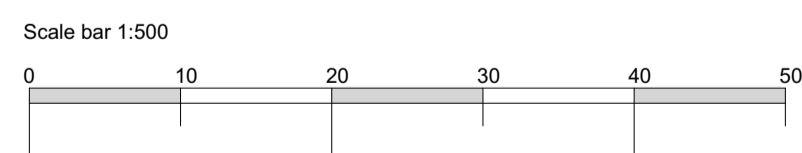




Existing Block Plan



Proposed Block Plan



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- Revisions
- A 03/2022 AH Proposed block plan to accord with access indicated on Outline approval
 - B 05/2022 AH Revisions to LPA comment
 - C 05/2022 AH Revisions to LPA comment
 - D 05/2022 AH Attenuation detail added to Engineer's design

Drawing title: Existing and Proposed Block Plans

Client: Cotswold Oak Ltd

Drawn by: AH Checked: JE

Project No: 21.20.020

Project: Land at Paygrove Lane, Longlevens

Scale: 1:500 @ A1

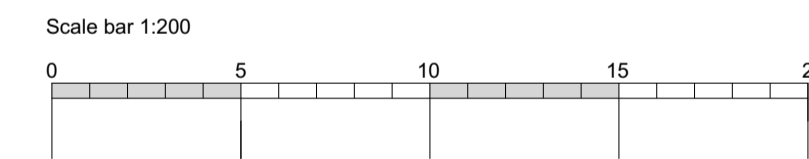
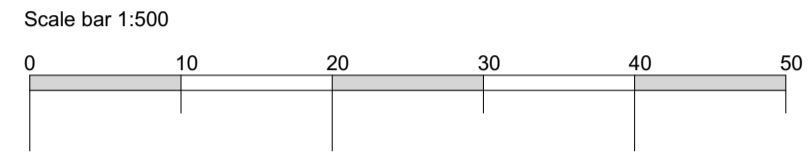
Date: January 2022

Project / Drawing No: 21.20.020 PL004 D

Accommodation schedule

Unit Mix

Ref	Bedrooms	Bedspace	Number	Off	GIFA sq/ft	Total sq/ft
Lawence	2 + study	3	1		935	935
Latchford	3	6	2		1389	2778
Langley	4	6	3		1389	4167
Ranscombe	4 + study	7	2		1615	3230
Ruscombe	5	8	2		1615	3230
						14340



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RIBA
 Chartered Practice

- Revisions
- A 03/2022 AH Proposed layout to accord with access indicated on Outline approval
 - B 03/2022 AH Accommodation schedule revised to indicate Langley house type as 6 bedspace
 - C 05/2022 AH Revisions to LPA comment
 - D 06/2022 AH Surfaces to parking and barrier to POS noted
 - E 06/2022 AH Additional tarmac surface at entrance to POS parking
 - F 06/2022 AH Attenuation area up-dated to Engineering layout
 - G 07/2022 AH Attenuation area up-dated to Engineering layout

Drawing title: **Proposed Site Layout and Street Scene**

Client: **Cotswold Oak Ltd**

Drawn by: **AH** Checked: **JE**

Project No: **21.20.020**

Project: **Land at Paygrove Lane, Longlevens**

Scale: **1:500, 1:200 @ A1**

Date: **January 2022**

Project / Drawing No: **21.20.020 PL005 G**



Landscape and Finishes Legend

- FFL 19.350 Proposed floor level
- T Tarmac finishes to highway and drives
- PT Permeable Tarmac finishes to drives
- P PCC block paviors, charcoal grey to GCH / LPA approval
- G Grasscrete block paving, geo-grid or similar to LPA approval to parking within POS. Grass to general parking spaces, and gravel fill to access and accessible spaces.
- Paths and patios formed out of 600x600x40mm pcc buff riven paving slabs by Tobemore laid out over 100mm concrete oversite and drained to adjacent soft landscaped areas.
- Russell Bute roof tile Anthracite
- Brick - Istock Forterra Chelsea Smoked Red
- Brick - Istock Forterra Atherstone Red Multi
- Turf Areas prepared and laid to turf
- Areas prepared and seeded to form playing field
- pg Pea gravel lain over weed suppressing membrane
- Prepared and planted borders with individual specimen shrub planting
- Existing boundary planting retained and reinforced as necessary. Refer to specification by MHP landscape consultants
- New hedgerow planting. Refer to specification by MHP landscape consultants
- Existing trees to be retained
- New tree planting
- Trees to be removed
- 16 Amp power supply to facilitate electric vehicle charge point.
- 1.8m high close board timber fence with solid timber gates fitted with bolts top and bottom and lock operable from both sides
* indicates 130x130mm hole formed at ground level to provide access for hedgehogs between plots and through boundary
- Black painted, five rail metal railings to demark residential development + pedestrian / maintenance pass gate as indicated
- 2.0m high acoustic fence - 12k Envirofence Jacksons Fencing
- Paved hardstanding for on plot bin storage. Collection from kerbside to LA regime
- Ecological enhancement in accordance with report by All Ecology
Istock Enclosed bat box 'C'
2 x Schwelger single nest for House Martins No.13
Schwelger bird home 'B'
- (B) Dual use litter / dog waste bin to LA specification. Wybone MLB12 galvanised steel bin, powder coated black (RAL 9005), pitched lid, litter and dog waste logo in gold applied to two sides. GCC logo applied to two sides, four standard litter apertures
NB In accordance with GCC requirements, temporary signage will be provided adjacent to each bin confirming developer's management co. details as point of contact for collection issues until formally adopted by GCC
- (S) Steel and recycled plastic bench. Wybone RPS/5 steel framed bench painted black (RAL 9005) with brown recycled slats

Trees

- AC Acer Campestre 'streetwise' (Field Maple)
- SA Sorbus Aria (Whitebeam)
- PA Prunus Avium (Cherry)
- QR Quercus Robur (Oak)

All trees and shrubs will conform to the specification for nursery stock as set out in British Standard 2936 Parts 1 (1992) and 4 (1984). Advanced Nursery stock trees shall conform to BS 5236.
Trees to be 'weathered' 2m high with 5-8cm girth and staked to a height of 750mm and planted in 1.0x1.0m prepared tree pits incorporating 80 litres of TP/MC and slow release fertiliser. Roots to be dipped in mycorrhizal inoculant immediately prior to planting.

