

CHARTERED CIVIL ENGINEERS

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SuDs Maintenance Plan

for

Proposed New Residential Development

at

Rear of 34 – 44 Carlton Avenue
Aldwick
Bognor Regis
West Sussex
PO21 3LR

Project: FC2891
Date: Nov 2021
Author: MH
Status: Pre Construction (for approval by LPA)
Revision: B (10/02/22)

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SuDs Maintenance Plan

for

**Rear of 34 – 44 Carlton Avenue
Aldwick
Bognor Regis
West Sussex
PO21 3LR**

1. Introduction

- 1.1 We have been appointed by Counterpoint Properties Ltd to provide a SuDs Maintenance Plan (SMP) for a residential development to the rear of 34-44 Carlton Avenue, Aldwick, Bognor Regis, West Sussex, PO21 3LR, to enable the storm water drainage system to be maintained and operated as intended within the design.
- 1.2 The SMP is also required to discharge planning conditions as part of the planning consent for the scheme.

2. Proposed Storm Water Drainage System

- 2.1 The storm water drainage system is as shown on drawings FC2805/01-11.
- FC2891/02D Drainage Layout Sheet 1 of 2
 - FC2891/03C Drainage Layout Sheet 2 of 2
 - FC2891/04A External Levels Sheet 1 of 2
 - FC2891/05A External Levels Sheet 2 of 2
 - FC2891/06A Construction Finishes
 - FC2891/07 Drainage Details Sheet 1 of 2
 - FC2891/08 Drainage Details Sheet 2 of 2
 - FC2891/09 Access to Existing Ditch
 - FC2891/11A Proposed Imp Areas and Geotechnical Summary Information
 - Formpave Design
 - FSC4505/01 Formpave Design Layout
 - FSC4505/100 Formpave Design Details
 - *(All to be updated to as-built in due course)*
- 2.2 The storm water drainage system within the site has been designed to cater for a 100-year storm return period with a 40% allowance for climate change, discharged to a blanket soakaways beneath the access road and driveway areas.
- 2.3 As the proposed system discharges all runoff from the development within the site into the ground there are no issues regarding proposed storm water flows and volumes.

2.4 The SuDS system aims to:

- 2.4.1 Control the flow and volume of water leaving the development
- 2.4.2 Prevent pollution by intercepting silt and cleaning runoff from hard surfaces.

2.5 The design has been approved by the Local Planning Authority (Arun District Council) and Building Regulations compliance. In addition, the connection to the off site foul water sewer has been approved by Southern Water.

2.6 The flood risks to the site have been ascertained within a Flood Risk Assessment undertaken by others during the planning process.

2.7 It should be noted that not all the drainage within the site is private. The extent of the site is as noted by the green boundary on drawing FC2891/02 & 03 Proposed Drainage with adopted sewers and private drainage indicated. A similar plan is proposed by altering FC2891/02 & 03 to form an as built drawing using coloured lines to differentiate between adopted sewers and private drainage.

2.8 Adopted drainage within and outside the site is maintained by Southern Water and is therefore not intended to form part of the SuDS Maintenance Plan and hence excluded. Any issues with the performance or operation of the adopted drainage systems should be addressed as soon as possible to Southern Water.

Contact details

Southern Water - Developer Services

Southern House, Yeoman Road, Worthing, West Sussex BN13 3NX

Team Number – 0330 303 0119

Web: www.southernwater.co.uk

2.9 Only private storm water drainage within the site bounded by the green boundary on FC2891/02 & 03 (as built) are deemed to be part of the SuDS Maintenance Plan.

2.10 In addition, existing riparian responsibilities regarding an existing ditch along the eastern boundary of the development site will also be maintained with LPA agreed areas and access defined on drawing FC2891/09 (as built).

2.11 Following completion of the development, future management and maintenance of the onsite drainage and the landowner's riparian responsibilities with regard to the ditch, located on the eastern boundary of the site, will become the responsibility of the Estate Management Company, working on behalf of the development's residents.

2.12 The development's residents will provide the Estate Management Company with sufficient funds to enable it to carry out its obligations on the resident's behalf.

- 2.13 Initially, the future management and maintenance will be undertaken by Counterpoint Properties Ltd, prior to transferring to the Estate Management Company.

Contact Details

Company: Counterpoint Properties Ltd.

Tel: [REDACTED]

Address: 34 The Drive, Bognor Regis, West Sussex, PO21 4DU

Estate Management Company TBA

Company:

Tel:

Address:

3. SuDs at Rear of 34-44 Carlton Avenue

- 3.1 During rainfall events storm water runoff from the roof enters the below ground drainage system via rainwater downpipes.
- 3.2 Runoff from the access road and driveway areas is discharged through the porous block paved system, Formpave.
- 3.3 The runoff from both the roof and patio areas is conveyed through the site by below ground pipes to the blanket soakaway, which forms the lower sub base layer of the Formpave construction, utilising the voids within the gravel sub base, wrapped in a geotextile, where runoff infiltrates into the existing sub grade
- 3.4 Proposed levels have been designed to enable flood flow routes, during periods of severe weather exceeding the design criteria of the drainage design, to pass through the site without flooding the buildings.

4. Managing SuDs

- 4.1 The SuDs at Rear of 34-44 Carlton Avenue have been designed for easy maintenance to comprise:
 - Regular day to day care – litter collection, regular gardening to control vegetation growth and checking inlets where water enters the SuDs feature.
 - Occasional tasks – checking the SuDs feature and removing any silt that builds up in the SuDs feature.
 - Remedial Work – repairing damage where necessary.

5. SuDs Scheme Checklist

- 5.1 The Suds scheme includes control structures to manage runoff as it flows to the site outfall.
- 5.2 The following lists the SuDS components and extra features which are found on site:
- **Inlet Structures** such as rain water down pipes, road gullies and channel drains. They should be free from obstruction at all times to allow free flow through the SuDS.
 - **Inspection Chambers** and rodding eyes are used on bends or where pipes come together. They allow access and cleaning to the system if necessary.
 - **Pervious Pavements (Formpave)** allow runoff from these areas to permeate directly through the pavement construction. They should be free from obstruction at all times to allow free flow through the SuDS.
 - **Below ground drainage** pipes and tanks provide storage of the attenuated runoff within the SuDS system. They should be free from obstruction at all times to allow free flow and to maintain correct storage volumes.
 - **Flood Flow Routes** (exceedance routes) allow water volumes exceeding the capacity of the SuDS system to escape from the site without causing damage to property. This route should be clear of obstructions at all times.
 - **Infiltration Ditches/Ditches** They should be free from obstruction at all times to allow free flow through the SuDS.

6. Sustainable Drainage Maintenance Specification

General Requirements

General Requirements	
Maintenance activities comprise - Regular maintenance - Occasional tasks - Remedial work	Frequency
Generally Litter Collect all litter or other debris and remove it from site at each visit	Monthly

- **Avoid use of weed-killers and pesticides to prevent chemical pollution**
- **Avoid de-icing agents wherever possible**
- **Protect all below ground drainage through careful selection and placement of hard and soft landscaping.**

Inlet structures and Inspection Chambers

- **Inlet Structures** such as rain water down pipes, road gullies and channel drains. They should be free from obstruction at all times to allow free flow through the SuDS.
- **Inspection Chambers** and rodding eyes are used on bends or where pipes come together. They allow access and cleaning to the system if necessary.

Inlet structures and Inspection Chambers	
Regular Maintenance	Frequency
Inlet Structures Inspect rainwater down pipes, channel drains and road gullies, removing obstructions and silt as necessary. Check there is no physical damage Trim vegetation 1m min surround to structures and keep area free from silt and debris	Monthly Monthly
Inspection Chambers and below ground control chambers Remove cover and inspect, ensuring that the water is flowing freely and that the exit route for water is unobstructed. Remove debris and silt. Undertake inspection after leaf fall in Autumn	Annually
Occasional maintenance Check topsoil levels are 20mm above edges of chambers to avoid mower damage	As necessary
Remedial work Repair physical damage if necessary	As required

Pervious Pavements (Formpave)

- **Pervious Pavements (Formpave)** allow runoff from these areas to permeate directly through the pavement construction. They should be free from obstruction at all times to allow free flow through the SuDS.

Pervious Pavements (Formpave)	
Regular Maintenance	Frequency
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 manufacturers recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as area is most likely to collect the most sediment.
Occasional Maintenance	Frequency
Stabilise and mow contributing and adjacent areas Removal of weeds or management using glyphosphate applied directly into the weeds by an applicator rather than by spraying	As Required As required – once per year on less frequently used pavements
Remedial Actions	Frequency
Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving. 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. Rehabilitation of surface and upper substructure by remedial sweeping	As Required As Required Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)

Pervious Pavements (Formpave) Cont'	
Monitoring	Frequency
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, 48hrs after large storms in first six months
Inspect silt accumulation rates and establish appropriate brushing frequencies.	Annually
Monitor inspection chambers.	Annually
Notice	Frequency
Occupiers/Owners should be made aware that the stockpiling of materials adjacent to, on top of the Formpave construction or on adjacent hard paved areas could lead to sediment clogging the pervious paving system, requiring rehabilitation of the surface and upper substructure.	Occupiers/Owners to be made aware of restrictions preferably prior to occupation. Reminders to be sent out monthly for 3 months and then annually or as required.
Any stock piling of materials on site should be carefully considered and appropriate precautions taken to prevent sediment laying on or entering the Formpave construction.	

Below ground drainage pipes and soakaways

- **Below ground drainage** pipes and soakaways provide storage of the runoff within the SuDS system. They should be free from obstruction at all times to allow free flow and to maintain correct storage volumes.

Below ground drainage pipes and soakaways	
Regular Maintenance	Frequency
Inspect and identify any areas that are not operating correctly. If required take remedial action. Remove debris from the catchment surface (where it may cause risks to performance) Remove sediment from pre-treatment inlet structures and inspection chambers. Maintain vegetation to designed limits within the vicinity of below ground drainage pipes and tanks to avoid damage to system.	Monthly for 3 months then annually Monthly Annually or as required Monthly or as required
Remedial work Repair physical damage if necessary	As required
Monitoring Inspect all inlets, outlets and vents to ensure that they are in good condition and operating as designed Survey inside of tank and pipe runs for sediment build up and remove if necessary	Annually Every 5 years or as required

Flood Flow Routes

- **Flood Flow Routes** (exceedance routes) allow water volumes exceeding the capacity of the SuDS system to escape from the site without causing damage to property. This route should be clear of obstructions at all times.

Flood Flow Routes	
Regular Maintenance	Frequency
Make visual inspection. Check route is not blocked by new fences, walls, soil or other rubbish. Remove as necessary.	Monthly

Infiltration Ditches/Ditches

- **Infiltration Ditches/Ditches** They should be free from obstruction at all times to allow free flow through the SuDS.

Infiltration Ditches/Ditches	
Regular Maintenance	Frequency
Remove litter, debris and trash	Monthly
Cut grass – for landscaped areas and access routes	Monthly or as required
Cut grass – meadow grass in and around ditches	Half Yearly: Spring (before nesting season) and autumn
Manage other vegetation and remove nuisance plants	Monthly at start, then as required
Occasional Maintenance	Frequency
Reseed areas of poor vegetation growth	Annually or as required
Prune and trim trees and remove cuttings	As Required – before nesting season
Remove buildup of sediment	As Required
Remedial Work	Frequency
Repair erosion or other damage by reseeding or returfing	As required
Monitoring	Frequency
Inspect banksides for evidence of physical damage	Monthly

Spillage – Emergency Action

Most spillages on development are of compounds that do not pose a serious risk to the environment if they enter the drainage in a slow and controlled manner with time available for natural breakdown in a treatment system. Therefore, small spillages of oil, milk or other known organic substances should be removed where possible using soak mats as recommended by the Environment Agency, with residual spillage allowed to bio remediate in the drainage system.

