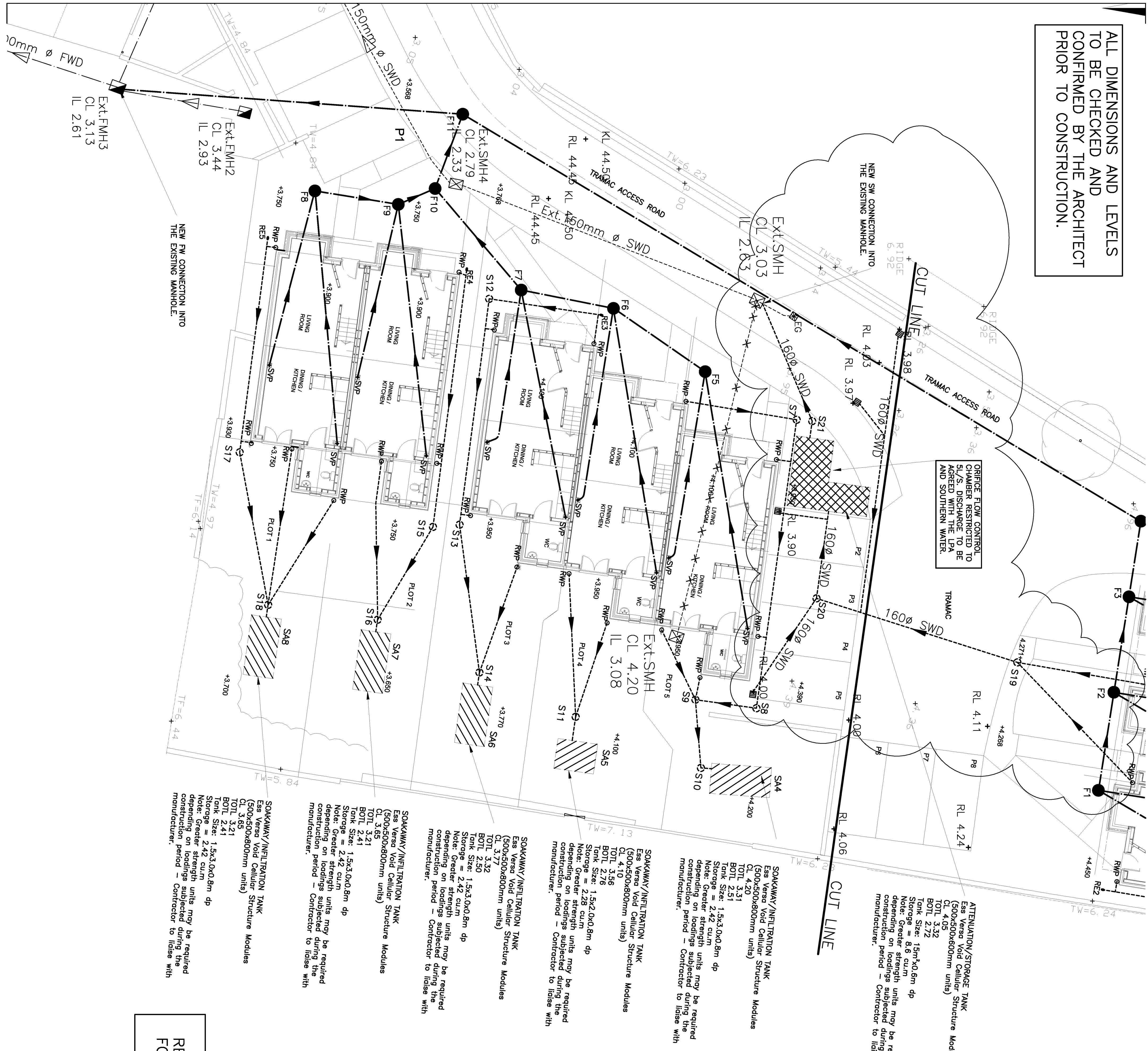
THE OLD DAIRY
CHURCH STREET
LITTLEHAMPTON

DRAINAGE LAYOUT
SHEET 1 OF 2

DRAWING NO.	REV	CHECKED
51091 / 10	A	
SCALE 1:100 @A1	DRAWN DATE 17 JS	APPROVED
AutoCAD Ref: 51091-10.dwg		

This drawing is produced using AutoCAD. Only written dimensions are to be respected.

ALL DIMENSIONS AND LEVELS
TO BE CHECKED AND
CONFIRMED BY THE ARCHITECT
PRIOR TO CONSTRUCTION.



KEY

- * SVP Soil Vent Pipe with Rodding Access
- o RWP Rain Water Pipe with Rodding Access
- *SS Stub Stock with Air Admission valve
- *RE Rodding Eye
- SW -Existing Private Surface Water Sewer
- SW -Proposed Private Surface Water Sewer
- FW -Existing Private Foul Water Sewer
- FW -Proposed Private Foul Water Sewer
- SW -Existing Public Surface Water Sewer
- FW -Existing Public Foul Water Sewer
- F6 Foul Manhole
- S6 Surface Water Manhole
- Ext SMH1 Existing Private Surface Water Manhole
- Ext FMH1 Existing Private Foul Water Manhole
- * Existing Private Drain to be Abandoned
- Surface Water Soakaways
- Surface Water Attenuation Tank

In addition to these notes, reference shall be made to the specification of works and the relevant Architect's and Specialist's drawings and specifications. The Contractor is responsible for verifying all site dimensions before commencing work.

All dimensions are in millimetres unless noted otherwise.

This drawing has been produced electronically and may have been photo-shall not be scaled. Work only to fixed dimensions. Any dimensional discrepancies errors or omissions are to be reported to the engineer immediately.

Levels are in metres unless noted otherwise to Ordnance Survey datum.

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NOTES

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51091/10 DRAINAGE LAYOUT 1 OF 2
51091/12 DRAINAGE DETAILS
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A	AS CLOUED	07/04/17JS
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DIXON HURST

CONSULTING CIVIL & STRUCTURAL ENGINEERS

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Registered in England No. 5438720 - Registered Office 4 Frederick Terrace, Brighton BN1 1XJ.

CONTRACT

THE OLD DAIRY
CHURCH STREET
LITTLEHAMPTON

DRAWING

DRAINAGE LAYOUT
SHEET 2 OF 2

DRAWING NO.	51091 / 11	REV	A	CHECKED
SCALE	1:100 @A1	DATE	DRAWN	APPROVED
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Dixon Hurst Kemp			Page 1																																																																																																																																																																																																																	
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Summer</td><td>3.202</td><td>0.202</td><td>0.0</td><td>0.7</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>3.168</td><td>0.168</td><td>0.0</td><td>0.6</td><td>O K</td></tr><tr><td>15 min Winter</td><td>3.280</td><td>0.280</td><td>0.0</td><td>1.0</td><td>O K</td></tr><tr><td>30 min Winter</td><td>3.372</td><td>0.372</td><td>0.0</td><td>1.3</td><td>O K</td></tr><tr><td>60 min Winter</td><td>3.468</td><td>0.468</td><td>0.0</td><td>1.7</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>122.433</td><td>26</td></tr><tr><td>30 min Summer</td><td>82.239</td><td>40</td></tr><tr><td>60 min Summer</td><td>52.662</td><td>68</td></tr><tr><td>120 min Summer</td><td>32.503</td><td>126</td></tr><tr><td>180 min Summer</td><td>24.118</td><td>184</td></tr><tr><td>240 min Summer</td><td>19.386</td><td>242</td></tr><tr><td>360 min 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Dixon Hurst Kemp			Page 2		
Victoria Court 22 St Pancras West Sussex PO19 7GD		Old Dairy , Littleham... SW Drainage Design Soakaway No.1, Plot 8			
Date March 2017 File SOAKAWAY 1PLOT 8...		Designed by JS Checked by			
Elstree Computing Ltd		Source Control W.12.6			
<u>Summary of Results for 100 year Return Period (+30%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
120 min Winter	3.556	0.556	0.0	2.0	O K
180 min Winter	3.597	0.597	0.0	2.1	O K
240 min Winter	3.617	0.617	0.0	2.2	O K
360 min Winter	3.635	0.635	0.0	2.3	O K
480 min Winter	3.637	0.637	0.0	2.3	O K
600 min Winter	3.632	0.632	0.0	2.3	O K
720 min Winter	3.627	0.627	0.0	2.2	O K
960 min Winter	3.611	0.611	0.0	2.2	O K
1440 min Winter	3.569	0.569	0.0	2.0	O K
2160 min Winter	3.503	0.503	0.0	1.8	O K
2880 min Winter	3.442	0.442	0.0	1.6	O K
4320 min Winter	3.341	0.341	0.0	1.2	O K
5760 min Winter	3.262	0.262	0.0	0.9	O K
7200 min Winter	3.199	0.199	0.0	0.7	O K
8640 min Winter	3.149	0.149	0.0	0.5	O K
10080 min Winter	3.108	0.108	0.0	0.4	O K
Storm Event	Rain (mm/hr)		Time-Peak (mins)		
120 min Winter	32.503		124		
180 min Winter	24.118		180		
240 min Winter	19.386		238		
360 min Winter	14.268		348		
480 min Winter	11.460		454		
600 min Winter	9.659		492		
720 min Winter	8.396		564		
960 min Winter	6.724		720		
1440 min Winter	4.907		1026		
2160 min Winter	3.573		1468		
2880 min Winter	2.849		1884		
4320 min Winter	2.067		2688		
5760 min Winter	1.644		3464		
7200 min Winter	1.377		4248		
8640 min Winter	1.193		4936		
10080 min Winter	1.056		5648		
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Dixon Hurst Kemp		Page 3
Victoria Court 22 St Pancras West Sussex PO19 7GD	Old Dairy , Littleham... SW Drainage Design Soakaway No.1, Plot 8	
Date March 2017 File SOAKAWAY 1PLOT 8...	Designed by JS Checked by	
Elstree Computing Ltd	Source Control W.12.6	