Planting Notes
Ground preparation and planting works to include:
Excavate planting areas to a minimum depth of 600mm and remove all unsuitable material from site
Ensure supply and spread 400mm depth of approved topsoil in areas to be planted. Light harrow to provide a fine tilth.
Collect and remove from areas to be planted or turfed all stones greater than 50mm in any dimension.
Supply and plant shrubs incorporating 20g / plant of slow release fertilizer into the backfill.
Provide and spread evenly over planting areas 75mm depth of coarse grade bark mulch.

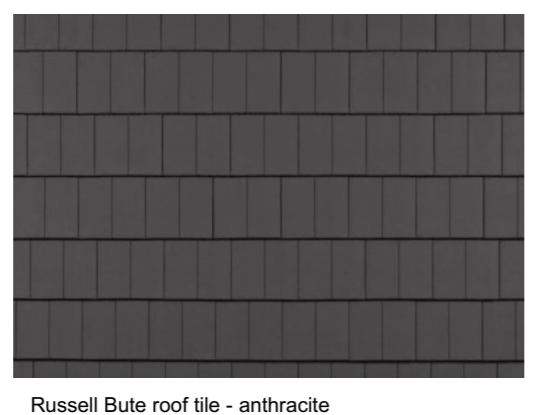
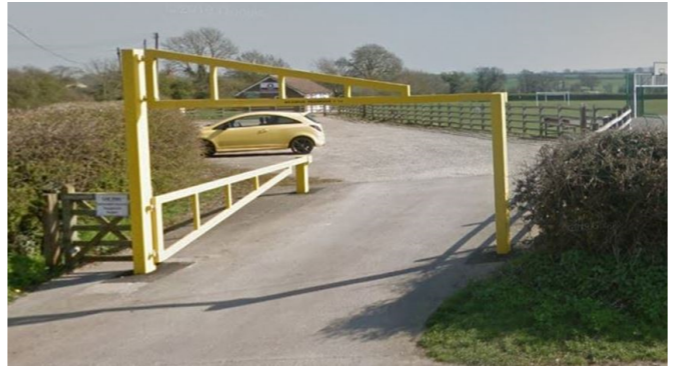
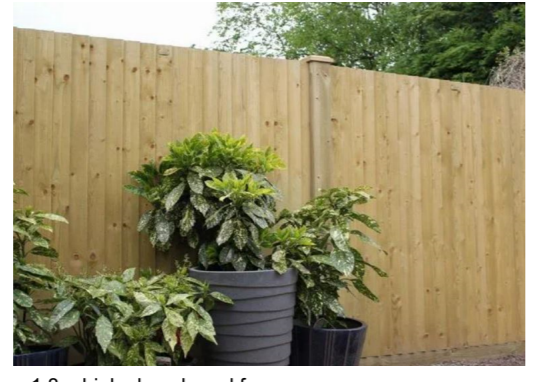
Planted Borders
To be planted in groups of 3, 5, 7 per box in a random mix at a rate of 5 plants per sqm

Type (i)	%
Cotoneaster Dameri	20
Berberis Candidula	25
Hedera Colchica Denata Variegata	15
Mahonia Aquifolium	20
Spiraea Japonica Bullata	20

Type (ii)	%
Comus Canadensis	25
Euonymus Fortunei Radicans	25
Pachysandra Terminalis Variegata	20
Vincia Major Variegata	20
Hedera Hibernica	10

Specimen Shrub Planting
Individual container grown specimen shrubs (minimum 3 litre) shown thus

BD	Berberis Darwini	25
CT	Choisya Ternata	25
FO	Forsythia Ovata	20
IQ	Ilex Aquifolium Golden Queen	20
IK	Ilex Alacquerensis Golden King	20
PV	Philadelphus Virginal	10
VA	Viburnum Aurora	10



Revision

Revision	Date	By	Description
A	03/2022	AH	Hedgerow mix amended
B	03/2022	AH	Proposed layout plan to accord with access indicated on Outline approval
C	03/2022	AH	Access for hedgehogs indicated to new boundary fences
D	04/2022	AH	Ecological enhancement for birds and bats added, in accordance with report by All Ecology
E	05/2022	AH	Revisions to LPA comment
F	06/2022	AH	Surfaces to parking and barrier to POS noted
G	06/2022	AH	Permeable tarmac finishes to drives
H	06/2022	AH	Additional tarmac finishes at entrance to POS parking
I	06/2022	AH	Attenuation area up-dated to Engineering layout
J	07/2022	AH	Attenuation area up-dated to Engineering layout