In the event of a serious spillage, either by volume or of unknown or toxic compounds, then isolate the spillage with soil, turf or fabric and block outlet pipes from chamber(s) downstream of the spillage with a bung(s). (A bung for blocking pipes may be made by wrapping soil or turf in a plastic sheet or closely woven fabric)

Contact the Environment Agency immediately
Tel: 03708 506 506

Queries regarding the design feature

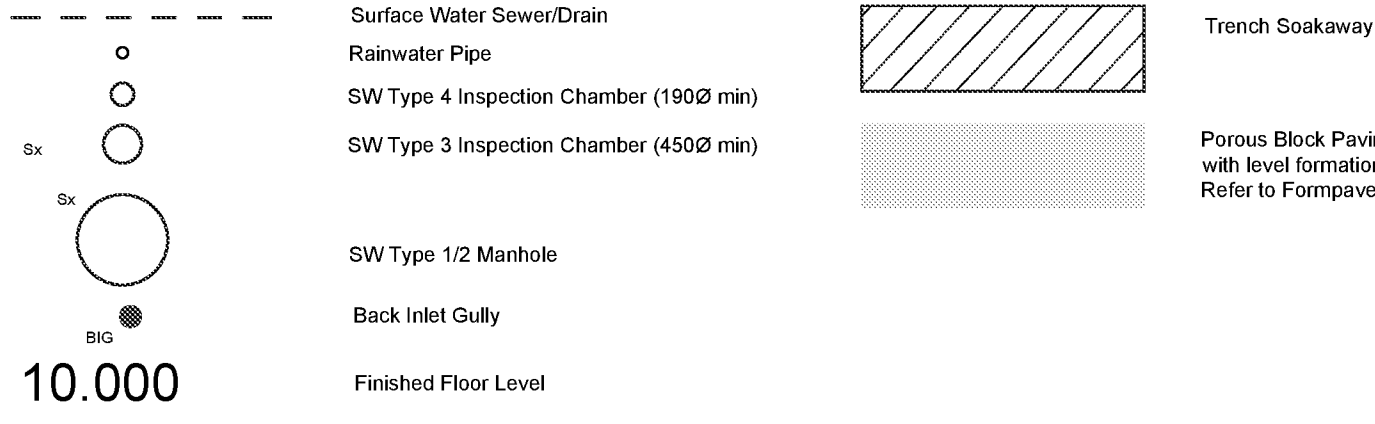
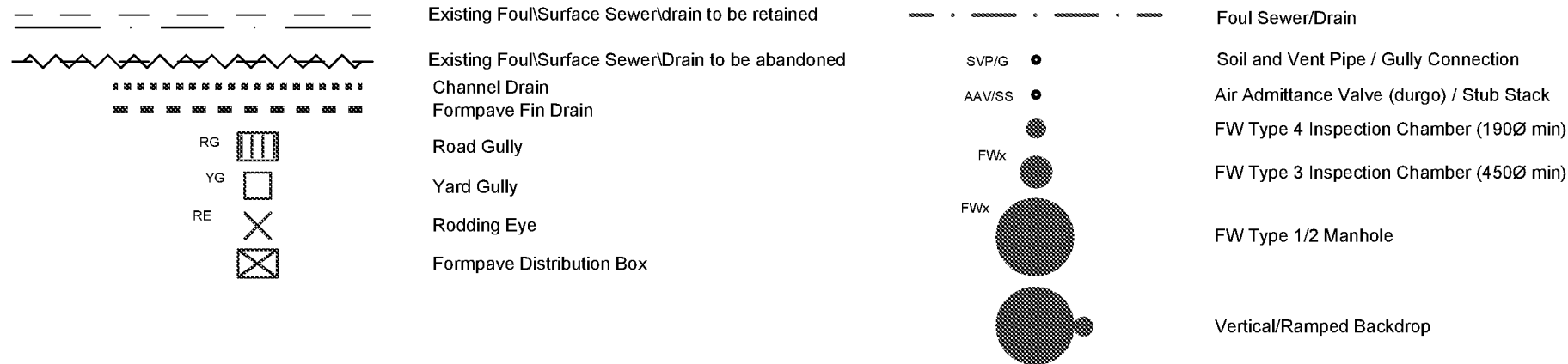
In the event of a concern or failure of a SuDS design feature contact:

ABMH Civils Ltd (Mark Hobbs)
Chartered Civil Engineers
1 The Grove
Felpham
West Sussex
PO22 7EY
Tel: [REDACTED]
E: [REDACTED]
W: www.abmh.co.uk

Appendix

- FC2891/02D Drainage Layout Sheet 1 of 2
- FC2891/03C Drainage Layout Sheet 2 of 2
- FC2891/04A External Levels Sheet 1 of 2
- FC2891/05A External Levels Sheet 2 of 2
- FC2891/06A Construction Finishes
- FC2891/07 Drainage Details Sheet 1 of 2
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 - FSC4505/100 Formpave Design Details
- *(All to be updated to as-built in due course)*

Legend



NOTE THE FOLLOWING:

- Southern Water Agreements**
1. **Section 106 Foul Sewer Connection**
- 1.1. SW Ref S106-xxx dated xxx
- 1.2. Direct connection to FWS - FW
2. **Formpave Design - Blanket Soakaways**
- 2.1. Refer to Design & Details dated 02/09/21
- 2.2. Dwg Ref: FSC4505/D1 & D100

1. **SW Drainage Design**
- 1.1. **Proposed Site**
- 1.1.1. All SW runoff to be discharged to Blanket Soakaways using Formpave Porous Paving (infiltration system) with min 450mm dp gravel sub base, level formation and 80mm DBM temp construction surface
- 1.1.2. Sub Base to have min 35% voids ratio - Test certificates to be submitted to ABMHC & LPA/LPA for approval to verify material and voids ratio
- 1.1.3. Refer to formpave specification.
- 1.1.3.1. S/R = $5.0 \times 10^{-6} \text{ m/s} = 0.018 \text{ m/hr}$ - Used as Design value
- 1.1.4. Lowest S/R recorded on site = $7.0 \times 10^{-6} \text{ m/s} = 0.025 \text{ m/hr}$
- 1.1.4.1. Drained Areas
- 1.1.4.1.1. SAT1 = $2405 \text{ m}^2 = 2184 \text{ m}^2 \times 10\% \text{ Urban Creep}$ (Roof Area = 999 m^2 , Paving = 1184 m^2)
- 1.1.5. Design to cater for 100yr SRP + 40% CC allowance, FOS = 5
- 1.1.6. Confirmation of winter Ground water table levels required
- 1.1.6.1. Highest GWL taken as 49.28m - AIP with LPA
2. **FW Drainage Design**
- 2.1. **Proposed Flow from Site**
- 2.1.1. Peak FW Flow 8No Dwellings = 0.37 l/s Peak FW Flow (SFA)

NOTES

1. This drawing is to be read in conjunction with drawing Nos. FC2891/01-25.
2. Existing on-site drainage is shown on drawing FC2891/01-25.
3. All adopted drainage and connections to the sewer system are to be constructed in accordance with 'Sewers for Adoption' 7th Edition or as stipulated in the Southern Water Addendum.
4. Connections to the adopted drainage system are subject to the approval of Southern Water the Drainage Authority. Diverted, diverted, build close to sewer, and new sewers are subject to SW approval. All other drainage is to remain private.
5. All pipes and fittings to be adopted, or connecting to adopted sewers, and/or situated under highway to be verified clay (min 40kN/m) to BS EN 295 & BS65 (SWIS only), or Concrete pipes to BS EN 1916 & BS5911 Part 1, or Thermoplastic Structured wall sewer pipes to BS EN 13476-1-4 and WIS 4-35-01 (class 8kN/m), or Ductile Iron BS EN 598, and be capable of withstanding 4000 PSI jetting pressure.
6. Cover levels shown are approximate. Covers and frames shall be set to finished ground levels and falls.
7. All drainage to be constructed to BS EN 752:1999 and subject to the approval of Building Control/LPA and the Environment Agency.
8. Gully and channel drain positions are liable to amendment when the design levels have been determined.
9. All downpipes to new dwellings are to be sealed, ie connected directly to the stormwater drain. All downpipes to existing dwelling are to be connected to trapped gullies. Access points to be provided 1m above ground level for external RWP's and 1m above FFL for internal RWP's.
10. All below ground concrete to be to ACCE site classification of AC-1 (refer to Geotechnical Investigation)
11. Aco channel drain to be K1005 with grade C250 Quicklock 'Heelguard' cast iron grating or equivalent, where adjacent to kerbing or within pedestrian areas. Elsewhere Aco channel drain to be Road Drain 100 Class F. All channel drain outlets to have oil traps
12. The Contractor should construct works in accordance with the Local Authority specification for the works they are to undertake.
13. Road gully/Channel outlet pipes are to be 150mm dia. with concrete surround and flexible joints. All other un-referenced pipes are assumed to be 100mm dia. FW min gradient - 1 in 80 (100 dia) min 1WC connected FW min gradient - 1 in 150 (150 dia) min 5WC's SW min gradient - 1 in 100 (100/150 dia)
14. If any sub soil drainage systems are uncovered during the Works contact the Engineer for instructions. Generally sub soil drains affected are to be diverted around new Works and connected into the surface water drainage system. Pipe diameters and gradients are to be maintained.
15. Before commencing construction the Contractor must check the invert levels of existing sewers to which connections are made. In addition the Contractor must locate and determine invert levels of the existing spurs to which connections are proposed. Additional spurnhole connections are to be agreed with the relevant adopting authority. Any discrepancies are to be notified to the Engineer immediately, prior to construction.
16. Road reinstatements are to be to the Highway Authority approval.
17. No private areas are to drain onto adoptable areas and vice versa.
18. All redundant drainage to be abandoned once the Contractor and Client have satisfied themselves that no connections remain live. Drains and sewers less than 1.5m deep which are in open ground should as far as is practicable be removed. Other pipes should be sealed at both ends and at any other point of connection and solidly filled at intervals not exceeding 25m with Class G3 or G4.

SUBJECT TO THE APPROVAL OF:
LPA - Planning Conditions
BUILDING CONTROL/NHBC
SW - S106 FWS connection

Subject to confirmation of the following:
GF FFL No 34 & 36 Carlton Ave
Foundations
SW S106 connections
Agreement of winter Ground water levels with LPA

D	Issued For BUDGET/APPROVAL ONLY	10/02/22
C	Issued For BUDGET/APPROVAL ONLY	29/10/21
B	Issued For BUDGET/APPROVAL ONLY	03/09/21
A	Issued For BUDGET/APPROVAL ONLY	24/08/21
REV	Issued For BUDGET/APPROVAL ONLY	30/08/21
REV	DESCRIPTION	DATE

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DEVELOPMENT TO REAR OF
34-44 CARLTON AVENUE
BOGNOR REGIS, W SUSSEX
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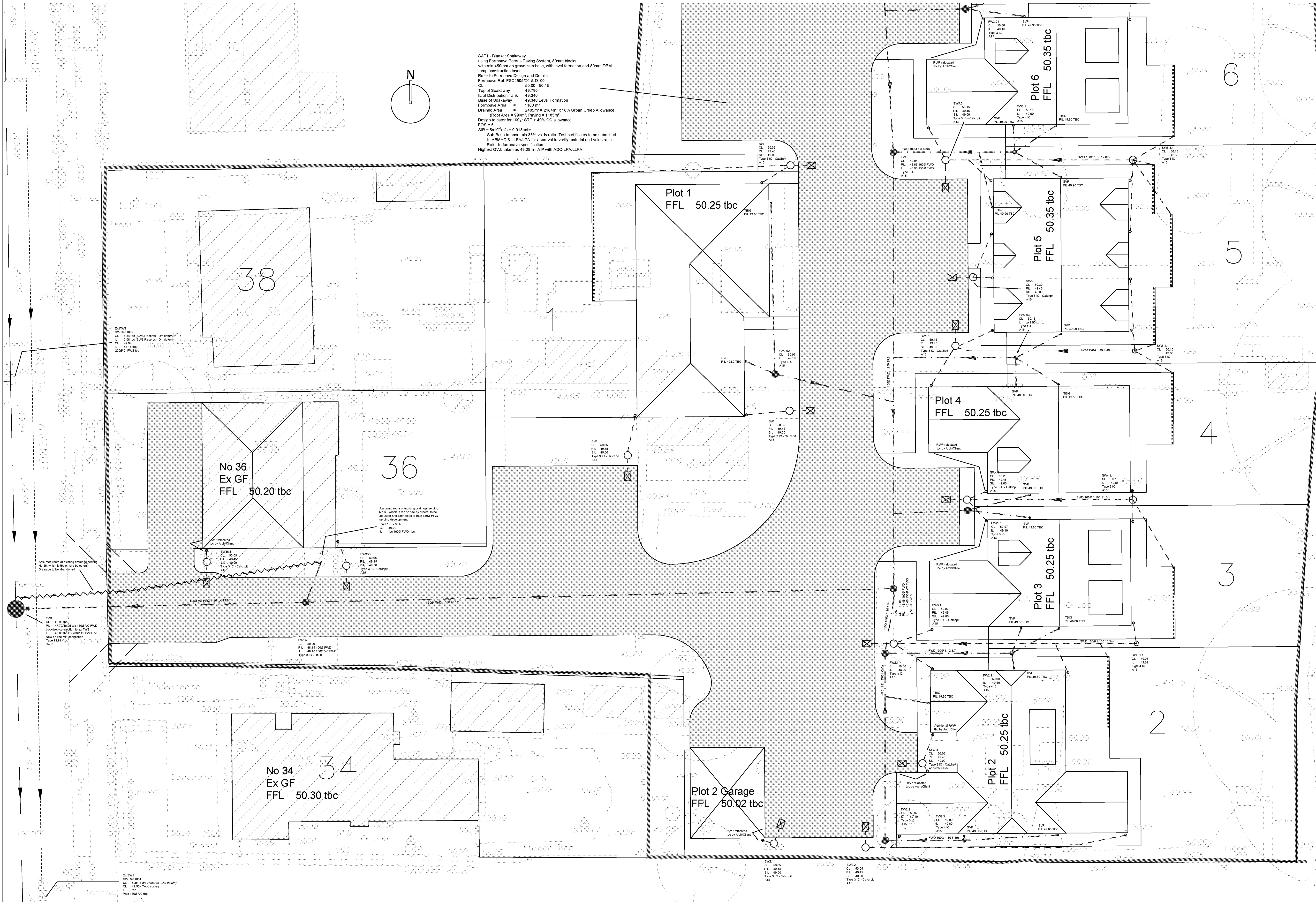
DRAINAGE LAYOUT