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time / Area Diagram

Total Area (ha) 0.004

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.002	4-8	0.001	8-12	0.001

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Date March 2017 File SOAKAWAY 1PLOT 8...	Designed by JS Checked by	
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Model Details

Storage is Online Cover Level (m) 4.750

Cellular Storage Structure

Invert Level (m) 3.000 Safety Factor 10.0
Infiltration Coefficient Base (m/hr) 0.17000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.17000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	3.8	3.8	0.900	0.0	10.2
0.800	3.8	10.2			

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Dixon Hurst Kemp			Page 1																																																																																																																																																																																																																	
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Summer</td><td>3.278</td><td>0.168</td><td>0.0</td><td>0.6</td><td>O K</td></tr><tr><td>15 min Winter</td><td>3.390</td><td>0.280</td><td>0.0</td><td>1.0</td><td>O K</td></tr><tr><td>30 min Winter</td><td>3.482</td><td>0.372</td><td>0.0</td><td>1.3</td><td>O K</td></tr><tr><td>60 min Winter</td><td>3.578</td><td>0.468</td><td>0.0</td><td>1.7</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>122.433</td><td>26</td></tr><tr><td>30 min Summer</td><td>82.239</td><td>40</td></tr><tr><td>60 min Summer</td><td>52.662</td><td>68</td></tr><tr><td>120 min Summer</td><td>32.503</td><td>126</td></tr><tr><td>180 min Summer</td><td>24.118</td><td>184</td></tr><tr><td>240 min Summer</td><td>19.386</td><td>242</td></tr><tr><td>360 min Summer</td><td>14.268</td><td>360</td></tr><tr><td>480 min Summer</td><td>11.460</td><td>412</td></tr><tr><td>600 min Summer</td><td>9.659</td><td>474</td></tr><tr><td>720 min 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Summer	3.602	0.492	0.0	1.8	O K	180 min Summer	3.637	0.527	0.0	1.9	O K	240 min Summer	3.653	0.543	0.0	1.9	O K	360 min Summer	3.665	0.555	0.0	2.0	O K	480 min Summer	3.665	0.555	0.0	2.0	O K	600 min Summer	3.663	0.553	0.0	2.0	O K	720 min Summer	3.659	0.549	0.0	2.0	O K	960 min Summer	3.647	0.537	0.0	1.9	O K	1440 min Summer	3.618	0.508	0.0	1.8	O K	2160 min Summer	3.573	0.463	0.0	1.7	O K	2880 min Summer	3.531	0.421	0.0	1.5	O K	4320 min Summer	3.460	0.350	0.0	1.2	O K	5760 min Summer	3.401	0.291	0.0	1.0	O K	7200 min Summer	3.352	0.242	0.0	0.9	O K	8640 min Summer	3.312	0.202	0.0	0.7	O K	10080 min Summer	3.278	0.168	0.0	0.6	O K	15 min Winter	3.390	0.280	0.0	1.0	O K	30 min Winter	3.482	0.372	0.0	1.3	O K	60 min Winter	3.578	0.468	0.0	1.7	O K	Storm Event	Rain (mm/hr)	Time-Peak (mins)	15 min Summer	122.433	26	30 min Summer	82.239	40	60 min Summer	52.662	68	120 min Summer	32.503	126	180 min Summer	24.118	184	240 min Summer	19.386	242	360 min Summer	14.268	360	480 min Summer	11.460	412	600 min Summer	9.659	474	720 min Summer	8.396	536	960 min Summer	6.724	672	1440 min Summer	4.907	950	2160 min Summer	3.573	1364	2880 min Summer	2.849	1764	4320 min Summer	2.067	2552	5760 min Summer	1.644	3296	7200 min Summer	1.377	4040	8640 min Summer	1.193	4760	10080 min Summer	1.056	5464	15 min Winter	122.433	26	30 min Winter	82.239	40	60 min Winter	52.662	68
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Victoria Court 22 St Pancras West Sussex PO19 7GD		Old Dairy , Littleham... SW Drainage Design Soakaway No.2, Plot 7			
Date March 2017 File SOAKAWAY 2PLOT 7...		Designed by JS Checked by			
Elstree Computing Ltd		Source Control W.12.6			
<u>Summary of Results for 100 year Return Period (+30%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
120 min Winter	3.666	0.556	0.0	2.0	O K
180 min Winter	3.707	0.597	0.0	2.1	O K
240 min Winter	3.727	0.617	0.0	2.2	O K
360 min Winter	3.745	0.635	0.0	2.3	O K
480 min Winter	3.747	0.637	0.0	2.3	O K
600 min Winter	3.742	0.632	0.0	2.3	O K
720 min Winter	3.737	0.627	0.0	2.2	O K
960 min Winter	3.721	0.611	0.0	2.2	O K
1440 min Winter	3.679	0.569	0.0	2.0	O K
2160 min Winter	3.613	0.503	0.0	1.8	O K
2880 min Winter	3.552	0.442	0.0	1.6	O K
4320 min Winter	3.451	0.341	0.0	1.2	O K
5760 min Winter	3.372	0.262	0.0	0.9	O K
7200 min Winter	3.309	0.199	0.0	0.7	O K
8640 min Winter	3.259	0.149	0.0	0.5	O K
10080 min Winter	3.218	0.108	0.0	0.4	O K
Storm Event	Rain (mm/hr)		Time-Peak (mins)		
120 min Winter	32.503		124		
180 min Winter	24.118		180		
240 min Winter	19.386		238		
360 min Winter	14.268		348		
480 min Winter	11.460		454		
600 min Winter	9.659		492		
720 min Winter	8.396		564		
960 min Winter	6.724		720		
1440 min Winter	4.907		1026		
2160 min Winter	3.573		1468		
2880 min Winter	2.849		1884		
4320 min Winter	2.067		2688		
5760 min Winter	1.644		3464		
7200 min Winter	1.377		4248		
8640 min Winter	1.193		4936		
10080 min Winter	1.056		5648		
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Victoria Court 22 St Pancras West Sussex PO19 7GD	Old Dairy , Littleham... SW Drainage Design Soakaway No.2, Plot 7	
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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time / Area Diagram

Total Area (ha) 0.004

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.002	4-8	0.001	8-12	0.001

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Date March 2017 File SOAKAWAY 2PLOT 7...	Designed by JS Checked by	
Elstree Computing Ltd	Source Control W.12.6	