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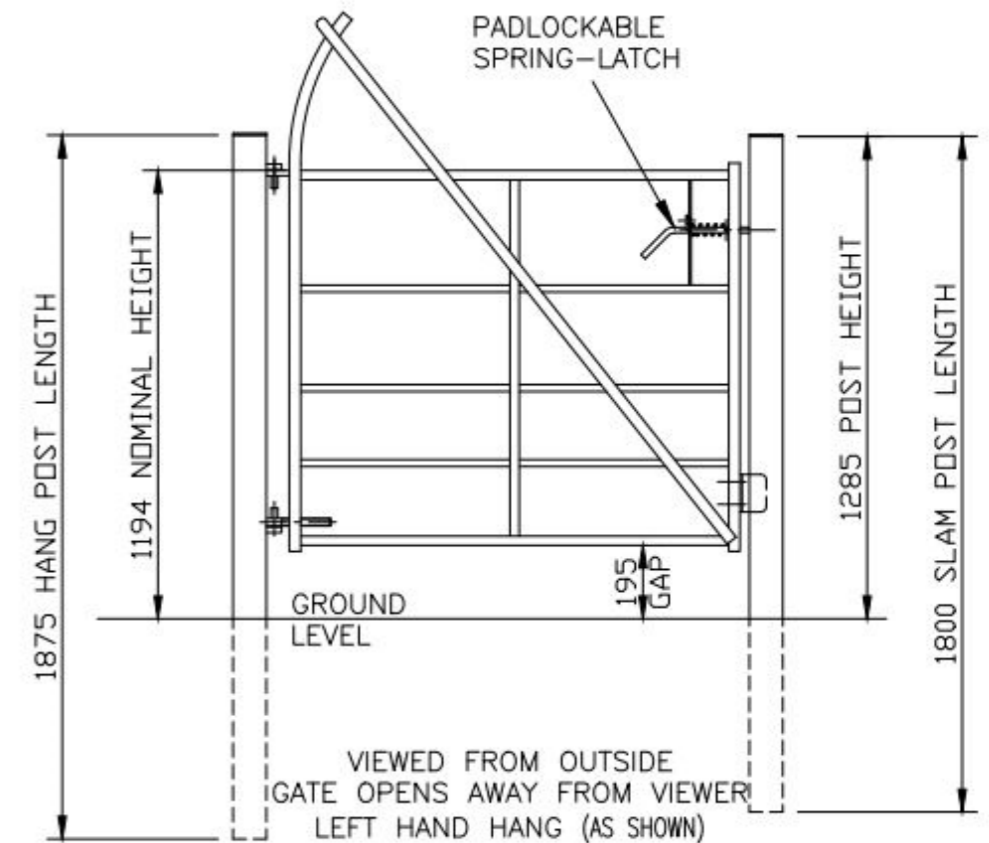
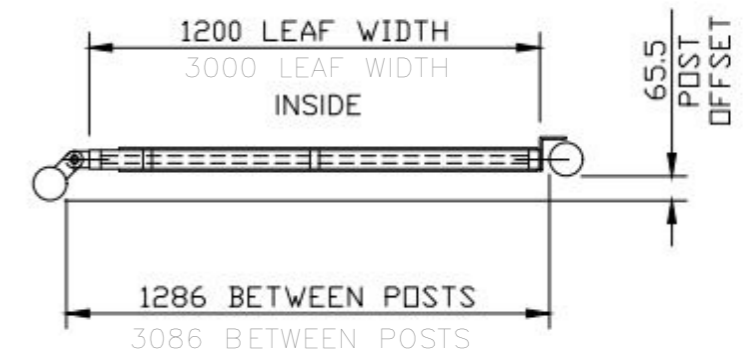
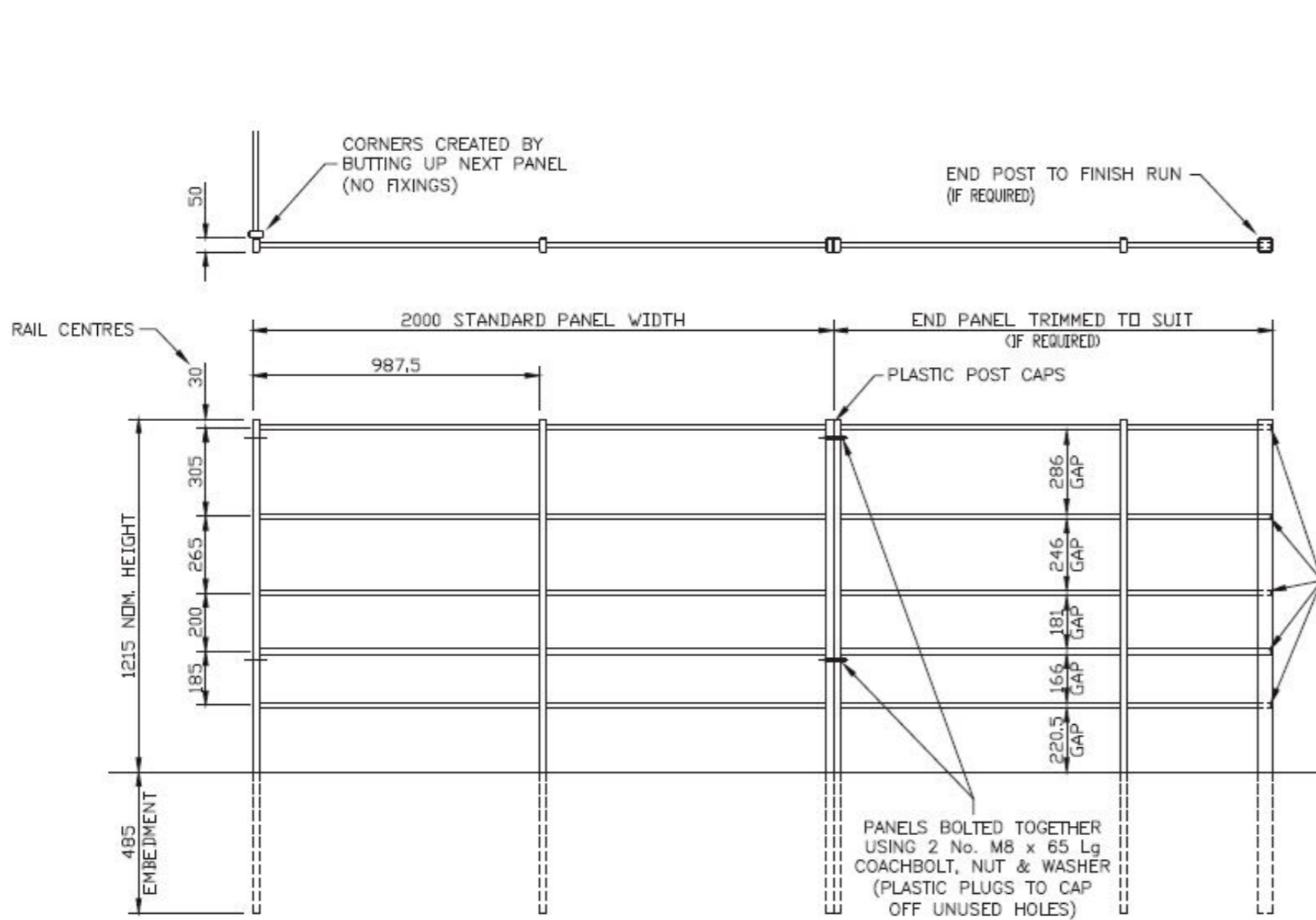
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Drawing title: Materials Distribution and Landscaping
Client: Cotswold Oak Ltd
Drawn by: AH Checked: JE
Project No: 21.20.020