SHEET 1 OF 2

FC2891/02

SCALE 1:125 DATE JUNE 21 MH CHND

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NOTES

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- Refer to Drawing FC2891/02 for notes

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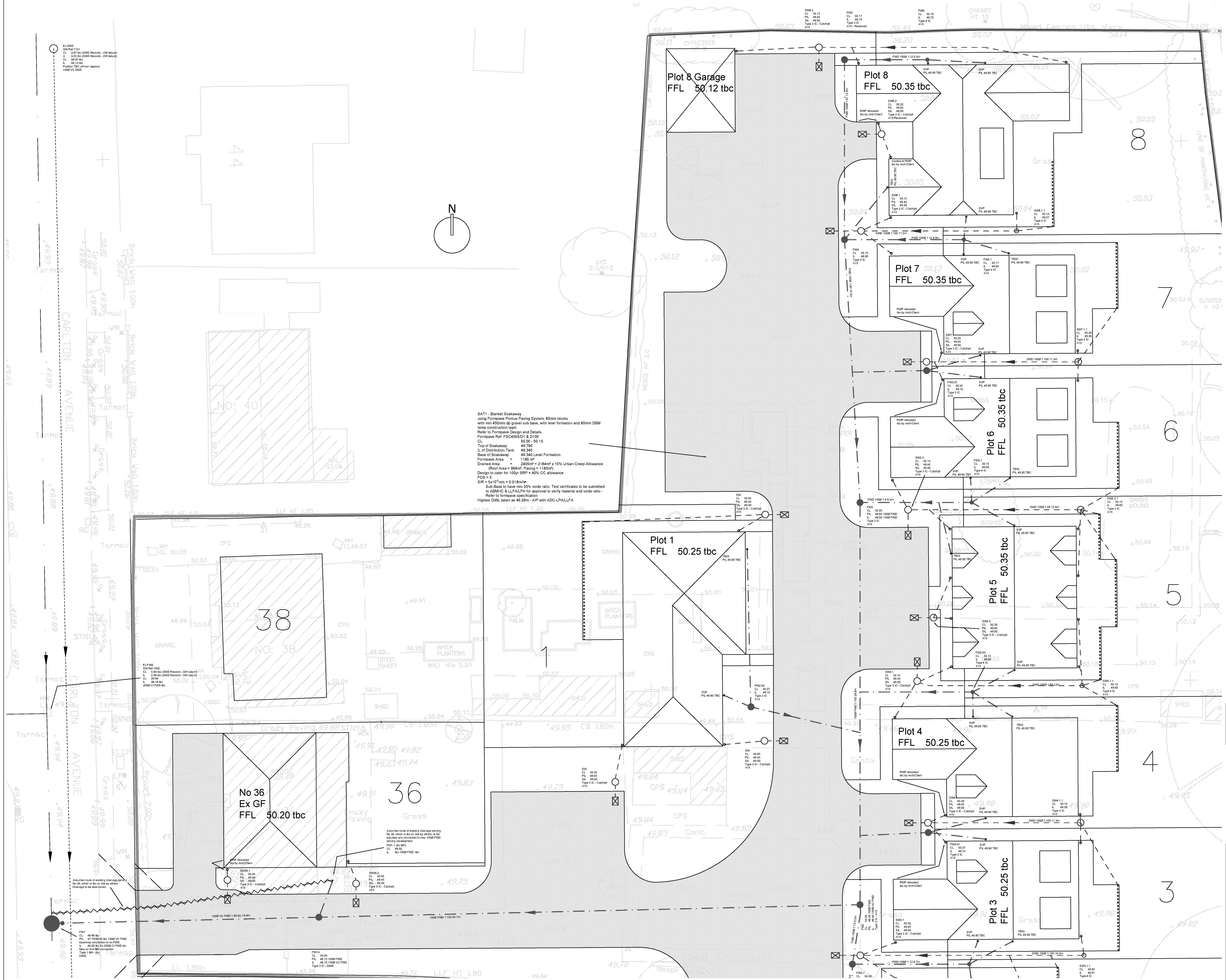
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DRAINAGE LAYOUT
SHEET 2 OF 2

FC2891/03

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SUBJECT TO THE APPROVAL OF:
LPA
BUILDING CONTROL/NHBC
WSCC - Highways

Legend

- Direction of Fall
- Proposed Level
- Proposed Level with Drainage Point
- Proposed Retaining Wall
- Proposed FFL
- Earthworks/Regrading
- Exceedance Flood Flow Route

A	Issued For BUDGET/APPROVAL ONLY	23/09/21
-	Issued For BUDGET/APPROVAL ONLY	30/06/21
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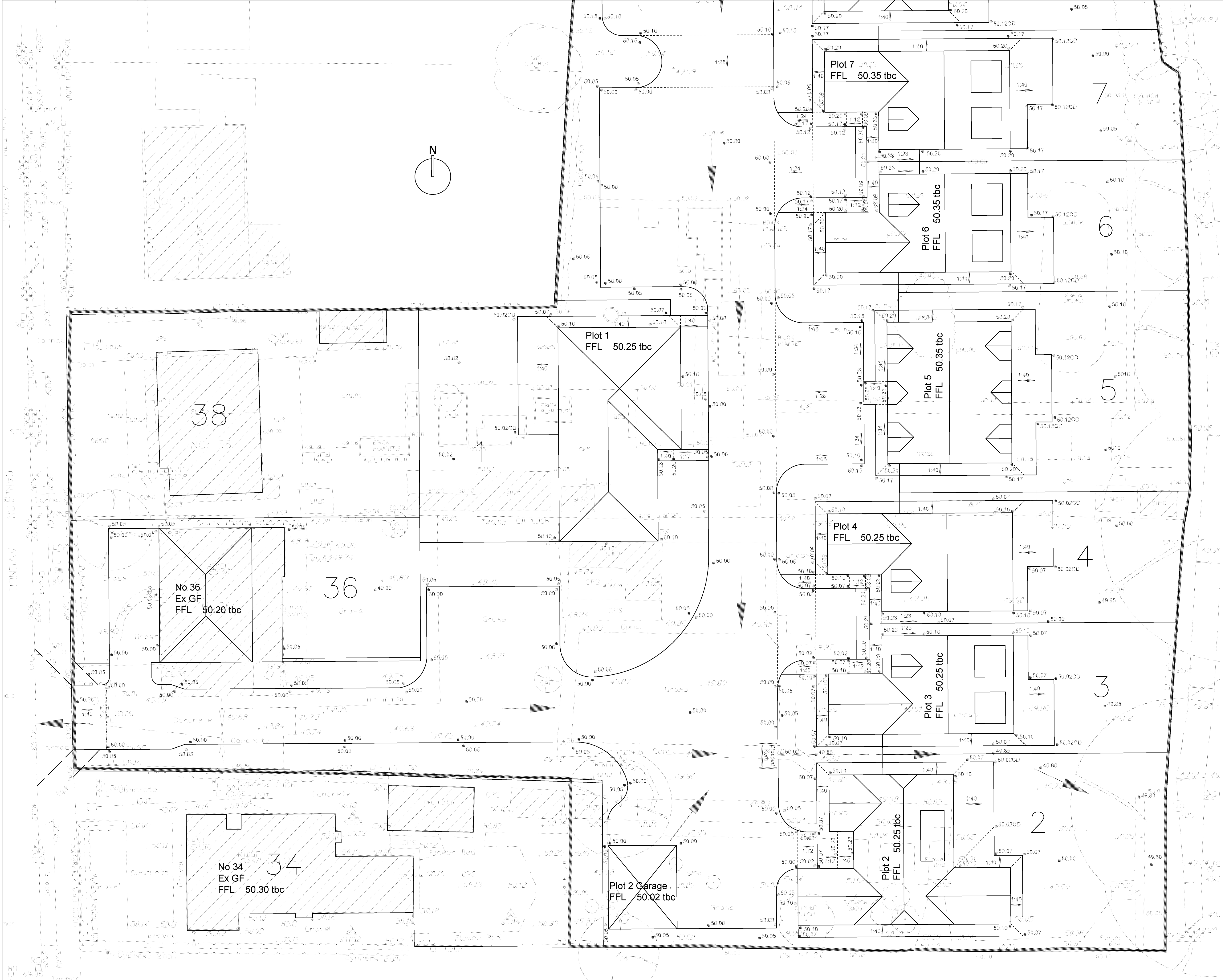
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DEVELOPMENT TO REAR OF
34-44 CARLTON AVENUE
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PO21 3LR

EXTERNAL LEVELS
SHEET 1 OF 2

FC2891/04	REV	A
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JUNE 21	MH	-

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BUILDING CONTROL/NHBC
WSCC - Highways

Legend

- Direction of Fall
- Proposed Level
- Proposed Level with Drainage Point
- Proposed Retaining Wall
- Proposed FFL
- Earthworks/Regrading
- Exceedance Flood Flow Route

A	Issued For BUDGET/APPROVAL ONLY	23/08/21
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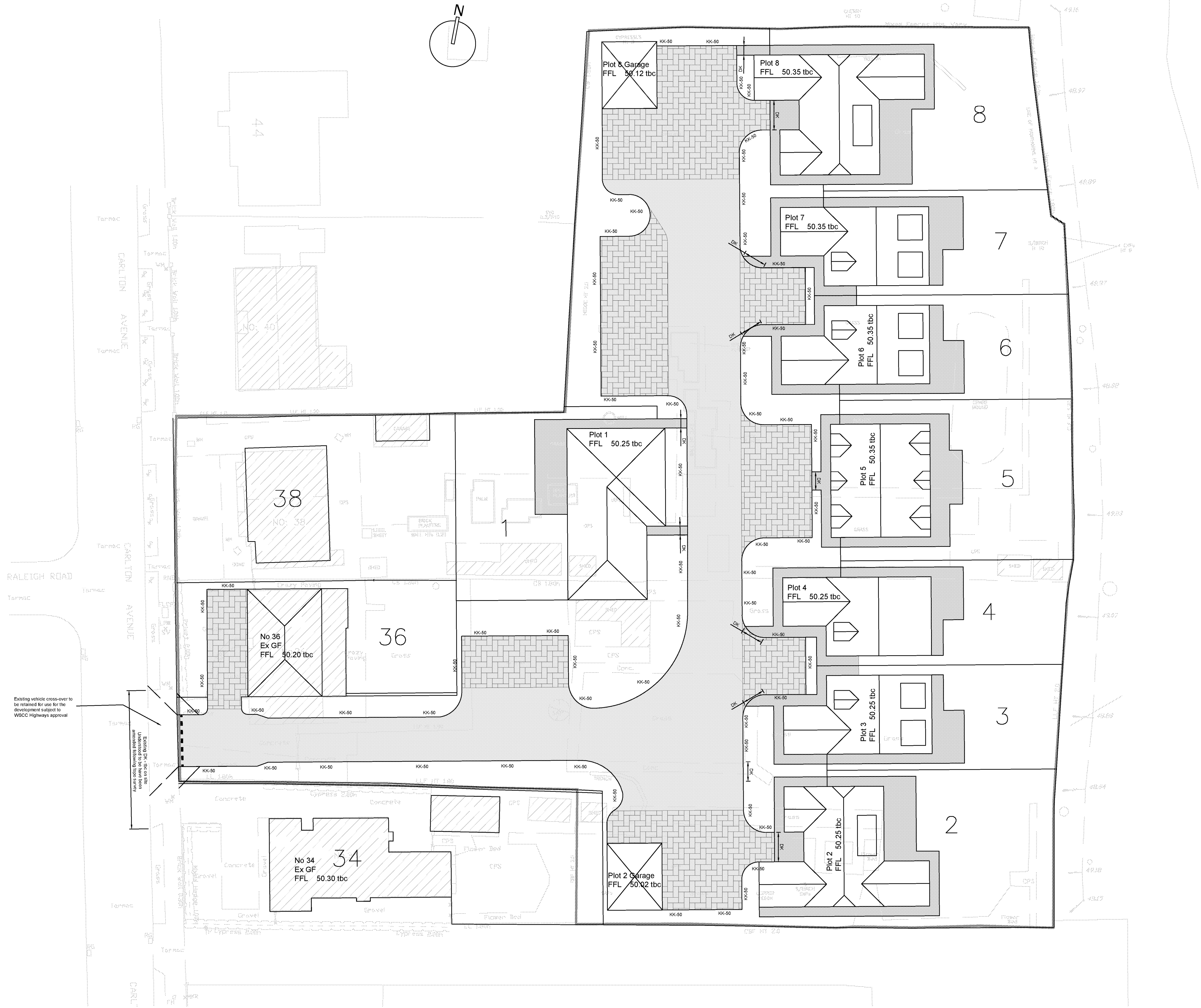
DEVELOPEMENT TO REAR OF
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EXTERNAL LEVELS
SHEET 2 OF 2