Model Details

Storage is Online Cover Level (m) 4.800

Cellular Storage Structure

Invert Level (m) 3.110 Safety Factor 10.0
Infiltration Coefficient Base (m/hr) 0.17000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.17000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	3.8	3.8	0.900	0.0	10.2
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<u>Summary of Results for 100 year Return Period (+30%)</u> Half Drain Time : 536 minutes. <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>3.359</td><td>0.249</td><td>0.0</td><td>0.9</td><td>O K</td></tr><tr><td>30 min Summer</td><td>3.441</td><td>0.331</td><td>0.0</td><td>1.2</td><td>O K</td></tr><tr><td>60 min Summer</td><td>3.526</td><td>0.416</td><td>0.0</td><td>1.5</td><td>O K</td></tr><tr><td>120 min Summer</td><td>3.602</td><td>0.492</td><td>0.0</td><td>1.8</td><td>O K</td></tr><tr><td>180 min Summer</td><td>3.637</td><td>0.527</td><td>0.0</td><td>1.9</td><td>O K</td></tr><tr><td>240 min Summer</td><td>3.653</td><td>0.543</td><td>0.0</td><td>1.9</td><td>O K</td></tr><tr><td>360 min Summer</td><td>3.665</td><td>0.555</td><td>0.0</td><td>2.0</td><td>O K</td></tr><tr><td>480 min Summer</td><td>3.665</td><td>0.555</td><td>0.0</td><td>2.0</td><td>O K</td></tr><tr><td>600 min Summer</td><td>3.663</td><td>0.553</td><td>0.0</td><td>2.0</td><td>O K</td></tr><tr><td>720 min Summer</td><td>3.659</td><td>0.549</td><td>0.0</td><td>2.0</td><td>O K</td></tr><tr><td>960 min Summer</td><td>3.647</td><td>0.537</td><td>0.0</td><td>1.9</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>3.618</td><td>0.508</td><td>0.0</td><td>1.8</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>3.573</td><td>0.463</td><td>0.0</td><td>1.7</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>3.531</td><td>0.421</td><td>0.0</td><td>1.5</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>3.460</td><td>0.350</td><td>0.0</td><td>1.2</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>3.401</td><td>0.291</td><td>0.0</td><td>1.0</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>3.352</td><td>0.242</td><td>0.0</td><td>0.9</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>3.312</td><td>0.202</td><td>0.0</td><td>0.7</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>3.278</td><td>0.168</td><td>0.0</td><td>0.6</td><td>O K</td></tr><tr><td>15 min Winter</td><td>3.390</td><td>0.280</td><td>0.0</td><td>1.0</td><td>O K</td></tr><tr><td>30 min Winter</td><td>3.482</td><td>0.372</td><td>0.0</td><td>1.3</td><td>O K</td></tr><tr><td>60 min Winter</td><td>3.578</td><td>0.468</td><td>0.0</td><td>1.7</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>122.433</td><td>26</td></tr><tr><td>30 min Summer</td><td>82.239</td><td>40</td></tr><tr><td>60 min Summer</td><td>52.662</td><td>68</td></tr><tr><td>120 min Summer</td><td>32.503</td><td>126</td></tr><tr><td>180 min Summer</td><td>24.118</td><td>184</td></tr><tr><td>240 min Summer</td><td>19.386</td><td>242</td></tr><tr><td>360 min Summer</td><td>14.268</td><td>360</td></tr><tr><td>480 min Summer</td><td>11.460</td><td>412</td></tr><tr><td>600 min Summer</td><td>9.659</td><td>474</td></tr><tr><td>720 min Summer</td><td>8.396</td><td>536</td></tr><tr><td>960 min Summer</td><td>6.724</td><td>672</td></tr><tr><td>1440 min Summer</td><td>4.907</td><td>950</td></tr><tr><td>2160 min Summer</td><td>3.573</td><td>1364</td></tr><tr><td>2880 min Summer</td><td>2.849</td><td>1764</td></tr><tr><td>4320 min Summer</td><td>2.067</td><td>2552</td></tr><tr><td>5760 min Summer</td><td>1.644</td><td>3296</td></tr><tr><td>7200 min Summer</td><td>1.377</td><td>4040</td></tr><tr><td>8640 min Summer</td><td>1.193</td><td>4760</td></tr><tr><td>10080 min Summer</td><td>1.056</td><td>5464</td></tr><tr><td>15 min Winter</td><td>122.433</td><td>26</td></tr><tr><td>30 min Winter</td><td>82.239</td><td>40</td></tr><tr><td>60 min Winter</td><td>52.662</td><td>68</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	3.359	0.249	0.0	0.9	O K	30 min Summer	3.441	0.331	0.0	1.2	O K	60 min Summer	3.526	0.416	0.0	1.5	O K	120 min Summer	3.602	0.492	0.0	1.8	O K	180 min Summer	3.637	0.527	0.0	1.9	O K	240 min Summer	3.653	0.543	0.0	1.9	O K	360 min Summer	3.665	0.555	0.0	2.0	O K	480 min Summer	3.665	0.555	0.0	2.0	O K	600 min Summer	3.663	0.553	0.0	2.0	O K	720 min Summer	3.659	0.549	0.0	2.0	O K	960 min Summer	3.647	0.537	0.0	1.9	O K	1440 min Summer	3.618	0.508	0.0	1.8	O K	2160 min Summer	3.573	0.463	0.0	1.7	O K	2880 min Summer	3.531	0.421	0.0	1.5	O K	4320 min Summer	3.460	0.350	0.0	1.2	O K	5760 min Summer	3.401	0.291	0.0	1.0	O K	7200 min Summer	3.352	0.242	0.0	0.9	O K	8640 min Summer	3.312	0.202	0.0	0.7	O K	10080 min Summer	3.278	0.168	0.0	0.6	O K	15 min Winter	3.390	0.280	0.0	1.0	O K	30 min Winter	3.482	0.372	0.0	1.3	O K	60 min Winter	3.578	0.468	0.0	1.7	O K	Storm Event	Rain (mm/hr)	Time-Peak (mins)	15 min Summer	122.433	26	30 min Summer	82.239	40	60 min Summer	52.662	68	120 min Summer	32.503	126	180 min Summer	24.118	184	240 min Summer	19.386	242	360 min Summer	14.268	360	480 min Summer	11.460	412	600 min Summer	9.659	474	720 min Summer	8.396	536	960 min Summer	6.724	672	1440 min Summer	4.907	950	2160 min Summer	3.573	1364	2880 min Summer	2.849	1764	4320 min Summer	2.067	2552	5760 min Summer	1.644	3296	7200 min Summer	1.377	4040	8640 min Summer	1.193	4760	10080 min Summer	1.056	5464	15 min Winter	122.433	26	30 min Winter	82.239	40	60 min Winter	52.662	68
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Victoria Court 22 St Pancras West Sussex PO19 7GD		Old Dairy , Littleham... SW Drainage Design Soakaway No.3, Plot6			
Date March 2017 File SOAKAWAY 3PLOT 6...		Designed by JS Checked by			
Elstree Computing Ltd		Source Control W.12.6			
<u>Summary of Results for 100 year Return Period (+30%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
120 min Winter	3.666	0.556	0.0	2.0	O K
180 min Winter	3.707	0.597	0.0	2.1	O K
240 min Winter	3.727	0.617	0.0	2.2	O K
360 min Winter	3.745	0.635	0.0	2.3	O K
480 min Winter	3.747	0.637	0.0	2.3	O K
600 min Winter	3.742	0.632	0.0	2.3	O K
720 min Winter	3.737	0.627	0.0	2.2	O K
960 min Winter	3.721	0.611	0.0	2.2	O K
1440 min Winter	3.679	0.569	0.0	2.0	O K
2160 min Winter	3.613	0.503	0.0	1.8	O K
2880 min Winter	3.552	0.442	0.0	1.6	O K
4320 min Winter	3.451	0.341	0.0	1.2	O K
5760 min Winter	3.372	0.262	0.0	0.9	O K
7200 min Winter	3.309	0.199	0.0	0.7	O K
8640 min Winter	3.259	0.149	0.0	0.5	O K
10080 min Winter	3.218	0.108	0.0	0.4	O K
Storm Event	Rain (mm/hr)		Time-Peak (mins)		
120 min Winter	32.503		124		
180 min Winter	24.118		180		
240 min Winter	19.386		238		
360 min Winter	14.268		348		
480 min Winter	11.460		454		
600 min Winter	9.659		492		
720 min Winter	8.396		564		
960 min Winter	6.724		720		
1440 min Winter	4.907		1026		
2160 min Winter	3.573		1468		
2880 min Winter	2.849		1884		
4320 min Winter	2.067		2688		
5760 min Winter	1.644		3464		
7200 min Winter	1.377		4248		
8640 min Winter	1.193		4936		
10080 min Winter	1.056		5648		
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Date March 2017 File SOAKAWAY 3PLOT 6...	Designed by JS Checked by	
Elstree Computing Ltd	Source Control W.12.6	