Project: Land at Paygrove Lane, Longlevens
Scale: 1:250 @ A1
Date: January 2022
Project / Drawing No: 21.20.020 PL006 J



ESTATE GATE
1.2m WIDE OR 3.0m WIDE

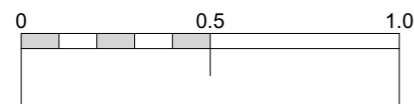
NOTES.

ALL DIMENSIONS ARE IN mm (UNO)
 GAPS UNDER GATES & FENCING ARE NOMINAL DUE TO GROUND LEVELS.

MATERIALS.

GATE POSTS: ø88.9 CHS
 T & B RAILS: 50 x 25 RHS
 MID RAILS: ø19 CHS
 STILES: 50 x 30 RHS
 BRACES: 30 x 6 MS FLAT

Scale bar 1:20



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Revisions
 A 05/2022 AH 3.0m wide gated referenced

Drawing title: Estate Railing and Gate Detail

Client: Cotswold Oak Ltd

Drawn by: AH Checked: JE

Project No: 21.20.020

Project: Land at Paygrove Lane, Longlevens

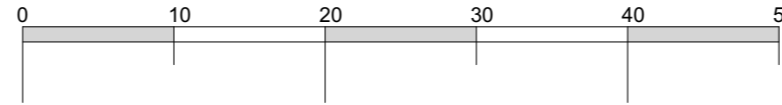
Scale: 1:20 @ A3

Date: February 2022

Project / Drawing No: 21.20.020 PL007 A

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Scale bar 1:500



Turning head allows turning of service and emergency vehicles

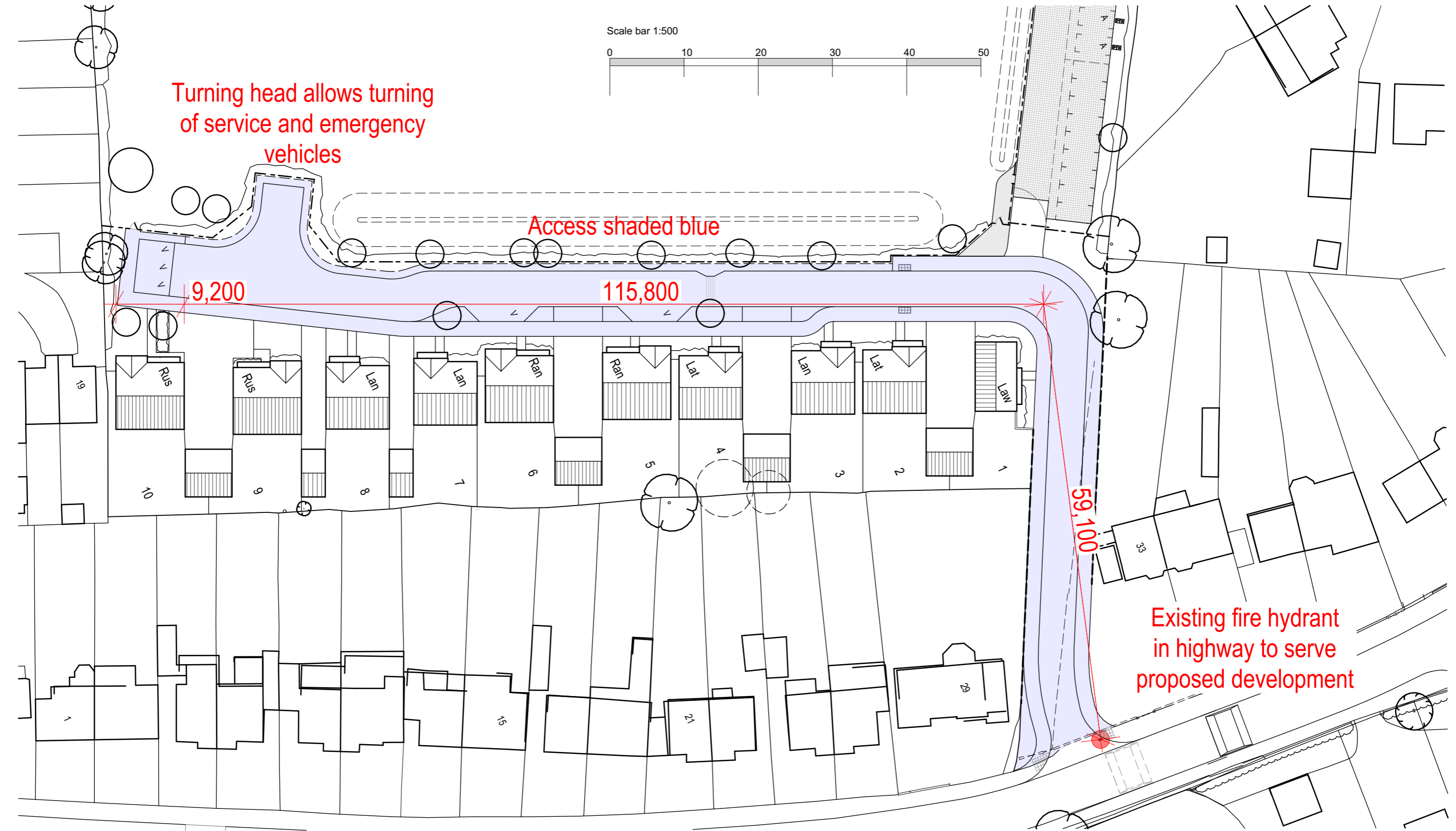
Access shaded blue

9,200

115,800

59,100

Existing fire hydrant in highway to serve proposed development



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Revision A
A 05/2022 AH Amended to suit layout revisons to LPA comment
B 06/2022 AH Attenuation area revised to suit Engineering layout
C 076/2022 AH Attenuation area revised to suit Engineering layout