FC2891/05

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Legend

Refer to WSCC Standards
Refer to WSCC Dwg: S278/38/01C, 2B, 03A, 04B, 18A, 20B

- HB2 PCC Half Battered Kerb to match existing heights
- BN PCC Bullnosed Kerb with 50mm upstand
- DK Dropped Kerb (PCC Bullnosed Kerb/Block Key Kerb) with 0-8mm upstand for pedestrian areas and 25mm for vehicular crossings. Dropper kerbs to be laid either side
- EBN PCC Edging - Bullnosed (20mm upstand)
- EF PCC Edging - Flat Top
- KK PCC Block Key Kerb (with 50/100mm upstand)
- Highway Boundary Demarcation
- Tactile Paving with Dropped Kerb

Private Construction

- SHARED SURFACE ROAD
80mm Porous Concrete Block Paving - Colour TBC by Client/Arch
Refer to Formpave Design & Construction Details
- PARKING AREAS
80mm Porous Concrete Block Paving - Contrasting Colour TBC by Client/Arch
Refer to Formpave Design & Construction Details
- Paths/Hardstanding Construction
Flexible/Slab/Block Construction - TBC by Client/Architect
Refer to WSCC Dwg: S278/38/04 Rev B, 05 rev C

SUBJECT TO THE APPROVAL OF:
LPA
BUILDING CONTROL/NHBC

Note:
CBR design value = 2-4% as noted within Geotechnical Report
The soils at shallow depth should be regarded as potentially frost susceptible and thus vehicular pavement construction should be a min 450mm thick.

A	Issued For BUDGET/APPROVAL ONLY	29/10/21
-	Issued For BUDGET/APPROVAL ONLY	24/08/21
REV	DESCRIPTION	DATE



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PROJECT	DEVELOPMENT TO REAR OF 34-44 CARLTON AVENUE BOGNOR REGIS, W SUSSEX PO21 3LR				
DRAWING	PROPOSED CONSTRUCTION FINISHES				
SCALE	1:200	DATE	AUG 21	INITIAL	REV
				MH	A
				CHND	-

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- This drawing is to be read in conjunction with drawing Nos. FC2891/01-25.

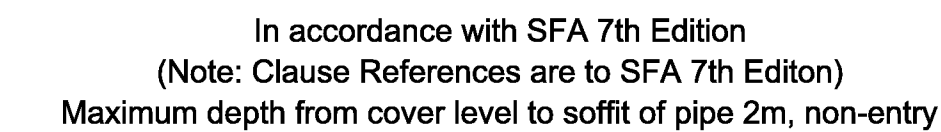
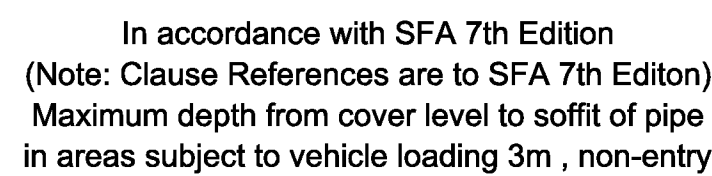
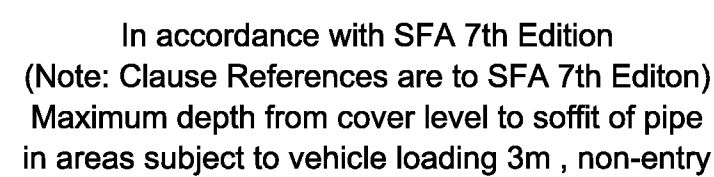
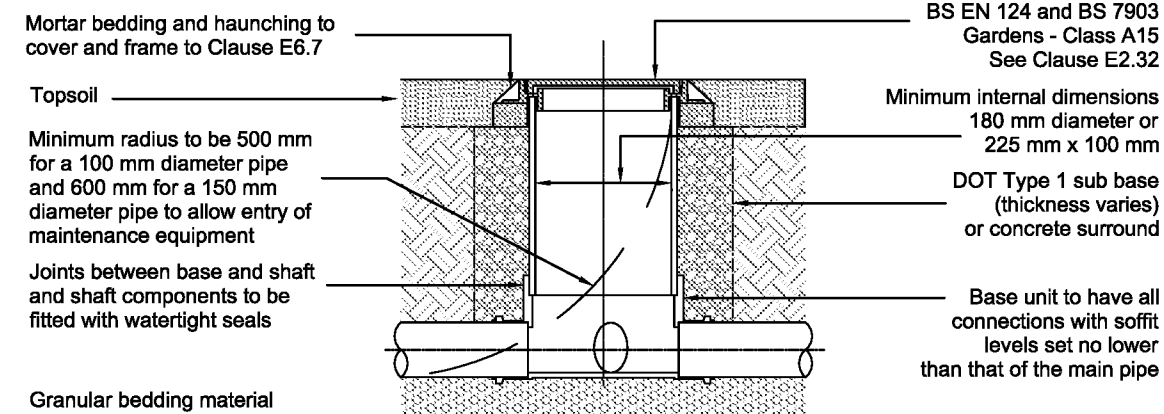
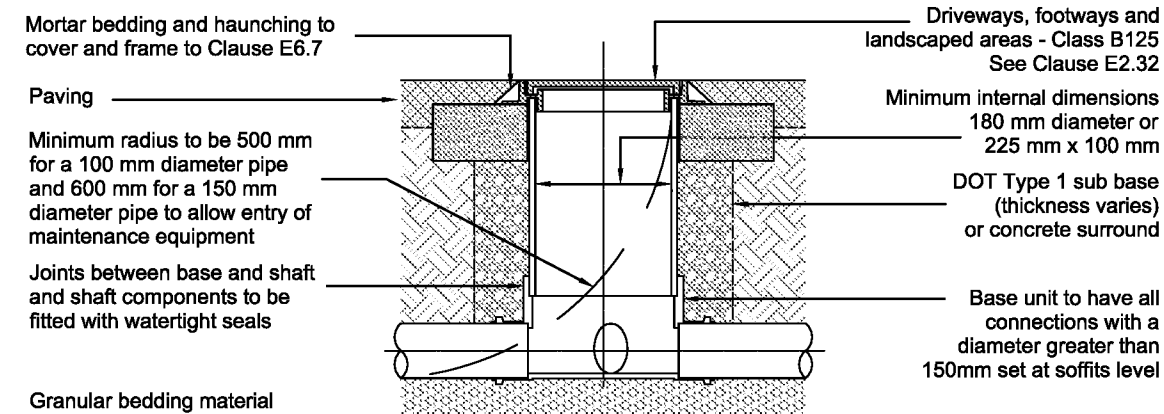


Nominal Diameter (mm) DN	Maximum Effective Rocker Pipe Length (m)
150 - 600	0.6
601- 750	1.0
over 750	1.25



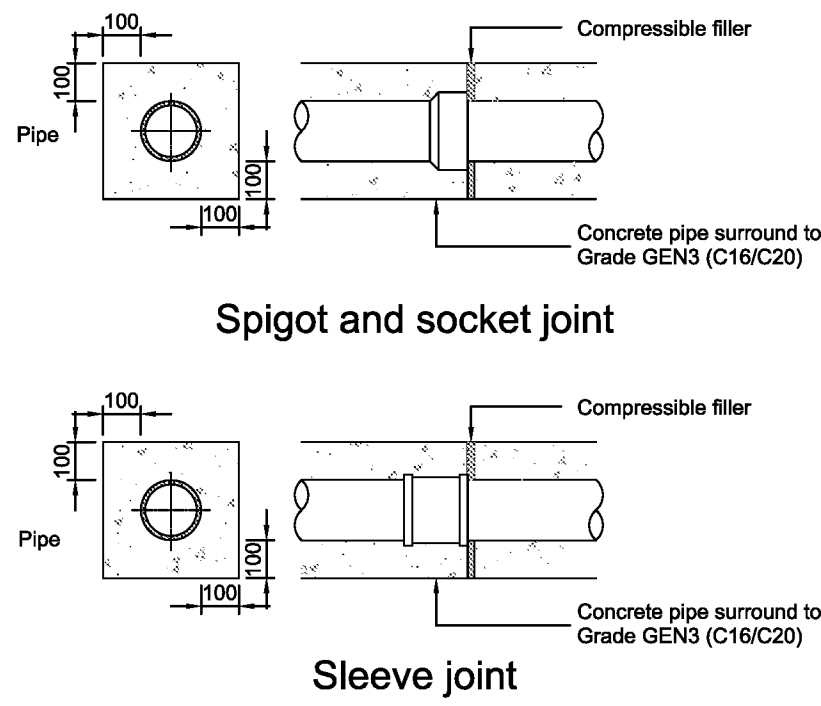
In accordance with SFA 7th Edition

Typical Arrangement of Pipe Junctions Within Adopted Manholes



PROJECT	DEVELOPMENT TO REAR OF 34-44 CARLTON AVENUE BOGNOR REGIS, W SUSSEX PO21 3LR							
DRAWING	PROPOSED DRAINAGE DETAILS SHEET 1 OF 2							
Pri No.	FC2891/07					REV	-	
SCALE	1:20	DATE	NOV 21		INITIAL	MH	CHKD	-

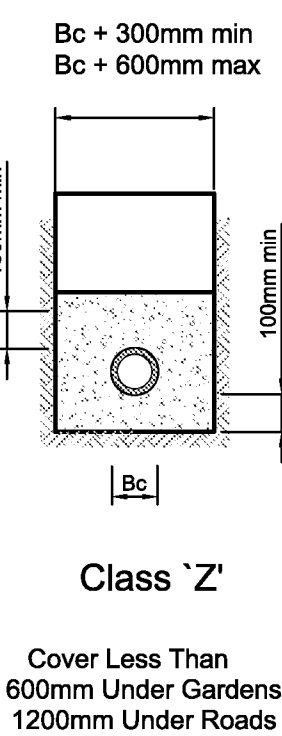
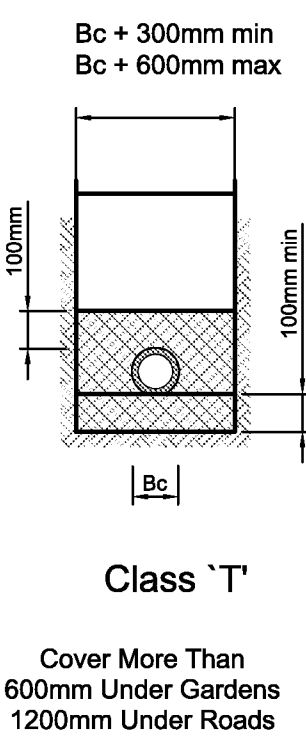
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Nominal Diameter (mm) DN	Thickness of Compressible Filler (mm)
Less than 450	18
450 - 1200	36
Exceeding 1200	54

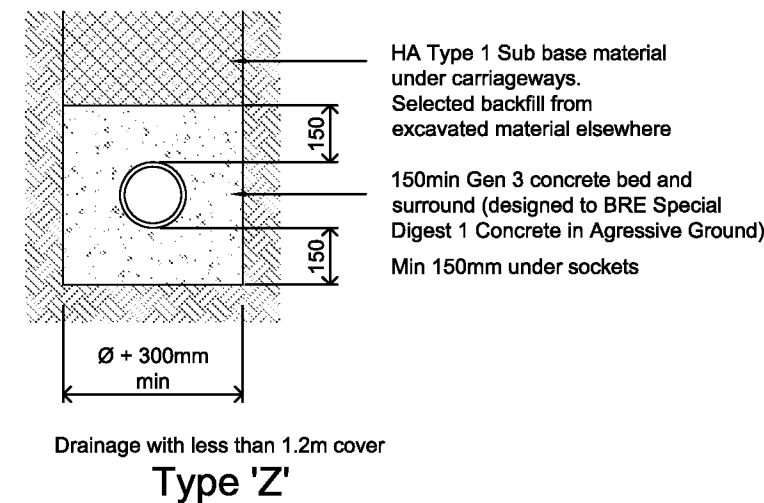
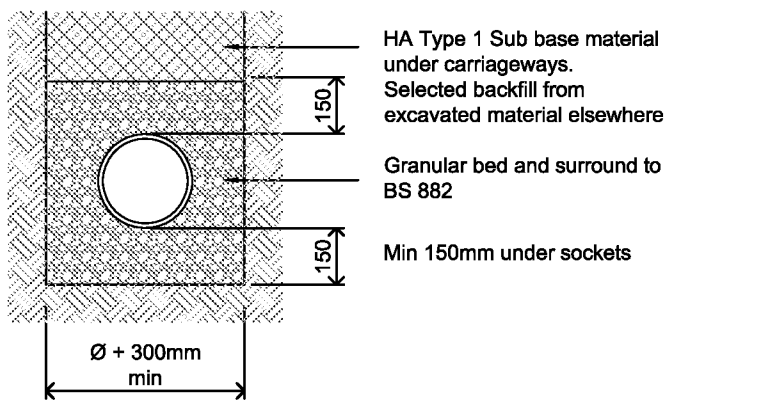
Compressible filler to pipes shall consist of bitumen-impregnated insulating board to BS EB 622-1 and BS EN 622-4.