Model Details

Storage is Online Cover Level (m) 4.700

Cellular Storage Structure

Invert Level (m) 3.110 Safety Factor 10.0
Infiltration Coefficient Base (m/hr) 0.17000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.17000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	3.8	3.8	0.900	0.0	10.2
0.800	3.8	10.2			

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Victoria Court 22 St Pancras West Sussex PO19 7GD	Old Dairy , Littleham...				
Date March 2017 File SOAKAWAY 4PLOT 5...	SW Drainage Design Soakaway No.4, Plot5				
Designed by JS Checked by					
Elstree Computing Ltd	Source Control W.12.6				
<u>Summary of Results for 100 year Return Period (+30%)</u>					
Half Drain Time : 639 minutes.					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	2.824	0.314	0.0	1.3	O K
30 min Summer	2.928	0.418	0.0	1.8	O K
60 min Summer	3.036	0.526	0.0	2.2	O K
120 min Summer	3.137	0.627	0.0	2.7	O K
180 min Summer	3.184	0.674	0.0	2.9	O K
240 min Summer	3.208	0.698	0.1	3.0	O K
360 min Summer	3.231	0.721	0.1	3.1	O K
480 min Summer	3.234	0.724	0.1	3.1	O K
600 min Summer	3.234	0.724	0.1	3.1	O K
720 min Summer	3.231	0.721	0.1	3.1	O K
960 min Summer	3.221	0.711	0.1	3.0	O K
1440 min Summer	3.190	0.680	0.1	2.9	O K
2160 min Summer	3.139	0.629	0.0	2.7	O K
2880 min Summer	3.092	0.582	0.0	2.5	O K
4320 min Summer	3.009	0.499	0.0	2.1	O K
5760 min Summer	2.939	0.429	0.0	1.8	O K
7200 min Summer	2.881	0.371	0.0	1.6	O K
8640 min Summer	2.831	0.321	0.0	1.4	O K
10080 min Summer	2.788	0.278	0.0	1.2	O K
15 min Winter	2.862	0.352	0.0	1.5	O K
30 min Winter	2.980	0.470	0.0	2.0	O K
60 min Winter	3.102	0.592	0.0	2.5	O K
Storm Event	Rain (mm/hr)		Time-Peak (mins)		
15 min Summer	122.433		26		
30 min Summer	82.239		41		
60 min Summer	52.662		70		
120 min Summer	32.503		128		
180 min Summer	24.118		186		
240 min Summer	19.386		244		
360 min Summer	14.268		362		
480 min Summer	11.460		444		
600 min Summer	9.659		500		
720 min Summer	8.396		562		
960 min Summer	6.724		692		
1440 min Summer	4.907		970		
2160 min Summer	3.573		1384		
2880 min Summer	2.849		1792		
4320 min Summer	2.067		2596		
5760 min Summer	1.644		3352		
7200 min Summer	1.377		4112		
8640 min Summer	1.193		4848		
10080 min Summer	1.056		5560		
15 min Winter	122.433		26		
30 min Winter	82.239		40		
60 min Winter	52.662		68		
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Date March 2017 File SOAKAWAY 4PLOT 5...		Designed by JS Checked by			
Elstree Computing Ltd		Source Control W.12.6			
<u>Summary of Results for 100 year Return Period (+30%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
120 min Winter	3.217	0.707	0.1	3.0	O K
180 min Winter	3.273	0.763	0.1	3.3	O K
240 min Winter	3.302	0.792	0.1	3.4	O K
360 min Winter	3.338	0.828	0.1	3.5	O K
480 min Winter	3.352	0.842	0.1	3.6	O K
600 min Winter	3.348	0.838	0.1	3.6	O K
720 min Winter	3.338	0.828	0.1	3.5	O K
960 min Winter	3.321	0.811	0.1	3.5	O K
1440 min Winter	3.278	0.768	0.1	3.3	O K
2160 min Winter	3.204	0.694	0.1	3.0	O K
2880 min Winter	3.134	0.624	0.0	2.7	O K
4320 min Winter	3.016	0.506	0.0	2.2	O K
5760 min Winter	2.920	0.410	0.0	1.8	O K
7200 min Winter	2.843	0.333	0.0	1.4	O K
8640 min Winter	2.780	0.270	0.0	1.2	O K
10080 min Winter	2.726	0.216	0.0	0.9	O K
Storm Event	Rain (mm/hr)		Time-Peak (mins)		
120 min Winter	32.503		126		
180 min Winter	24.118		182		
240 min Winter	19.386		240		
360 min Winter	14.268		352		
480 min Winter	11.460		462		
600 min Winter	9.659		562		
720 min Winter	8.396		586		
960 min Winter	6.724		736		
1440 min Winter	4.907		1042		
2160 min Winter	3.573		1492		
2880 min Winter	2.849		1928		
4320 min Winter	2.067		2764		
5760 min Winter	1.644		3536		
7200 min Winter	1.377		4328		
8640 min Winter	1.193		5096		
10080 min Winter	1.056		5848		
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Date March 2017 File SOAKAWAY 4PLOT 5...	Designed by JS Checked by	
Elstree Computing Ltd	Source Control W.12.6	

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time / Area Diagram

Total Area (ha) 0.006

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.002	4-8	0.002	8-12	0.002

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Victoria Court 22 St Pancras West Sussex PO19 7GD	Old Dairy , Littleham... SW Drainage Design Soakaway No.4, Plot5	
Date March 2017 File SOAKAWAY 4PLOT 5...	Designed by JS Checked by	
Elstree Computing Ltd	Source Control W.12.6	

Model Details

Storage is Online Cover Level (m) 4.200

Cellular Storage Structure

Invert Level (m) 2.510 Safety Factor 10.0
Infiltration Coefficient Base (m/hr) 0.17000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.17000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	4.5	4.5	0.900	0.0	11.7
0.800	4.5	11.7			

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Victoria Court 22 St Pancras West Sussex PO19 7GD	Old Dairy , Littleham...				
Date March 2017 File SOAKAWAY 5PLOT4 ...	SW Drainage Design Soakaway No.5, Plot4				
	Designed by JS Checked by				
Elstree Computing Ltd	Source Control W.12.6				
<u>Summary of Results for 100 year Return Period (+30%)</u>					
Half Drain Time : 499 minutes.					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	2.994	0.234	0.0	0.7	O K
30 min Summer	3.071	0.311	0.0	0.9	O K
60 min Summer	3.150	0.390	0.0	1.1	O K
120 min Summer	3.220	0.460	0.0	1.3	O K
180 min Summer	3.251	0.491	0.0	1.4	O K
240 min Summer	3.264	0.504	0.0	1.4	O K
360 min Summer	3.273	0.513	0.0	1.5	O K
480 min Summer	3.273	0.513	0.0	1.5	O K
600 min Summer	3.270	0.510	0.0	1.5	O K
720 min Summer	3.266	0.506	0.0	1.4	O K
960 min Summer	3.254	0.494	0.0	1.4	O K
1440 min Summer	3.224	0.464	0.0	1.3	O K
2160 min Summer	3.179	0.419	0.0	1.2	O K
2880 min Summer	3.139	0.379	0.0	1.1	O K
4320 min Summer	3.070	0.310	0.0	0.9	O K
5760 min Summer	3.014	0.254	0.0	0.7	O K
7200 min Summer	2.969	0.209	0.0	0.6	O K
8640 min Summer	2.932	0.172	0.0	0.5	O K
10080 min Summer	2.901	0.141	0.0	0.4	O K
15 min Winter	3.022	0.262	0.0	0.7	O K
30 min Winter	3.110	0.350	0.0	1.0	O K
60 min Winter	3.199	0.439	0.0	1.3	O K
Storm Event		Rain (mm/hr)	Time-Peak (mins)		
15 min Summer		122.433	26		
30 min Summer		82.239	40		
60 min Summer		52.662	70		
120 min Summer		32.503	126		
180 min Summer		24.118	184		
240 min Summer		19.386	242		
360 min Summer		14.268	346		
480 min Summer		11.460	400		
600 min Summer		9.659	462		
720 min Summer		8.396	526		
960 min Summer		6.724	664		
1440 min Summer		4.907	940		
2160 min Summer		3.573	1348		
2880 min Summer		2.849	1756		
4320 min Summer		2.067	2520		
5760 min Summer		1.644	3288		
7200 min Summer		1.377	4032		
8640 min Summer		1.193	4752		
10080 min Summer		1.056	5448		
15 min Winter		122.433	26		
30 min Winter		82.239	40		
60 min Winter		52.662	68		
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Dixon Hurst Kemp		Page 2
Victoria Court 22 St Pancras West Sussex PO19 7GD	Old Dairy , Littleham... SW Drainage Design Soakaway No.5, Plot4	
Date March 2017 File SOAKAWAY 5PLOT4 ...	Designed by JS Checked by	
Elstree Computing Ltd	Source Control W.12.6	