Drawing title: Fire Hydrant Strategy Plan

Client: Cotswold Oak Ltd

Drawn by: AH Checked: JE

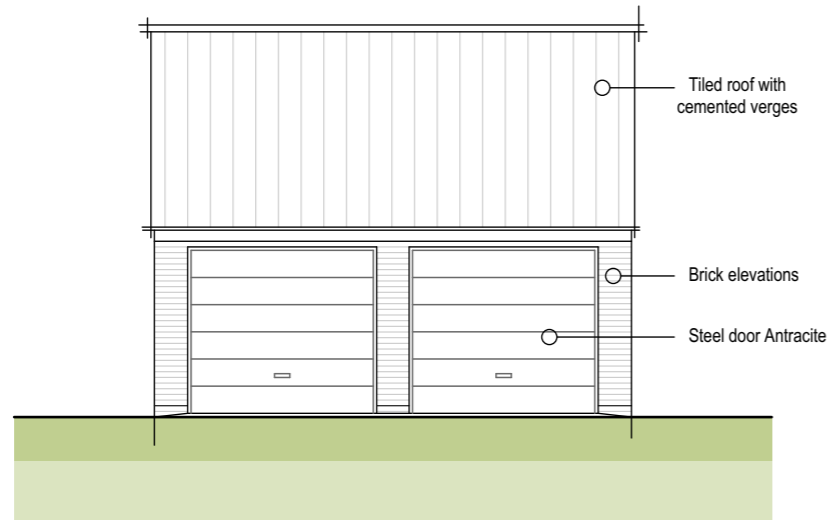
Project No: 21.20.020

Project: Land at Paygrove Lane, Longlevens

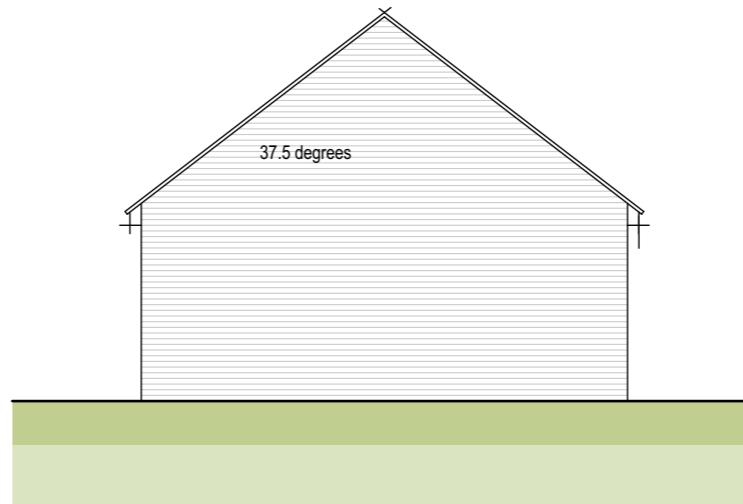
Scale: 1:500 @ A3

Date: February 2022

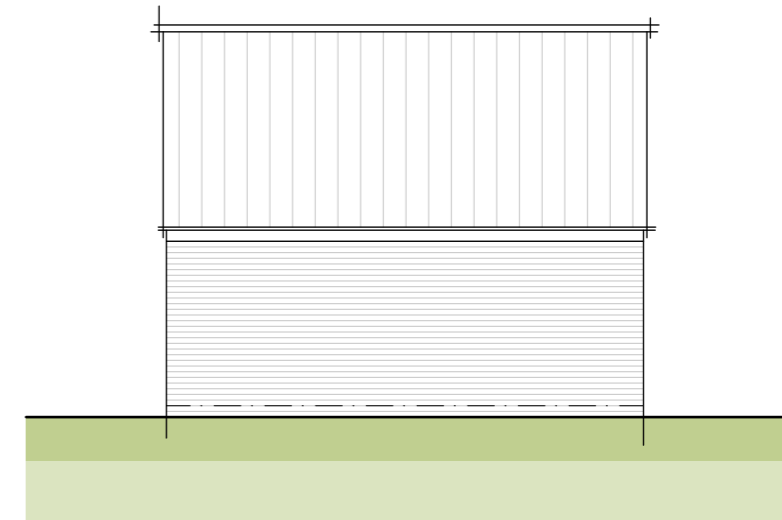
Project / Drawing No: 21.20.020 PL009 C



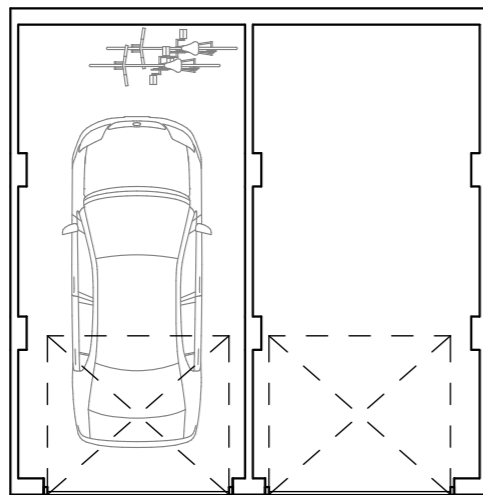
Front Elevation



Side Elevation

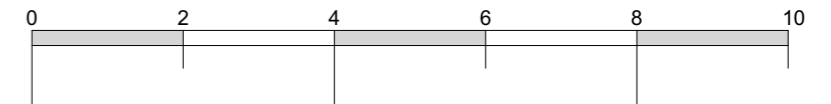


Rear Elevation



Pair Garages

Scale bar 1:100



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Revision A
 A 05/2022 AH Roof pitch reduced to 37.5 deg.