In accordance with SFA 7th Edition
Joints for Concrete Encased Pipes

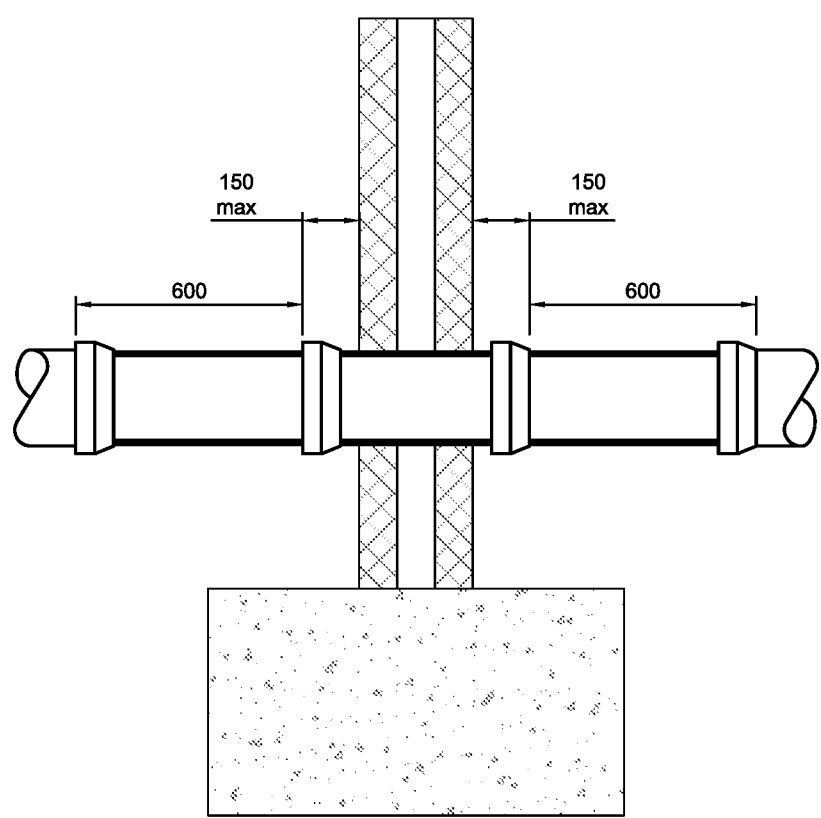


- Flexible Pipe
- Undisturbed Natural Soil
- 450mm wide Concrete Paving Slab to BS7263 or Concrete Garde ST4, sulphate resisting, to BS 5328:Part 2. Concrete to be monolithic with a minimum cube strength within 28 days of 20 MN/sq m or ground floor slab where applicable
- Graded or Single Sized Aggregate

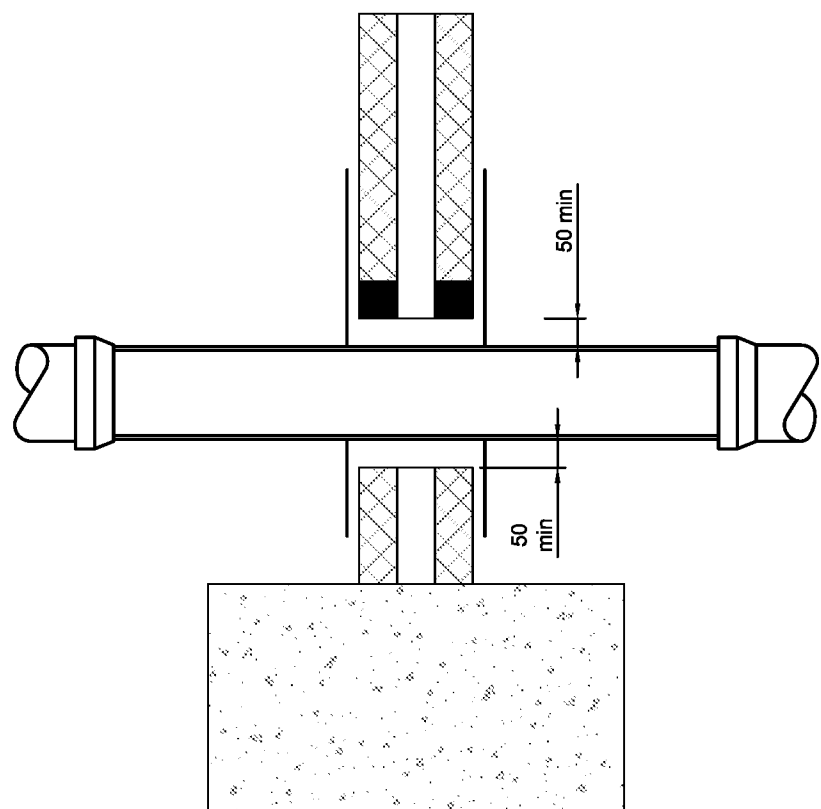
Flexible Pipe Trench Bedding for Private Drainage



Adopted Pipe Bedding Detail



Short length of pipe bedded in wall, joints formed within 150mm of either wall face. Adjacent rocker pipes of length 600mm with flexible joints for pipes upto 600Ø



Arched or lintel opening to structural engineers detail to give 50mm space all around the pipe. Mask opening both sides with rigid sheet material to prevent entry of fill or vermin. Important: Fill void with compressible sealant to prevent entry of gas.

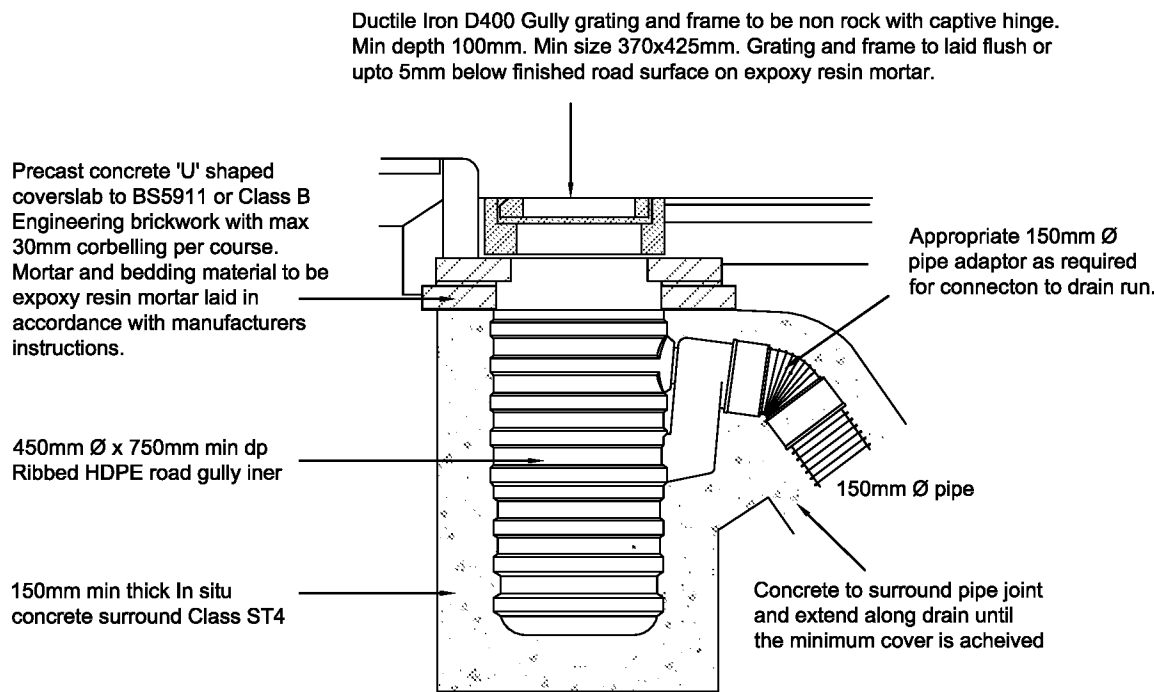
PIPE RUNS NEAR BUILDINGS

PIPE PENETRATING WALLS

Granular material.
Single sized and graded granular material should conform to Table 3 of BS 882:1992, Table 3 of BS 1047:1983 or table 1 of BS 3797:1990.

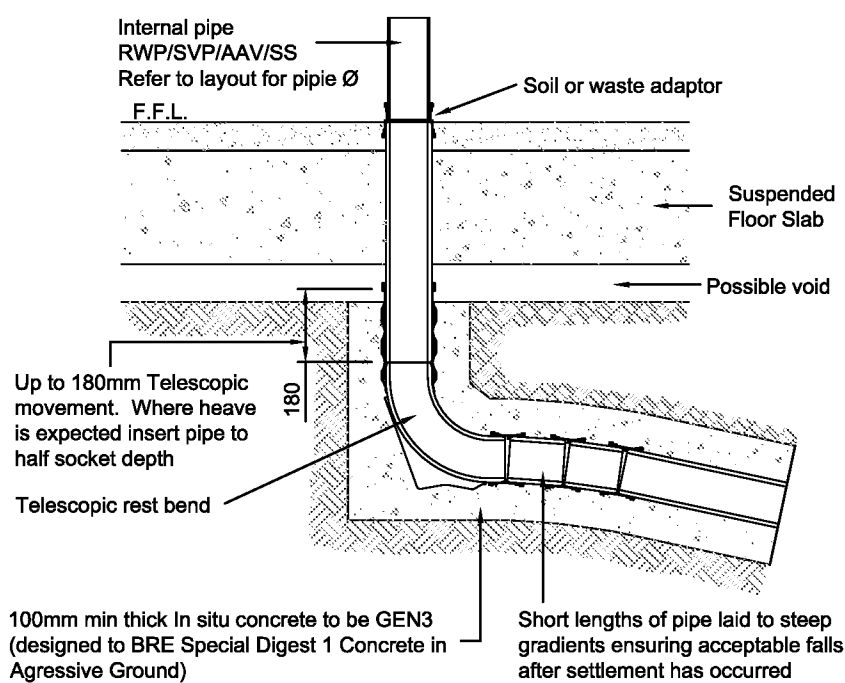
Nominal bore of pipe (mm)	Size mm Single Sized	Size mm Graded
100-150	10	N/A
150-200	10 or 14	14-5
225-300	10,14, or 20	14-5 or 20-5

Bc = External Pipe Diameter

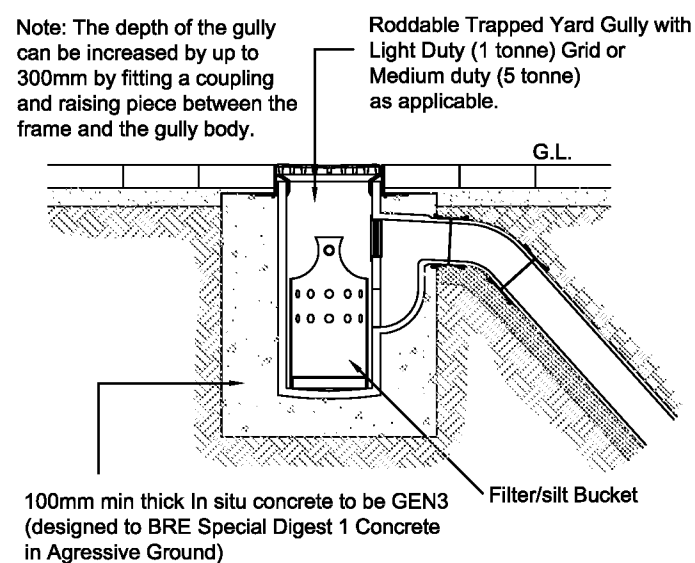


Ribbed HDPE Liner In situ Concrete Gully product indicated - equivalent approved permitted or Precast Concrete or Clay Gully permitted