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
120 min Winter	3.280	0.520	0.0	1.5	O K
180 min Winter	3.317	0.557	0.0	1.6	O K
240 min Winter	3.334	0.574	0.0	1.6	O K
360 min Winter	3.349	0.589	0.0	1.7	O K
480 min Winter	3.347	0.587	0.0	1.7	O K
600 min Winter	3.343	0.583	0.0	1.7	O K
720 min Winter	3.337	0.577	0.0	1.6	O K
960 min Winter	3.320	0.560	0.0	1.6	O K
1440 min Winter	3.277	0.517	0.0	1.5	O K
2160 min Winter	3.211	0.451	0.0	1.3	O K
2880 min Winter	3.153	0.393	0.0	1.1	O K
4320 min Winter	3.056	0.296	0.0	0.8	O K
5760 min Winter	2.982	0.222	0.0	0.6	O K
7200 min Winter	2.924	0.164	0.0	0.5	O K
8640 min Winter	2.878	0.118	0.0	0.3	O K
10080 min Winter	2.843	0.083	0.0	0.2	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
120 min Winter	32.503	124
180 min Winter	24.118	182
240 min Winter	19.386	238
360 min Winter	14.268	348
480 min Winter	11.460	448
600 min Winter	9.659	482
720 min Winter	8.396	558
960 min Winter	6.724	712
1440 min Winter	4.907	1016
2160 min Winter	3.573	1452
2880 min Winter	2.849	1876
4320 min Winter	2.067	2680
5760 min Winter	1.644	3456
7200 min Winter	1.377	4184
8640 min Winter	1.193	4856
10080 min Winter	1.056	5552

Dixon Hurst Kemp		Page 3
Victoria Court 22 St Pancras West Sussex PO19 7GD	Old Dairy , Littleham... SW Drainage Design Soakaway No.5, Plot4	
Date March 2017 File SOAKAWAY 5PLOT4 ...	Designed by JS Checked by	
Elstree Computing Ltd	Source Control W.12.6	

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time / Area Diagram

Total Area (ha) 0.003

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.001	4-8	0.001	8-12	0.001

Dixon Hurst Kemp		Page 4
Victoria Court 22 St Pancras West Sussex PO19 7GD	Old Dairy , Littleham... SW Drainage Design Soakaway No.5, Plot4	
Date March 2017 File SOAKAWAY 5PLOT4 ...	Designed by JS Checked by	
Elstree Computing Ltd	Source Control W.12.6	

Model Details

Storage is Online Cover Level (m) 4.100

Cellular Storage Structure

Invert Level (m) 2.760 Safety Factor 10.0
Infiltration Coefficient Base (m/hr) 0.17000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.17000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	3.0	3.0	0.900	0.0	8.6
0.800	3.0	8.6			

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Victoria Court	Old Dairy , Littleham...				
22 St Pancras	SW Drainage Design				
West Sussex PO19 7GD	Soakaway No.6, Plot3				
Date March 2017	Designed by JS				
File SOAKAWAY 6PLOT3 ...	Checked by				
Elstree Computing Ltd	Source Control W.12.6				
<u>Summary of Results for 100 year Return Period (+30%)</u>					
Half Drain Time : 639 minutes.					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	2.814	0.314	0.0	1.3	O K
30 min Summer	2.918	0.418	0.0	1.8	O K
60 min Summer	3.026	0.526	0.0	2.2	O K
120 min Summer	3.127	0.627	0.0	2.7	O K
180 min Summer	3.174	0.674	0.0	2.9	O K
240 min Summer	3.198	0.698	0.1	3.0	O K
360 min Summer	3.221	0.721	0.1	3.1	O K
480 min Summer	3.224	0.724	0.1	3.1	O K
600 min Summer	3.224	0.724	0.1	3.1	O K
720 min Summer	3.221	0.721	0.1	3.1	O K
960 min Summer	3.211	0.711	0.1	3.0	O K
1440 min Summer	3.180	0.680	0.1	2.9	O K
2160 min Summer	3.129	0.629	0.0	2.7	O K
2880 min Summer	3.082	0.582	0.0	2.5	O K
4320 min Summer	2.999	0.499	0.0	2.1	O K
5760 min Summer	2.929	0.429	0.0	1.8	O K
7200 min Summer	2.871	0.371	0.0	1.6	O K
8640 min Summer	2.821	0.321	0.0	1.4	O K
10080 min Summer	2.778	0.278	0.0	1.2	O K
15 min Winter	2.852	0.352	0.0	1.5	O K
30 min Winter	2.970	0.470	0.0	2.0	O K
60 min Winter	3.092	0.592	0.0	2.5	O K
Storm Event	Rain (mm/hr)		Time-Peak (mins)		
15 min Summer	122.433		26		
30 min Summer	82.239		41		
60 min Summer	52.662		70		
120 min Summer	32.503		128		
180 min Summer	24.118		186		
240 min Summer	19.386		244		
360 min Summer	14.268		362		
480 min Summer	11.460		444		
600 min Summer	9.659		500		
720 min Summer	8.396		562		
960 min Summer	6.724		692		
1440 min Summer	4.907		970		
2160 min Summer	3.573		1384		
2880 min Summer	2.849		1792		
4320 min Summer	2.067		2596		
5760 min Summer	1.644		3352		
7200 min Summer	1.377		4112		
8640 min Summer	1.193		4848		
10080 min Summer	1.056		5560		
15 min Winter	122.433		26		
30 min Winter	82.239		40		
60 min Winter	52.662		68		
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Victoria Court	Old Dairy , Littleham...				
22 St Pancras	SW Drainage Design				
West Sussex PO19 7GD	Soakaway No.6, Plot3				
Date March 2017	Designed by JS				
File SOAKAWAY 6PLOT3 ...	Checked by				
Elstree Computing Ltd	Source Control W.12.6				
<u>Summary of Results for 100 year Return Period (+30%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
120 min Winter	3.207	0.707	0.1	3.0	O K
180 min Winter	3.263	0.763	0.1	3.3	O K
240 min Winter	3.292	0.792	0.1	3.4	O K
360 min Winter	3.328	0.828	0.1	3.5	O K
480 min Winter	3.342	0.842	0.1	3.6	O K
600 min Winter	3.338	0.838	0.1	3.6	O K
720 min Winter	3.328	0.828	0.1	3.5	O K
960 min Winter	3.311	0.811	0.1	3.5	O K
1440 min Winter	3.268	0.768	0.1	3.3	O K
2160 min Winter	3.194	0.694	0.1	3.0	O K
2880 min Winter	3.124	0.624	0.0	2.7	O K
4320 min Winter	3.006	0.506	0.0	2.2	O K
5760 min Winter	2.910	0.410	0.0	1.8	O K
7200 min Winter	2.833	0.333	0.0	1.4	O K
8640 min Winter	2.770	0.270	0.0	1.2	O K
10080 min Winter	2.716	0.216	0.0	0.9	O K
Storm Event	Rain (mm/hr)		Time-Peak (mins)		
120 min Winter	32.503		126		
180 min Winter	24.118		182		
240 min Winter	19.386		240		
360 min Winter	14.268		352		
480 min Winter	11.460		462		
600 min Winter	9.659		562		
720 min Winter	8.396		586		
960 min Winter	6.724		736		
1440 min Winter	4.907		1042		
2160 min Winter	3.573		1492		
2880 min Winter	2.849		1928		
4320 min Winter	2.067		2764		
5760 min Winter	1.644		3536		
7200 min Winter	1.377		4328		
8640 min Winter	1.193		5096		
10080 min Winter	1.056		5848		
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Victoria Court 22 St Pancras West Sussex PO19 7GD	Old Dairy , Littleham... SW Drainage Design Soakaway No.6, Plot3	
Date March 2017 File SOAKAWAY 6PLOT3 ...	Designed by JS Checked by	
Elstree Computing Ltd	Source Control W.12.6	