Drawing title: Proposed Pair Garages

Client: Cotswold Oak Ltd

Drawn by: AH Checked: JE

Project No: 21.20.020

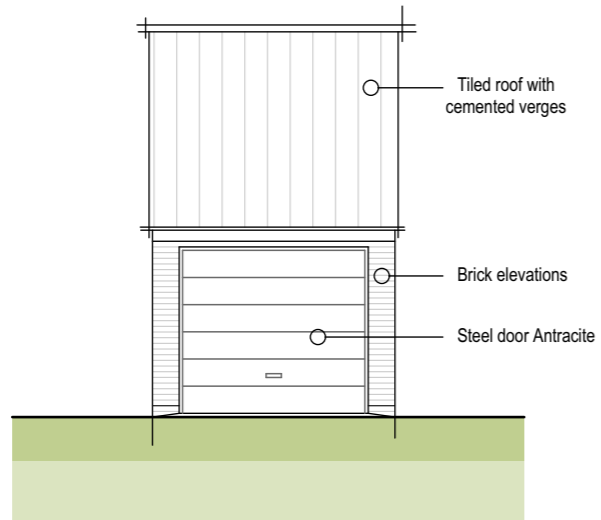
Project: Land at Paygrove Lane, Longlevens

Scale: 1:100 @ A3

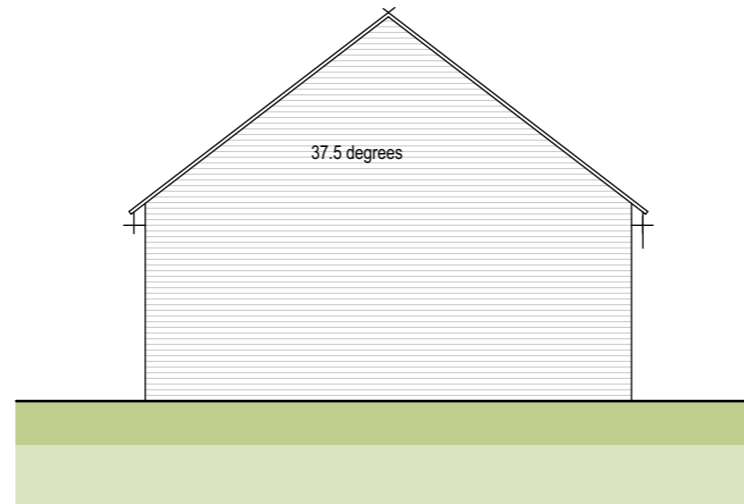
Date: February 2022

Project / Drawing No: 21.20.020 PLG01 A

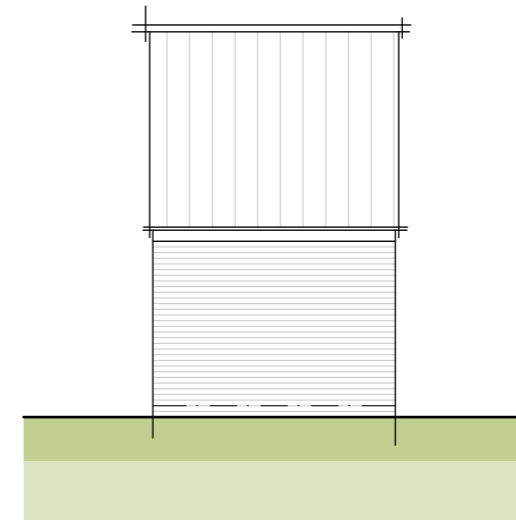
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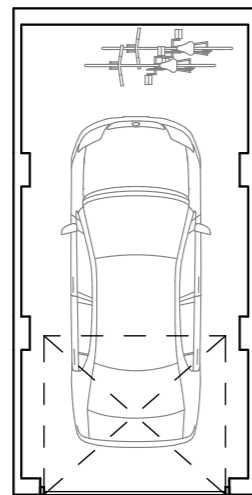
Front Elevation



Side Elevation

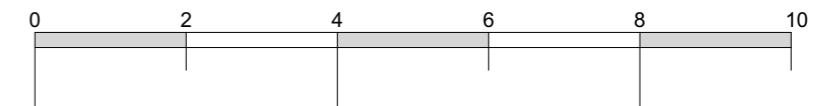


Rear Elevation



Single Garages

Scale bar 1:100



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Revision A
 A 05/2022 AH Roof pitch reduced to 37.5 deg.

Drawing title: Proposed Single Garage

Client: Cotswold Oak Ltd

Drawn by: AH Checked: JE

Project No: 21.20.020

Project: Land at Paygrove Lane, Longlevens

Scale: 1:100 @ A3

Date: February 2022

Project / Drawing No: 21.20.020 PLG02 A

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CTP House, Knapp Road
Cheltenham
Gloucestershire, GL50 3QQ

Paygrove Lane



Date 27/06/2022 15:50
File 21-0760 Swale_B.SRCX

Designed by CG
Checked by KT

Innovyze Source Control 2020.1.3

Summary of Results for 100 year Return Period (+40%)