Trapped Roddable Road Gully

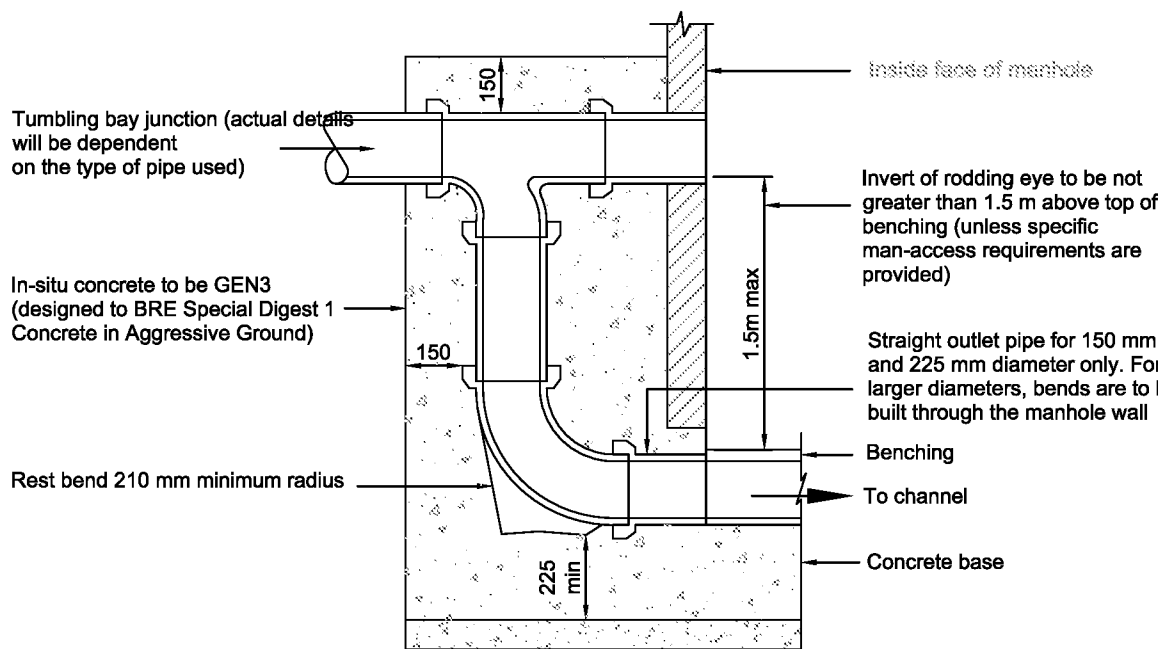


RWP/SVP/AAV/SS Internal Connection

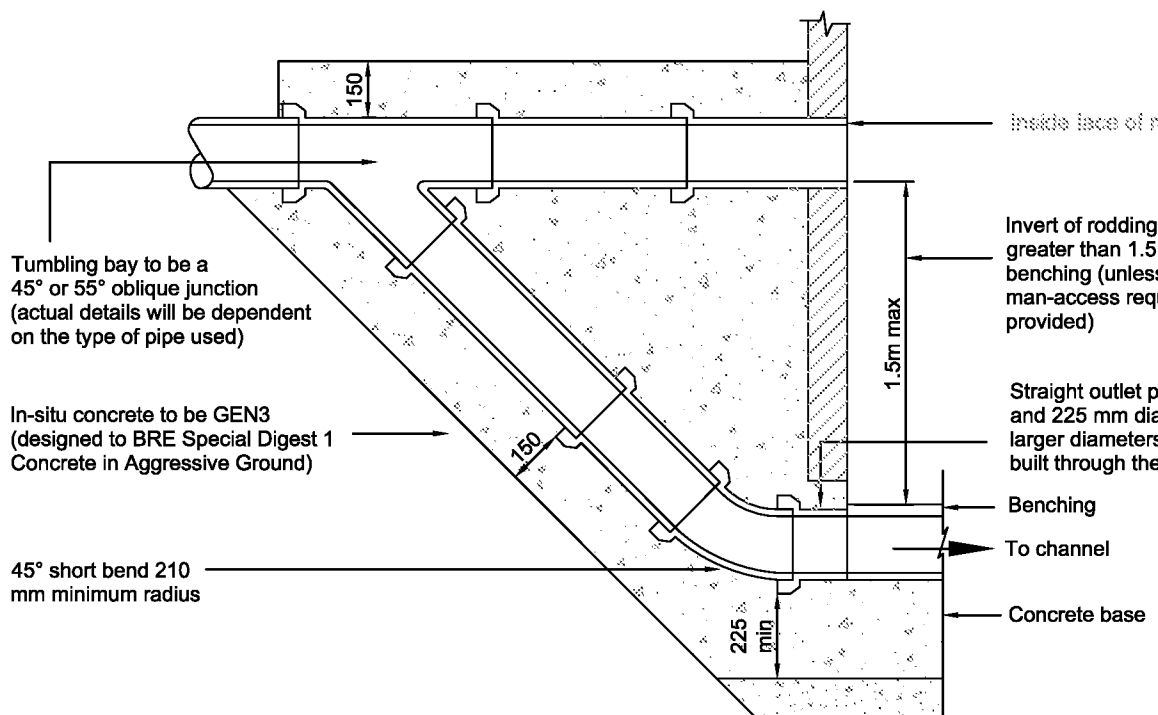


Restricted to Driveways and Non Trafficked Areas only
Hepworth product indicated - equivalent approved permitted

Trapped Yard Gully



External Vertical Backdrop

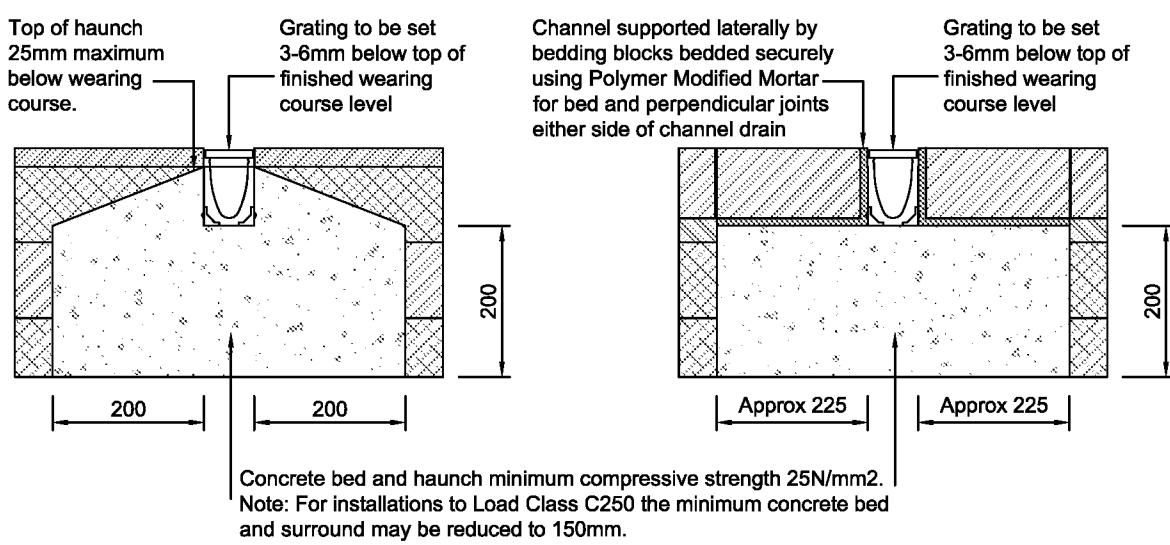


External Ramped Backdrop

In accordance with SFA 7th Edition

Note: Steeper gradients are preferred to the use of backdrops.
Type of backdrop to be used to be agreed with Undertaker.

Typical Adoptable Vertical and Ramped Backdrop Detail



Asphalt Pavement

Block Pavement

Aco ParkDrain shown - equivalent approved permitted

Typical Channel Drain Detail
Scale 1:10

-	Issued For Approval	01/11/21
REV	DESCRIPTION	DATE

abmh
ABMH Civils Ltd
1 The Grove, Felpham, Bognor Regis, West Sussex PO22 7EY
Mark Mob: 07761 950000
Email: mark@abmh.co.uk / Web: www.abmh.co.uk

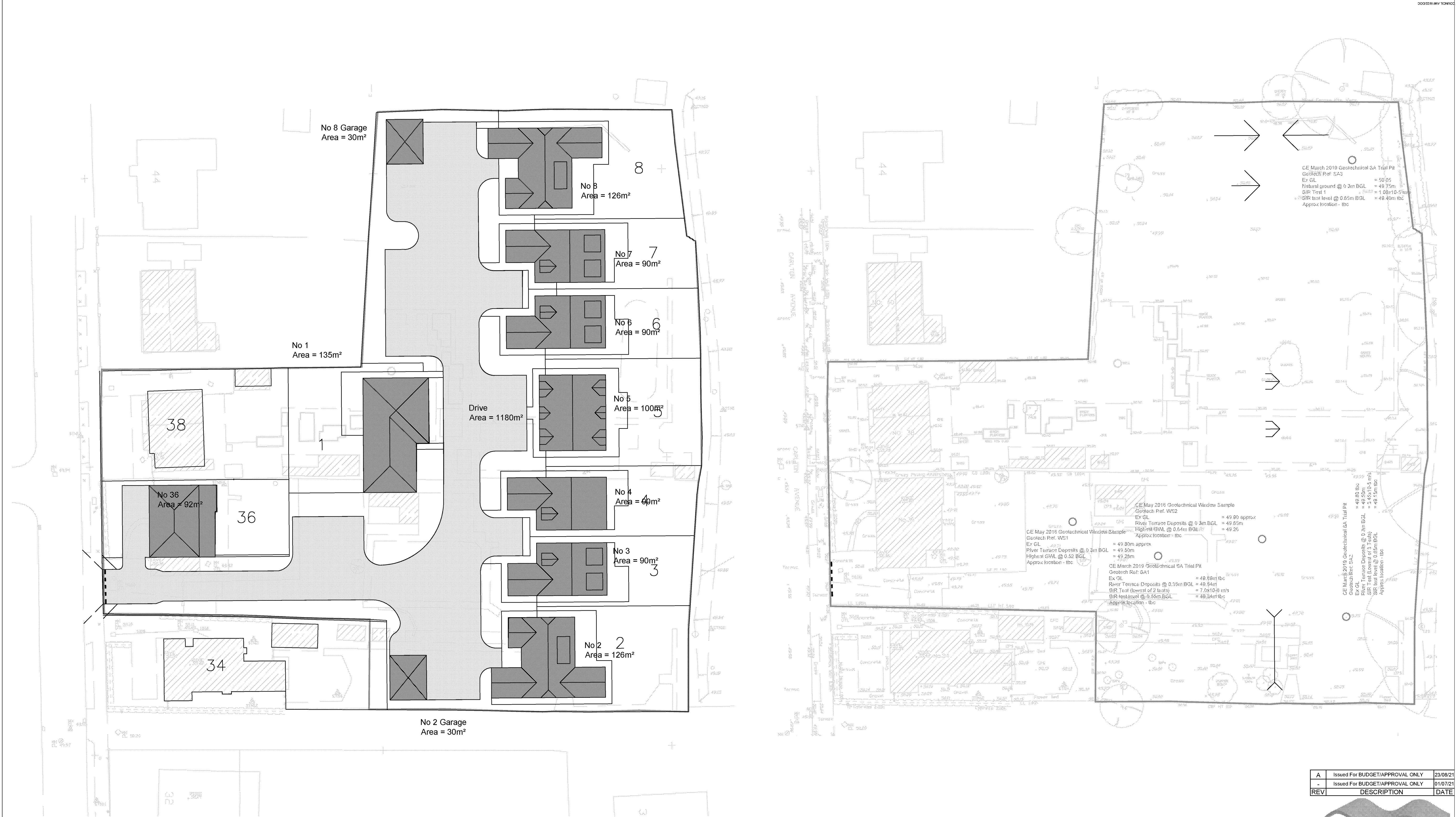
PROJECT	DEVELOPMENT TO REAR OF 34-44 CARLTON AVENUE BOGNOR REGIS, W SUSSEX PO21 3LR
DRAWING	PROPOSED DRAINAGE DETAILS SHEET 2 OF 2
SCALE	FC2891/08
DATE	NOV 21
INITIAL	MH
REV	-
CHD	-

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2. Refer to Drawing FC2891/02 for notes