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time / Area Diagram

Total Area (ha) 0.006

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.002	4-8	0.002	8-12	0.002

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Victoria Court 22 St Pancras West Sussex PO19 7GD	Old Dairy , Littleham... SW Drainage Design Soakaway No.6, Plot3	
Date March 2017 File SOAKAWAY 6PLOT3 ...	Designed by JS Checked by	
Elstree Computing Ltd	Source Control W.12.6	

Model Details

Storage is Online Cover Level (m) 3.770

Cellular Storage Structure

Invert Level (m) 2.500 Safety Factor 10.0
Infiltration Coefficient Base (m/hr) 0.17000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.17000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	4.5	4.5	0.900	0.0	11.7
0.800	4.5	11.7			

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Victoria Court 22 St Pancras West Sussex PO19 7GD		Old Dairy , Littleham...																																																																																																																																																																																																																		
Date March 2017		SW Drainage Design																																																																																																																																																																																																																		
File SOAKAWAY 7PLOT2 ...		Soakaway No.7, Plot 2																																																																																																																																																																																																																		
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<u>Summary of Results for 100 year Return Period (+30%)</u> Half Drain Time : 639 minutes. <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>2.814</td><td>0.314</td><td>0.0</td><td>1.3</td><td>O K</td></tr><tr><td>30 min Summer</td><td>2.918</td><td>0.418</td><td>0.0</td><td>1.8</td><td>O K</td></tr><tr><td>60 min Summer</td><td>3.026</td><td>0.526</td><td>0.0</td><td>2.2</td><td>O K</td></tr><tr><td>120 min Summer</td><td>3.127</td><td>0.627</td><td>0.0</td><td>2.7</td><td>O K</td></tr><tr><td>180 min Summer</td><td>3.174</td><td>0.674</td><td>0.0</td><td>2.9</td><td>O K</td></tr><tr><td>240 min Summer</td><td>3.198</td><td>0.698</td><td>0.1</td><td>3.0</td><td>O K</td></tr><tr><td>360 min Summer</td><td>3.221</td><td>0.721</td><td>0.1</td><td>3.1</td><td>O K</td></tr><tr><td>480 min Summer</td><td>3.224</td><td>0.724</td><td>0.1</td><td>3.1</td><td>O K</td></tr><tr><td>600 min Summer</td><td>3.224</td><td>0.724</td><td>0.1</td><td>3.1</td><td>O K</td></tr><tr><td>720 min Summer</td><td>3.221</td><td>0.721</td><td>0.1</td><td>3.1</td><td>O K</td></tr><tr><td>960 min Summer</td><td>3.211</td><td>0.711</td><td>0.1</td><td>3.0</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>3.180</td><td>0.680</td><td>0.1</td><td>2.9</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>3.129</td><td>0.629</td><td>0.0</td><td>2.7</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>3.082</td><td>0.582</td><td>0.0</td><td>2.5</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>2.999</td><td>0.499</td><td>0.0</td><td>2.1</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>2.929</td><td>0.429</td><td>0.0</td><td>1.8</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>2.871</td><td>0.371</td><td>0.0</td><td>1.6</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>2.821</td><td>0.321</td><td>0.0</td><td>1.4</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>2.778</td><td>0.278</td><td>0.0</td><td>1.2</td><td>O K</td></tr><tr><td>15 min Winter</td><td>2.852</td><td>0.352</td><td>0.0</td><td>1.5</td><td>O K</td></tr><tr><td>30 min Winter</td><td>2.970</td><td>0.470</td><td>0.0</td><td>2.0</td><td>O K</td></tr><tr><td>60 min Winter</td><td>3.092</td><td>0.592</td><td>0.0</td><td>2.5</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>122.433</td><td>26</td></tr><tr><td>30 min Summer</td><td>82.239</td><td>41</td></tr><tr><td>60 min Summer</td><td>52.662</td><td>70</td></tr><tr><td>120 min Summer</td><td>32.503</td><td>128</td></tr><tr><td>180 min Summer</td><td>24.118</td><td>186</td></tr><tr><td>240 min Summer</td><td>19.386</td><td>244</td></tr><tr><td>360 min Summer</td><td>14.268</td><td>362</td></tr><tr><td>480 min Summer</td><td>11.460</td><td>444</td></tr><tr><td>600 min Summer</td><td>9.659</td><td>500</td></tr><tr><td>720 min Summer</td><td>8.396</td><td>562</td></tr><tr><td>960 min Summer</td><td>6.724</td><td>692</td></tr><tr><td>1440 min Summer</td><td>4.907</td><td>970</td></tr><tr><td>2160 min Summer</td><td>3.573</td><td>1384</td></tr><tr><td>2880 min Summer</td><td>2.849</td><td>1792</td></tr><tr><td>4320 min Summer</td><td>2.067</td><td>2596</td></tr><tr><td>5760 min Summer</td><td>1.644</td><td>3352</td></tr><tr><td>7200 min Summer</td><td>1.377</td><td>4112</td></tr><tr><td>8640 min Summer</td><td>1.193</td><td>4848</td></tr><tr><td>10080 min Summer</td><td>1.056</td><td>5560</td></tr><tr><td>15 min Winter</td><td>122.433</td><td>26</td></tr><tr><td>30 min Winter</td><td>82.239</td><td>40</td></tr><tr><td>60 min Winter</td><td>52.662</td><td>68</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	2.814	0.314	0.0	1.3	O K	30 min Summer	2.918	0.418	0.0	1.8	O K	60 min Summer	3.026	0.526	0.0	2.2	O K	120 min Summer	3.127	0.627	0.0	2.7	O K	180 min Summer	3.174	0.674	0.0	2.9	O K	240 min Summer	3.198	0.698	0.1	3.0	O K	360 min Summer	3.221	0.721	0.1	3.1	O K	480 min Summer	3.224	0.724	0.1	3.1	O K	600 min Summer	3.224	0.724	0.1	3.1	O K	720 min Summer	3.221	0.721	0.1	3.1	O K	960 min Summer	3.211	0.711	0.1	3.0	O K	1440 min Summer	3.180	0.680	0.1	2.9	O K	2160 min Summer	3.129	0.629	0.0	2.7	O K	2880 min Summer	3.082	0.582	0.0	2.5	O K	4320 min Summer	2.999	0.499	0.0	2.1	O K	5760 min Summer	2.929	0.429	0.0	1.8	O K	7200 min Summer	2.871	0.371	0.0	1.6	O K	8640 min Summer	2.821	0.321	0.0	1.4	O K	10080 min Summer	2.778	0.278	0.0	1.2	O K	15 min Winter	2.852	0.352	0.0	1.5	O K	30 min Winter	2.970	0.470	0.0	2.0	O K	60 min Winter	3.092	0.592	0.0	2.5	O K	Storm Event	Rain (mm/hr)	Time-Peak (mins)	15 min Summer	122.433	26	30 min Summer	82.239	41	60 min Summer	52.662	70	120 min Summer	32.503	128	180 min Summer	24.118	186	240 min Summer	19.386	244	360 min Summer	14.268	362	480 min Summer	11.460	444	600 min Summer	9.659	500	720 min Summer	8.396	562	960 min Summer	6.724	692	1440 min Summer	4.907	970	2160 min Summer	3.573	1384	2880 min Summer	2.849	1792	4320 min Summer	2.067	2596	5760 min Summer	1.644	3352	7200 min Summer	1.377	4112	8640 min Summer	1.193	4848	10080 min Summer	1.056	5560	15 min Winter	122.433	26	30 min Winter	82.239	40	60 min Winter	52.662	68
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																															
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180 min Summer	3.174	0.674	0.0	2.9	O K																																																																																																																																																																																																															
240 min Summer	3.198	0.698	0.1	3.0	O K																																																																																																																																																																																																															
360 min Summer	3.221	0.721	0.1	3.1	O K																																																																																																																																																																																																															
480 min Summer	3.224	0.724	0.1	3.1	O K																																																																																																																																																																																																															
600 min Summer	3.224	0.724	0.1	3.1	O K																																																																																																																																																																																																															
720 min Summer	3.221	0.721	0.1	3.1	O K																																																																																																																																																																																																															
960 min Summer	3.211	0.711	0.1	3.0	O K																																																																																																																																																																																																															
1440 min Summer	3.180	0.680	0.1	2.9	O K																																																																																																																																																																																																															
2160 min Summer	3.129	0.629	0.0	2.7	O K																																																																																																																																																																																																															
2880 min Summer	3.082	0.582	0.0	2.5	O K																																																																																																																																																																																																															
4320 min Summer	2.999	0.499	0.0	2.1	O K																																																																																																																																																																																																															
5760 min Summer	2.929	0.429	0.0	1.8	O K																																																																																																																																																																																																															
7200 min Summer	2.871	0.371	0.0	1.6	O K																																																																																																																																																																																																															
8640 min Summer	2.821	0.321	0.0	1.4	O K																																																																																																																																																																																																															
10080 min Summer	2.778	0.278	0.0	1.2	O K																																																																																																																																																																																																															
15 min Winter	2.852	0.352	0.0	1.5	O K																																																																																																																																																																																																															
30 min Winter	2.970	0.470	0.0	2.0	O K																																																																																																																																																																																																															
60 min Winter	3.092	0.592	0.0	2.5	O K																																																																																																																																																																																																															
Storm Event	Rain (mm/hr)	Time-Peak (mins)																																																																																																																																																																																																																		
15 min Summer	122.433	26																																																																																																																																																																																																																		
30 min Summer	82.239	41																																																																																																																																																																																																																		
60 min Summer	52.662	70																																																																																																																																																																																																																		
120 min Summer	32.503	128																																																																																																																																																																																																																		
180 min Summer	24.118	186																																																																																																																																																																																																																		
240 min Summer	19.386	244																																																																																																																																																																																																																		
360 min Summer	14.268	362																																																																																																																																																																																																																		
480 min Summer	11.460	444																																																																																																																																																																																																																		
600 min Summer	9.659	500																																																																																																																																																																																																																		
720 min Summer	8.396	562																																																																																																																																																																																																																		
960 min Summer	6.724	692																																																																																																																																																																																																																		
1440 min Summer	4.907	970																																																																																																																																																																																																																		
2160 min Summer	3.573	1384																																																																																																																																																																																																																		
2880 min Summer	2.849	1792																																																																																																																																																																																																																		
4320 min Summer	2.067	2596																																																																																																																																																																																																																		
5760 min Summer	1.644	3352																																																																																																																																																																																																																		
7200 min Summer	1.377	4112																																																																																																																																																																																																																		
8640 min Summer	1.193	4848																																																																																																																																																																																																																		
10080 min Summer	1.056	5560																																																																																																																																																																																																																		
15 min Winter	122.433	26																																																																																																																																																																																																																		
30 min Winter	82.239	40																																																																																																																																																																																																																		
60 min Winter	52.662	68																																																																																																																																																																																																																		
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Victoria Court 22 St Pancras West Sussex PO19 7GD		Old Dairy , Littleham... SW Drainage Design Soakaway No.7, Plot 2			
Date March 2017 File SOAKAWAY 7PLOT2 ...		Designed by JS Checked by			
Elstree Computing Ltd		Source Control W.12.6			
<u>Summary of Results for 100 year Return Period (+30%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
120 min Winter	3.207	0.707	0.1	3.0	O K
180 min Winter	3.263	0.763	0.1	3.3	O K
240 min Winter	3.292	0.792	0.1	3.4	O K
360 min Winter	3.328	0.828	0.1	3.5	O K
480 min Winter	3.342	0.842	0.1	3.6	O K
600 min Winter	3.338	0.838	0.1	3.6	O K
720 min Winter	3.328	0.828	0.1	3.5	O K
960 min Winter	3.311	0.811	0.1	3.5	O K
1440 min Winter	3.268	0.768	0.1	3.3	O K
2160 min Winter	3.194	0.694	0.1	3.0	O K
2880 min Winter	3.124	0.624	0.0	2.7	O K
4320 min Winter	3.006	0.506	0.0	2.2	O K
5760 min Winter	2.910	0.410	0.0	1.8	O K
7200 min Winter	2.833	0.333	0.0	1.4	O K
8640 min Winter	2.770	0.270	0.0	1.2	O K
10080 min Winter	2.716	0.216	0.0	0.9	O K
Storm Event	Rain (mm/hr)		Time-Peak (mins)		
120 min Winter	32.503		126		
180 min Winter	24.118		182		
240 min Winter	19.386		240		
360 min Winter	14.268		352		
480 min Winter	11.460		462		
600 min Winter	9.659		562		
720 min Winter	8.396		586		
960 min Winter	6.724		736		
1440 min Winter	4.907		1042		
2160 min Winter	3.573		1492		
2880 min Winter	2.849		1928		
4320 min Winter	2.067		2764		
5760 min Winter	1.644		3536		
7200 min Winter	1.377		4328		
8640 min Winter	1.193		5096		
10080 min Winter	1.056		5848		
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Elstree Computing Ltd	Source Control W.12.6	