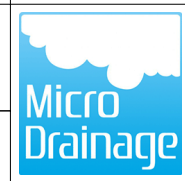
Half Drain Time : 1206 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m ³)	Status
15 min Summer	18.405	1.025	0.0	2.0	2.0	105.7	O K
30 min Summer	18.575	1.195	0.0	2.0	2.0	141.6	O K
60 min Summer	18.695	1.315	0.0	2.0	2.0	180.0	Flood Risk
120 min Summer	18.792	1.412	0.0	2.0	2.0	219.1	Flood Risk
180 min Summer	18.839	1.459	0.0	2.0	2.0	240.4	Flood Risk
240 min Summer	18.866	1.486	0.0	2.0	2.0	253.7	Flood Risk
360 min Summer	18.895	1.515	0.0	2.0	2.0	268.4	Flood Risk
480 min Summer	18.911	1.531	0.0	2.0	2.0	276.7	Flood Risk
600 min Summer	18.919	1.539	0.0	2.0	2.0	280.7	Flood Risk
720 min Summer	18.921	1.541	0.0	2.0	2.0	281.9	Flood Risk
960 min Summer	18.915	1.535	0.0	2.0	2.0	278.8	Flood Risk
1440 min Summer	18.888	1.508	0.0	2.0	2.0	264.8	Flood Risk
2160 min Summer	18.857	1.477	0.0	2.0	2.0	249.0	Flood Risk
2880 min Summer	18.828	1.448	0.0	2.0	2.0	235.3	Flood Risk
4320 min Summer	18.767	1.387	0.0	2.0	2.0	208.6	Flood Risk
5760 min Summer	18.702	1.322	0.0	2.0	2.0	182.5	Flood Risk
7200 min Summer	18.629	1.249	0.0	2.0	2.0	157.5	O K
8640 min Summer	18.547	1.167	0.0	2.0	2.0	134.1	O K
10080 min Summer	18.448	1.068	0.0	2.0	2.0	112.6	O K
15 min Winter	18.406	1.026	0.0	2.0	2.0	105.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
15 min Summer	117.448	0.0	108.8	26
30 min Summer	79.010	0.0	146.5	41
60 min Summer	50.812	0.0	188.4	70
120 min Summer	31.621	0.0	234.7	130
180 min Summer	23.637	0.0	263.0	188
240 min Summer	19.105	0.0	283.6	248
360 min Summer	14.037	0.0	312.5	366
480 min Summer	11.286	0.0	335.0	486
600 min Summer	9.522	0.0	345.3	604
720 min Summer	8.282	0.0	345.2	724
960 min Summer	6.640	0.0	345.1	962
1440 min Summer	4.854	0.0	342.3	1238
2160 min Summer	3.541	0.0	472.9	1604
2880 min Summer	2.828	0.0	503.7	1996
4320 min Summer	2.055	0.0	548.9	2816
5760 min Summer	1.637	0.0	583.0	3632
7200 min Summer	1.371	0.0	610.7	4400
8640 min Summer	1.186	0.0	633.4	5192
10080 min Summer	1.049	0.0	654.0	5944
15 min Winter	117.448	0.0	108.8	26

CTP House, Knapp Road
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Paygrove Lane



Date 27/06/2022 15:50
File 21-0760 Swale_B.SRCX

Designed by CG
Checked by KT

Innovyze Source Control 2020.1.3

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (1/s)	Max Control (1/s)	Max Σ Outflow (1/s)	Max Volume (m³)	Status
30 min Winter	18.575	1.195	0.0	2.0	2.0	141.7	O K
60 min Winter	18.695	1.315	0.0	2.0	2.0	180.3	Flood Risk
120 min Winter	18.793	1.413	0.0	2.0	2.0	219.5	Flood Risk
180 min Winter	18.840	1.460	0.0	2.0	2.0	241.1	Flood Risk
240 min Winter	18.868	1.488	0.0	2.0	2.0	254.6	Flood Risk
360 min Winter	18.898	1.518	0.0	2.0	2.0	269.7	Flood Risk
480 min Winter	18.914	1.534	0.0	2.0	2.0	278.4	Flood Risk
600 min Winter	18.923	1.543	0.0	2.0	2.0	282.9	Flood Risk
720 min Winter	18.926	1.546	0.0	2.0	2.0	284.7	Flood Risk
960 min Winter	18.923	1.543	0.0	2.0	2.0	283.1	Flood Risk
1440 min Winter	18.896	1.516	0.0	2.0	2.0	268.8	Flood Risk
2160 min Winter	18.854	1.474	0.0	2.0	2.0	247.5	Flood Risk
2880 min Winter	18.813	1.433	0.0	2.0	2.0	228.3	Flood Risk
4320 min Winter	18.716	1.336	0.0	2.0	2.0	187.9	Flood Risk
5760 min Winter	18.599	1.219	0.0	2.0	2.0	148.6	O K
7200 min Winter	18.446	1.066	0.0	2.0	2.0	112.4	O K
8640 min Winter	17.745	0.365	0.0	2.0	2.0	80.0	O K
10080 min Winter	17.618	0.238	0.0	2.0	2.0	52.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Winter	79.010	0.0	146.6	41
60 min Winter	50.812	0.0	188.5	70
120 min Winter	31.621	0.0	234.7	128
180 min Winter	23.637	0.0	263.1	186
240 min Winter	19.105	0.0	283.6	244
360 min Winter	14.037	0.0	312.4	360
480 min Winter	11.286	0.0	334.9	476
600 min Winter	9.522	0.0	344.2	590
720 min Winter	8.282	0.0	343.8	706
960 min Winter	6.640	0.0	342.9	928
1440 min Winter	4.854	0.0	340.3	1348
2160 min Winter	3.541	0.0	473.2	1672
2880 min Winter	2.828	0.0	503.4	2132
4320 min Winter	2.055	0.0	549.2	3024
5760 min Winter	1.637	0.0	582.6	3856
7200 min Winter	1.371	0.0	610.1	4616
8640 min Winter	1.186	0.0	633.0	5360
10080 min Winter	1.049	0.0	653.9	6048

CTP House, Knapp Road
Cheltenham
Gloucestershire, GL50 3QQ

Paygrove Lane



Date 27/06/2022 15:50
File 21-0760 Swale_B.SRCX

Designed by CG
Checked by KT

Innovyze Source Control 2020.1.3


Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	1.000
M5-60 (mm)	18.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.371