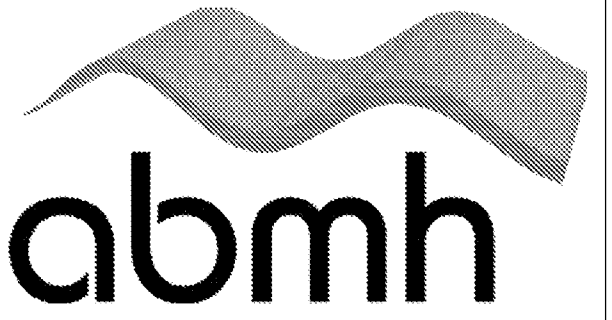


PROJECT	DEVELOPEMENT TO REAR OF 34-44 CARLTON AVENUE BOGNOR REGIS, W SUSSEX PO21 3LR					
	ACCESS TO EXISTING DITCH					
DRAWING						
SCALE	FIG No.	FC2891/09			REV	-
1:200	DATE	NOV 21	INITIAL	MH	CHRG	-
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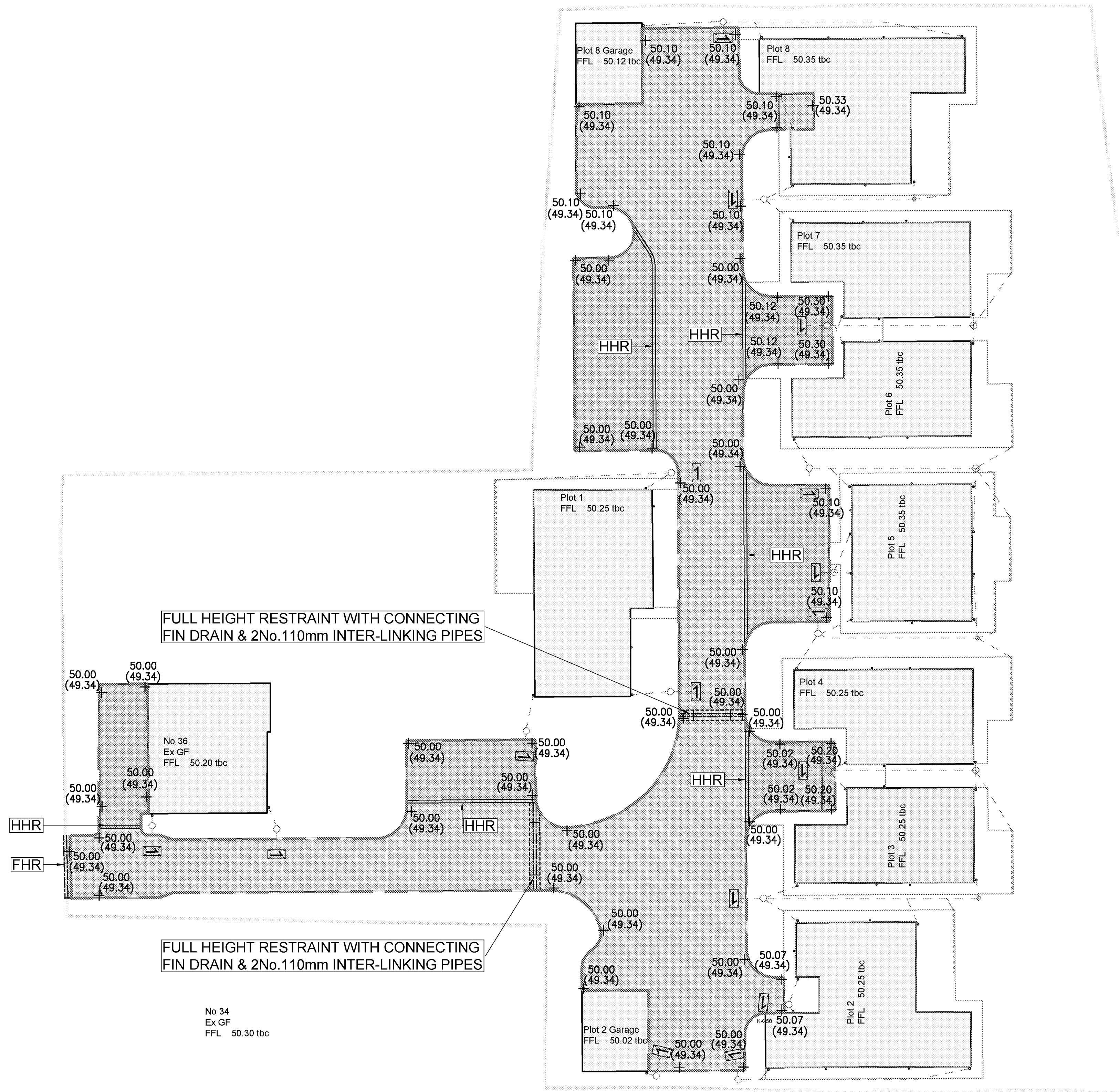
	Proposed Building Area	= 999 m²
	Proposed Impermeable Paved Area	= 1180 m²
	Total Impermeable Area	= 2180 m²

A	Issued For BUDGET/APPROVAL ONLY	23/08/21
-	Issued For BUDGET/APPROVAL ONLY	01/07/21
REV	DESCRIPTION	DATE


ABMH Civils Ltd
1 The Grove, Felpham, Bognor Regis, West Sussex PO22 7EY
Mark Mob: 07761 950000
Email: mark@abmh.co.uk / Web: www.abmh.co.uk

PROJECT	DEVELOPMENT TO REAR OF 34-44 CARLTON AVENUE BOGNOR REGIS, W SUSSEX PO21 3LR		
DRAWING	PROPOSED IMPERMEABLE AREAS & SUMMARY GEOTECH DATA		
SCALE	FC2891/11	REV	A
1:250	DATE	JUNE 21	MH
	INITIAL	CHD	-

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AQUAFLOW CLEAN CRUSHED STONE OVERALL DEPTH
TO BE 450mm MINIMUM WITH LEVEL SUB-FORMATION
IN PARKING & ACCESS

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- FORMPAVE RECTANGULAR AQUAFLOW BLOCKS IN PARKING
- FORMPAVE RECTANGULAR AQUAFLOW BLOCKS IN ACCESS WITH DBM BASE COURSE
- FORMPAVE RECTANGULAR AQUAFLOW BLOCKS WITH LEVEL SUB-FORMATION. (FOR FORMATION DETAILS REFER TO DRAWING FSC4505-D100)
- FORMPAVE SINGLE DISTRIBUTION TANK 0.35m X 0.70m X 0.15m DEEP CONNECTED TO 110mmØ OUTLET
- FULL HEIGHT RESTRAINT
- HALF HEIGHT RESTRAINT
- FULL HEIGHT RESTRAINT WITH CONNECTING FIN DRAIN & 2No.110mm INTER-LINKING PIPES
- AMENDED PROPOSED LEVELS
PROPOSED INVERT LEVELS
- SW DRAINAGE DESIGNED BY ENGINEER

- NOTES:
- FOR CONSTRUCTION AND FORMATION DETAILS REFER TO DRAWING FSC4505-D100
 - DRAINAGE RUNS SHOWN FOR INDICATIVE PURPOSES ONLY - TO BE DESIGNED BY OTHERS.
 - LOWER THE FORMATION LOCALLY WHERE REQUIRED TO SUIT THE INVERT LEVEL OF DISTRIBUTION BOXES

-	First Issue	B.H	02.09.2021
Rev. No.	Revision	Drawn By	Date

INNOVATORS IN

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PERMEABLE PAVING

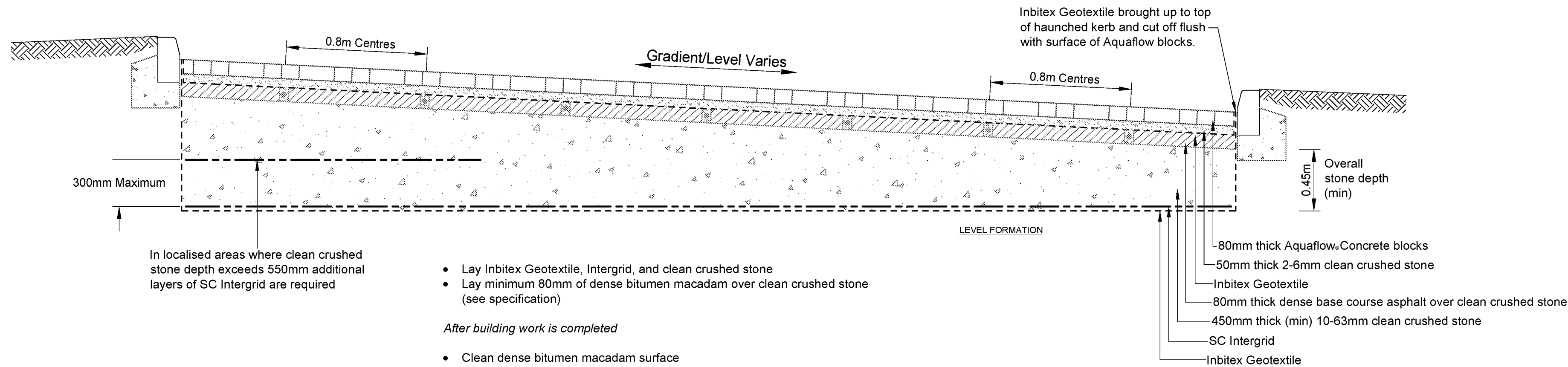
Quality concrete paving products

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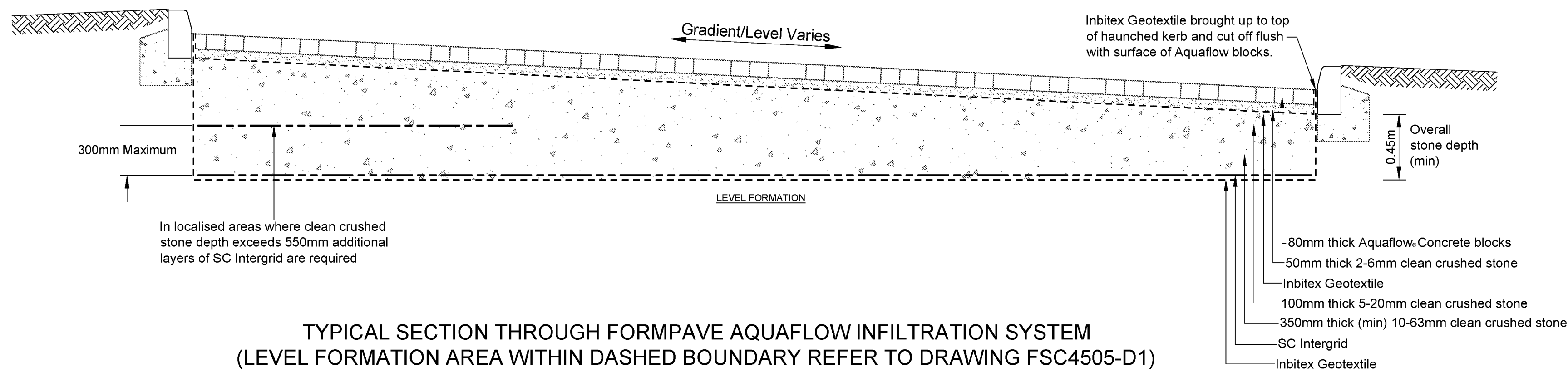
Project
CARLTON AVENUE, BOGNOR REGIS
WEST SUSSEX