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time / Area Diagram

Total Area (ha) 0.006

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.002	4-8	0.002	8-12	0.002

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Victoria Court 22 St Pancras West Sussex PO19 7GD	Old Dairy , Littleham... SW Drainage Design Soakaway No.7, Plot 2	
Date March 2017 File SOAKAWAY 7PLOT2 ...	Designed by JS Checked by	
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Model Details

Storage is Online Cover Level (m) 3.770

Cellular Storage Structure

Invert Level (m) 2.500 Safety Factor 10.0
Infiltration Coefficient Base (m/hr) 0.17000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.17000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	4.5	4.5	0.900	0.0	11.7
0.800	4.5	11.7			

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Victoria Court 22 St Pancras West Sussex PO19 7GD		Old Dairy , Littleham... SW Drainage Design Soakaway No.8, Plot1			
Date March 2017 File SOAKAWAY 8PLOT1 ...		Designed by JS Checked by			
Elstree Computing Ltd		Source Control W.12.6			
<u>Summary of Results for 100 year Return Period (+30%)</u> Half Drain Time : 567 minutes.					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	2.671	0.261	0.0	1.1	O K
30 min Summer	2.757	0.347	0.0	1.5	O K
60 min Summer	2.846	0.436	0.0	1.9	O K
120 min Summer	2.928	0.518	0.0	2.2	O K
180 min Summer	2.965	0.555	0.0	2.4	O K
240 min Summer	2.983	0.573	0.0	2.4	O K
360 min Summer	2.998	0.588	0.0	2.5	O K
480 min Summer	2.999	0.589	0.0	2.5	O K
600 min Summer	2.997	0.587	0.0	2.5	O K
720 min Summer	2.993	0.583	0.0	2.5	O K
960 min Summer	2.982	0.572	0.0	2.4	O K
1440 min Summer	2.953	0.543	0.0	2.3	O K
2160 min Summer	2.907	0.497	0.0	2.1	O K
2880 min Summer	2.864	0.454	0.0	1.9	O K
4320 min Summer	2.791	0.381	0.0	1.6	O K
5760 min Summer	2.729	0.319	0.0	1.4	O K
7200 min Summer	2.678	0.268	0.0	1.1	O K
8640 min Summer	2.635	0.225	0.0	1.0	O K
10080 min Summer	2.600	0.190	0.0	0.8	O K
15 min Winter	2.703	0.293	0.0	1.3	O K
30 min Winter	2.800	0.390	0.0	1.7	O K
60 min Winter	2.901	0.491	0.0	2.1	O K
Storm Event	Rain (mm/hr)		Time-Peak (mins)		
15 min Summer	122.433		26		
30 min Summer	82.239		40		
60 min Summer	52.662		70		
120 min Summer	32.503		128		
180 min Summer	24.118		186		
240 min Summer	19.386		244		
360 min Summer	14.268		360		
480 min Summer	11.460		422		
600 min Summer	9.659		484		
720 min Summer	8.396		548		
960 min Summer	6.724		680		
1440 min Summer	4.907		958		
2160 min Summer	3.573		1368		
2880 min Summer	2.849		1768		
4320 min Summer	2.067		2560		
5760 min Summer	1.644		3344		
7200 min Summer	1.377		4104		
8640 min Summer	1.193		4840		
10080 min Summer	1.056		5544		
15 min Winter	122.433		26		
30 min Winter	82.239		40		
60 min Winter	52.662		68		
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Date March 2017 File SOAKAWAY 8PLOT1 ...	Designed by JS Checked by	
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Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
120 min Winter	2.995	0.585	0.0	2.5	O K
180 min Winter	3.039	0.629	0.0	2.7	O K
240 min Winter	3.061	0.651	0.0	2.8	O K
360 min Winter	3.083	0.673	0.0	2.9	O K
480 min Winter	3.087	0.677	0.1	2.9	O K
600 min Winter	3.081	0.671	0.0	2.9	O K
720 min Winter	3.077	0.667	0.0	2.9	O K
960 min Winter	3.062	0.652	0.0	2.8	O K
1440 min Winter	3.021	0.611	0.0	2.6	O K
2160 min Winter	2.953	0.543	0.0	2.3	O K
2880 min Winter	2.891	0.481	0.0	2.1	O K
4320 min Winter	2.786	0.376	0.0	1.6	O K
5760 min Winter	2.703	0.293	0.0	1.3	O K
7200 min Winter	2.636	0.226	0.0	1.0	O K
8640 min Winter	2.582	0.172	0.0	0.7	O K
10080 min Winter	2.538	0.128	0.0	0.5	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
120 min Winter	32.503	126
180 min Winter	24.118	182
240 min Winter	19.386	240
360 min Winter	14.268	352
480 min Winter	11.460	458
600 min Winter	9.659	544
720 min Winter	8.396	572
960 min Winter	6.724	726
1440 min Winter	4.907	1032
2160 min Winter	3.573	1476
2880 min Winter	2.849	1904
4320 min Winter	2.067	2728
5760 min Winter	1.644	3512
7200 min Winter	1.377	4256
8640 min Winter	1.193	5008
10080 min Winter	1.056	5656

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Victoria Court 22 St Pancras West Sussex PO19 7GD	Old Dairy , Littleham... SW Drainage Design Soakaway No.8, Plot1	
Date March 2017 File SOAKAWAY 8PLOT1 ...	Designed by JS Checked by	
Elstree Computing Ltd	Source Control W.12.6	

Model Details

Storage is Online Cover Level (m) 3.650

Cellular Storage Structure

Invert Level (m) 2.410 Safety Factor 10.0
Infiltration Coefficient Base (m/hr) 0.17000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.17000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	4.5	4.5	0.900	0.0	11.7
0.800	4.5	11.7			

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Victoria Court 22 St Pancras West Sussex PO19 7GD		Old Dairy , Littleham...					
		SW Drainage Design					
		Attenuation Tank					
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File ATTENUATION TANK...		Checked by					
Elstree Computing Ltd		Source Control W.12.6					
<u>Summary of Results for 100 year Return Period (+30%)</u> Half Drain Time : 15 minutes.							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	3.181	0.461	0.0	4.3	4.3	5.4	O K
30 min Summer	3.272	0.552	0.0	4.7	4.7	6.4	O K
60 min Summer	3.282	0.562	0.0	4.7	4.7	6.6	O K
120 min Summer	3.214	0.494	0.0	4.4	4.4	5.8	O K
180 min Summer	3.139	0.419	0.0	4.0	4.0	4.9	O K
240 min Summer	3.075	0.355	0.0	3.7	3.7	4.1	O K
360 min Summer	2.986	0.266	0.0	3.2	3.2	3.1	O K
480 min Summer	2.927	0.207	0.0	2.8	2.8	2.4	O K
600 min Summer	2.886	0.166	0.0	2.5	2.5	1.9	O K
720 min Summer	2.857	0.137	0.0	2.3	2.3	1.6	O K
960 min Summer	2.819	0.099	0.0	1.9	1.9	1.1	O K
1440 min Summer	2.781	0.061	0.0	1.5	1.5	0.7	O K
2160 min Summer	2.765	0.045	0.0	1.1	1.1	0.5	O K
2880 min Summer	2.756	0.036	0.0	0.9	0.9	0.4	O K
4320 min Summer	2.746	0.026	0.0	0.6	0.6	0.3	O K
5760 min Summer	2.740	0.020	0.0	0.5	0.5	0.2	O K
7200 min Summer	2.735	0.015	0.0	0.4	0.4	0.2	O K
8640 min Summer	2.732	0.012	0.0	0.4	0.4	0.1	O K
10080 min Summer	2.730	0.010	0.0	0.3	0.3	0.1	O K
15 min Winter	3.241	0.521	0.0	4.5	4.5	6.1	O K
30 min Winter	3.347	0.627	0.0	5.0	5.0	7.3	O K
60 min Winter	3.336	0.616	0.0	4.9	4.9	7.2	O K
	Storm Event		Rain (mm/hr)	Time-Peak (mins)			
	15 min Summer		122.433	20			
	30 min Summer		82.239	29			
	60 min Summer		52.662	46			
	120 min Summer		32.503	78			
	180 min Summer		24.118	108			
	240 min Summer		19.386	140			
	360 min Summer		14.268	200			
	480 min Summer		11.460	260			
	600 min Summer		9.659	320			
	720 min Summer		8.396	378			
	960 min Summer		6.724	498			
	1440 min Summer		4.907	736			
	2160 min Summer		3.573	1092			
	2880 min Summer		2.849	1468			
	4320 min Summer		2.067	2168			
	5760 min Summer		1.644	2888			
	7200 min Summer		1.377	3616			
	8640 min Summer		1.193	4384			
	10080 min Summer		1.056	5136			
	15 min Winter		122.433	21			
	30 min Winter		82.239	30			
	60 min Winter		52.662	48			
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Date March 2017		Designed by JS					
File ATTENUATION TANK...		Checked by					
Elstree Computing Ltd		Source Control W.12.6					
<u>Summary of Results for 100 year Return Period (+30%)</u>							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
120 min Winter	3.217	0.497	0.0	4.4	4.4	5.8	O K
180 min Winter	3.109	0.389	0.0	3.9	3.9	4.5	O K
240 min Winter	3.028	0.308	0.0	3.5	3.5	3.6	O K
360 min Winter	2.926	0.206	0.0	2.8	2.8	2.4	O K
480 min Winter	2.867	0.147	0.0	2.4	2.4	1.7	O K
600 min Winter	2.832	0.112	0.0	2.0	2.0	1.3	O K
720 min Winter	2.808	0.088	0.0	1.8	1.8	1.0	O K
960 min Winter	2.781	0.061	0.0	1.5	1.5	0.7	O K
1440 min Winter	2.764	0.044	0.0	1.1	1.1	0.5	O K
2160 min Winter	2.753	0.033	0.0	0.8	0.8	0.4	O K
2880 min Winter	2.746	0.026	0.0	0.6	0.6	0.3	O K
4320 min Winter	2.737	0.017	0.0	0.5	0.5	0.2	O K
5760 min Winter	2.732	0.012	0.0	0.4	0.4	0.1	O K
7200 min Winter	2.729	0.009	0.0	0.3	0.3	0.1	O K
8640 min Winter	2.728	0.008	0.0	0.3	0.3	0.1	O K
10080 min Winter	2.726	0.006	0.0	0.2	0.2	0.1	O K
	Storm Event		Rain (mm/hr)	Time-Peak (mins)			
	120 min Winter		32.503	82			
	180 min Winter		24.118	114			
	240 min Winter		19.386	144			
	360 min Winter		14.268	204			
	480 min Winter		11.460	262			
	600 min Winter		9.659	320			
	720 min Winter		8.396	380			
	960 min Winter		6.724	496			
	1440 min Winter		4.907	736			
	2160 min Winter		3.573	1100			
	2880 min Winter		2.849	1456			
	4320 min Winter		2.067	2172			
	5760 min Winter		1.644	2952			
	7200 min Winter		1.377	3656			
	8640 min Winter		1.193	4432			
	10080 min Winter		1.056	5040			
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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time / Area Diagram

Total Area (ha) 0.037

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.012	4-8	0.012	8-12	0.012

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Model Details

Storage is Online Cover Level (m) 4.000

Cellular Storage Structure

Invert Level (m) 2.720 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	12.3	12.3	0.700	0.0	20.7
0.600	12.3	20.7			

Orifice Outflow Control

Diameter (m) 0.055 Discharge Coefficient 0.600 Invert Level (m) 2.700