Title
AQUAFLOW PERMEABLE PAVING LAYOUT
FOR PARKING AREA AND ACCESS ROAD

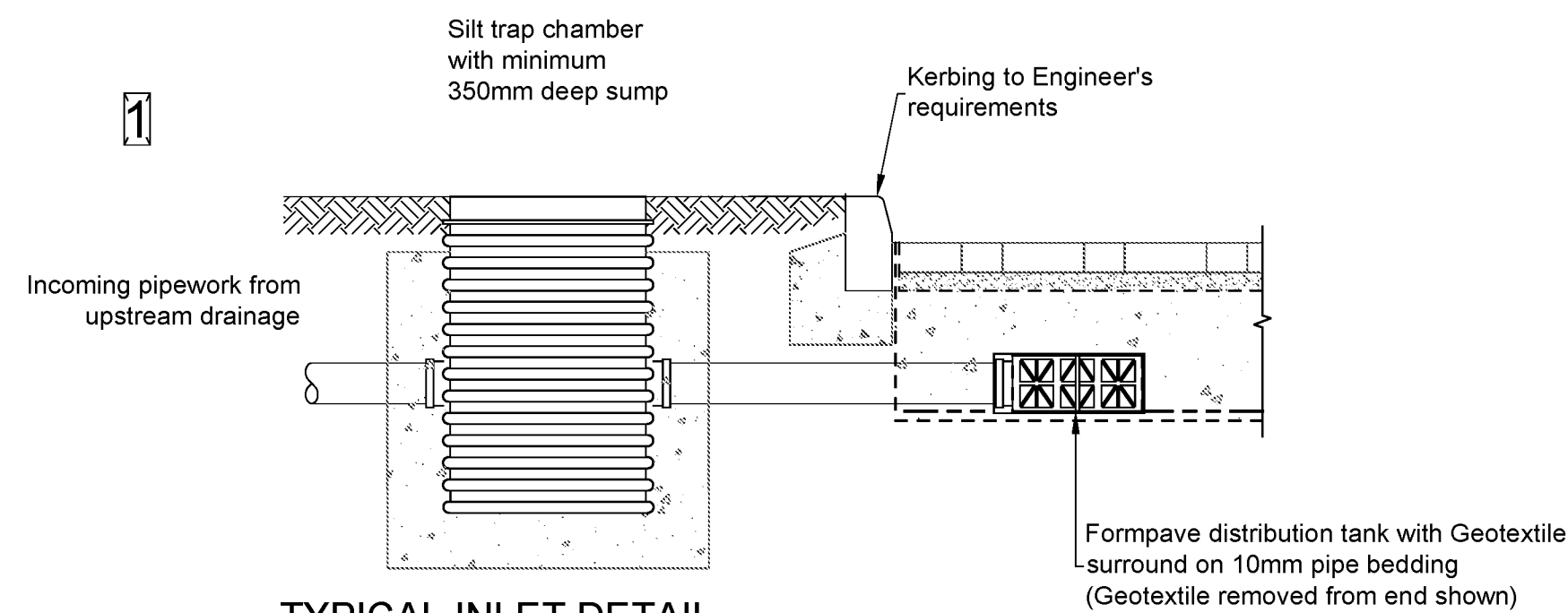
Scale 1:200	Date 02.09.2021	Drawn B.H	Checked -	Approved -
Project No. FSC4505	Drg. No. D1	Revision -		



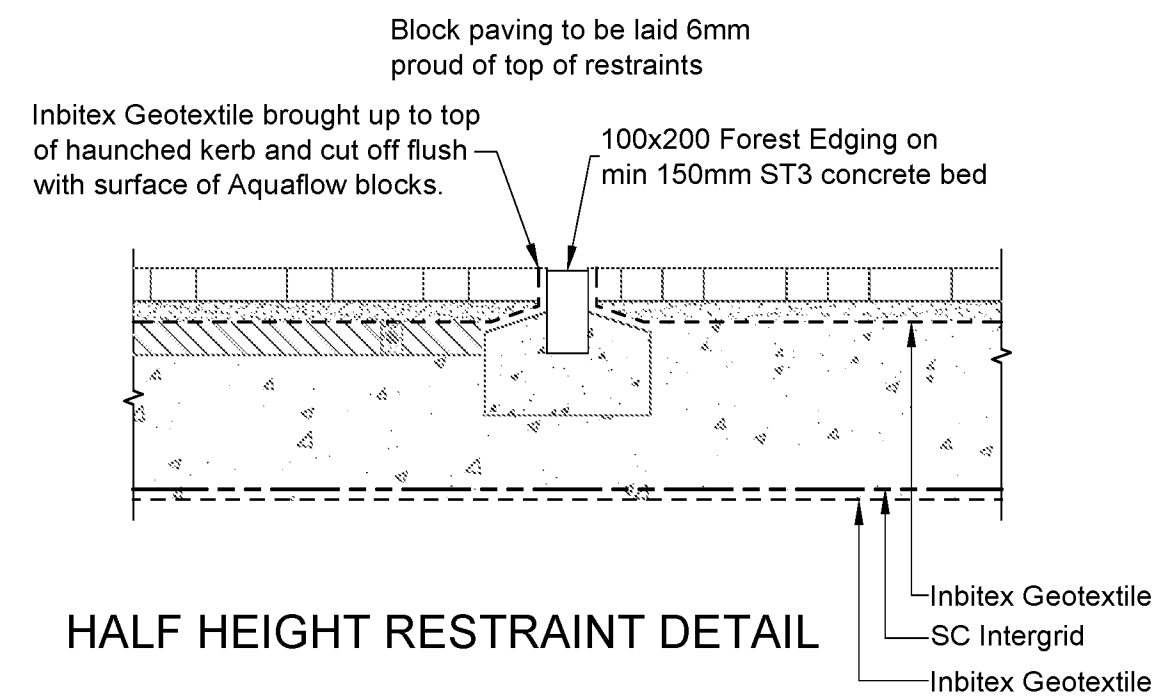
TYPICAL SECTION THROUGH FORMPAVE AQUAFLOW INFILTRATION SYSTEM
(LEVEL FORMATION AREA WITHIN DASHED BOUNDARY REFER TO DRAWING FSC4505-D1)
ACCESS



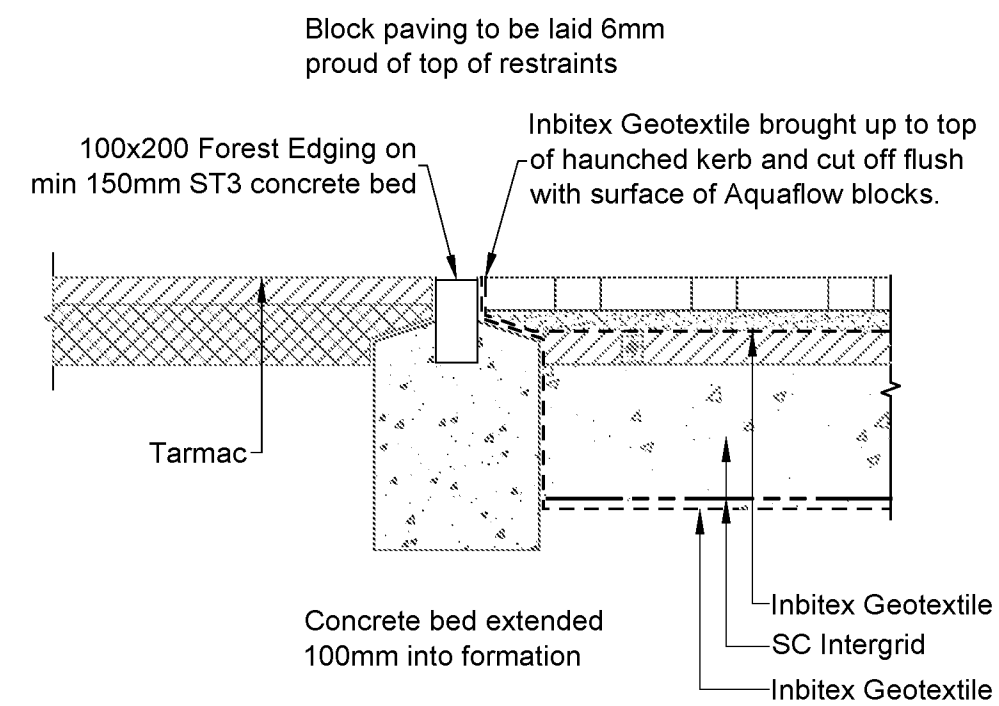
TYPICAL SECTION THROUGH FORMPAVE AQUAFLOW INFILTRATION SYSTEM
(LEVEL FORMATION AREA WITHIN DASHED BOUNDARY REFER TO DRAWING FSC4505-D1)
PARKING



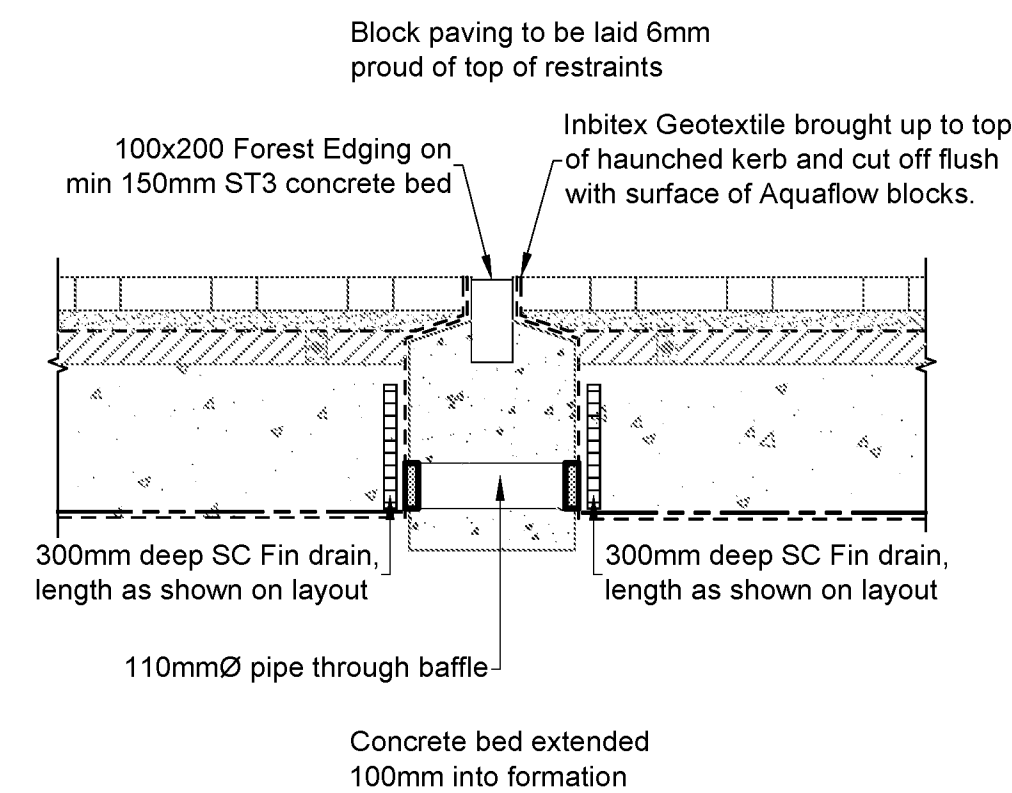
TYPICAL INLET DETAIL
(SINGLE SIZE 0.35 x 0.70 x 0.15m DEEP)



HALF HEIGHT RESTRAINT DETAIL



FULL HEIGHT RESTRAINT DETAIL
(TARMAC TO FORMPAVE AQUAFLOW TRANSITION)



FULL HEIGHT RESTRAINT WITH CONNECTING
FIN DRAIN & 2No. 110mm INTER-LINKING PIPES

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STORM WATER SOURCE CONTROL SYSTEM
Aquaflow paving.

TYPE(S) OF PAVING
Permeable concrete block paving

REFERENCE
Aquaflow

SIZE
100 x 200 x 80 Thick

COLOURS
Red brindle, Golden brindle, Natural, Charcoal, Burnt red.

SETTING OUT
Aquaflow and Aquasetts:
90Ø herringbone with single stretcher course around all perimeters.

KERBS
Standard kerb system or Forest Edging: both to be haunched with concrete.

LAYING COURSE*
50mm depth of 2-6mm single size clean crushed stone to: BS EN 13242:2002

GEOTEXTILE
Inbitex Geotextile as noted

SUB-BASE SPECIFICATION*
The granular sub-base material shall comprise crushed rock or concrete possessing well defined edges. It must be sound, clean, non friable and free from clay or other deleterious matter.

The material must be non plastic when tested in accordance with BS1377 Test No 4. *The crushed stone used for the laying course and sub-base must have a minimum 10% fines value of 150kN when tested in accordance with BS812 Part 111.

The selected test samples not be over dried and should be soaked in water at room temperature for 48-hours before the test. The 100mm deep upper layer of sub-base material should be graded 20mm-5mm to BS882.

The 63-10mm material should be graded as follows:-

BS Sieve size	%passing
100mm	100
63mm	90-100
37.5mm	60-80
20mm	15-30
10mm	0-5

DEPTH OF SUB-BASE
It is recommended that a sub-base depth of 350mm should be used. The depth of sub-base may be varied at the discretion of the engineer.

Intergrid(s) * - SC Intergrid

ASPHALT RUNNING COURSE
To be 20mm dense bitumen base course manufactured with 125pen bitumen to BS EN 13108-1:2016.

SURFACE FINISH
The blocks should be vibrated with a vibrating plate compactor fitted with a block paving pad (rubber mat). Following the first pass with a vibrating plate a light dressing of 2-4mm single size clean stone should be applied to the surface and brushed in, approximately 8m2 per bag, available from Formpave in 25kg bags. Blocks should again be vibrated and any debris brushed off.

-	First Issue	B.H	02.09.2021
Rev. No.	Revision	Drawn By	Date

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FORTEERRA

Project
CARLTON AVENUE, BOGNOR REGIS
WEST SUSSEX

Title
AQUAFLOW PERMEABLE PAVING
FORMATION AND CONSTRUCTION DETAILS

Scale	Date	Drawn	Checked	Approved
N.T.S	02.09.2021	B.H	-	-

Project No.	Drg. No.	Revision
FSC4505	D100	-