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From:	To:	From:	To:	From:	To:
0	4	4	8	8	12
	0.124		0.124		0.124

Cotswold Transport Planning		Page 4
CTP House, Knapp Road Cheltenham Gloucestershire, GL50 3QQ	Paygrove Lane	
Date 27/06/2022 15:50 File 21-0760 Swale_B.SRCX	Designed by CG Checked by KT	
Innovyze	Source Control 2020.1.3	

Model Details

Storage is Online Cover Level (m) 18.930

Complex Structure

Cellular Storage

Invert Level (m) 17.380 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	231.0	0.0	0.401	0.1	0.0
0.400	231.0	0.0			

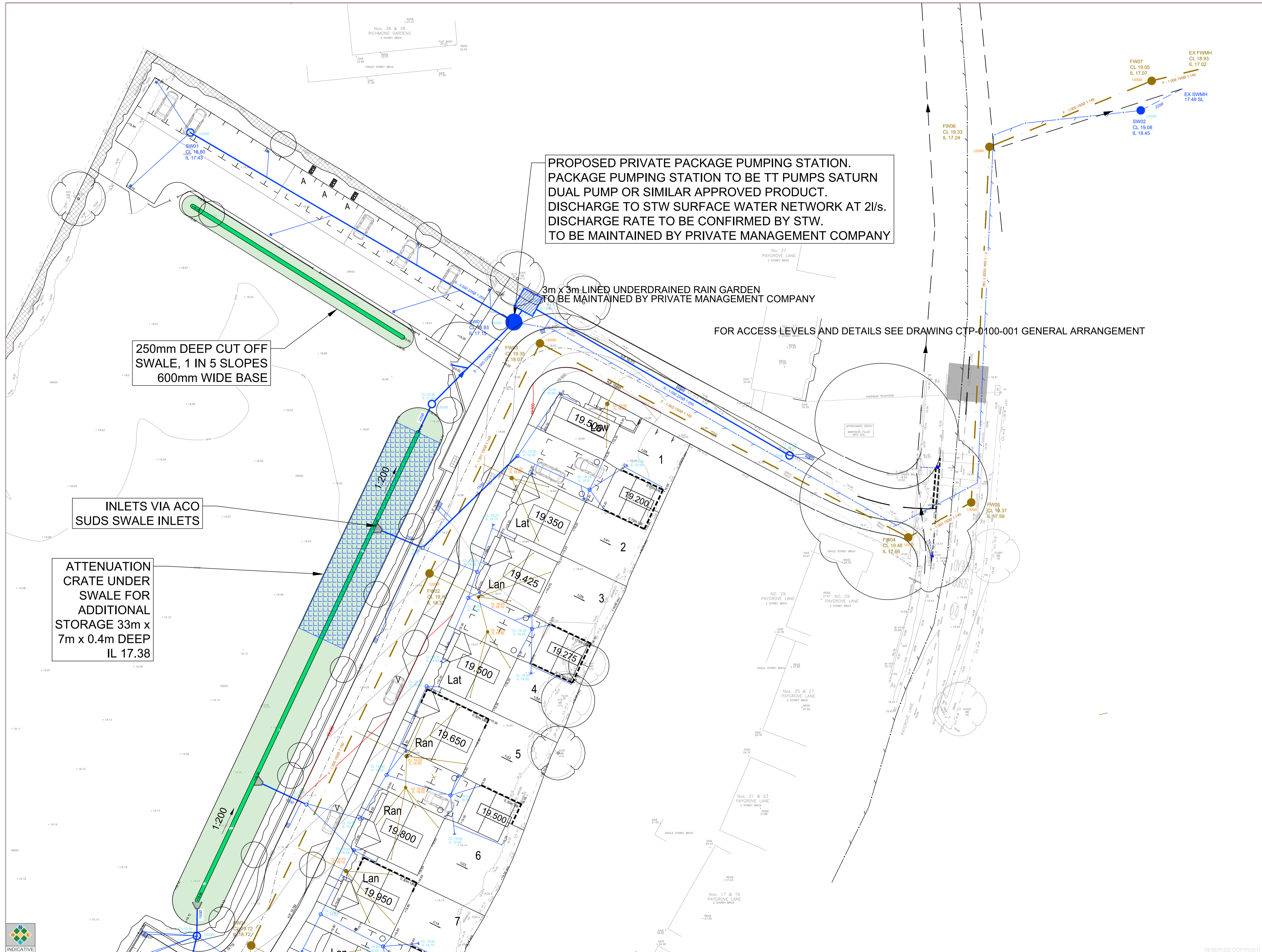
Swale

Infiltration Coefficient Base (m/hr) 0.00000 Length (m) 75.0
 Infiltration Coefficient Side (m/hr) 0.00000 Side Slope (1:X) 5.0
 Safety Factor 2.0 Slope (1:X) 200.0
 Porosity 1.00 Cap Volume Depth (m) 0.000
 Invert Level (m) 18.080 Cap Infiltration Depth (m) 0.000
 Base Width (m) 0.6

Pump Outflow Control

Invert Level (m) 17.150

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.0000	0.900	2.0000	1.700	2.0000	2.500	2.0000
0.200	2.0000	1.000	2.0000	1.800	2.0000	2.600	2.0000
0.300	2.0000	1.100	2.0000	1.900	2.0000	2.700	2.0000
0.400	2.0000	1.200	2.0000	2.000	2.0000	2.800	2.0000
0.500	2.0000	1.300	2.0000	2.100	2.0000	2.900	2.0000
0.600	2.0000	1.400	2.0000	2.200	2.0000	3.000	2.0000
0.700	2.0000	1.500	2.0000	2.300	2.0000		
0.800	2.0000	1.600	2.0000	2.400	2.0000		



PROPOSED PRIVATE PACKAGE PUMPING STATION.
 PACKAGE PUMPING STATION TO BE TT PUMPS SATURN
 DUAL PUMP OR SIMILAR APPROVED PRODUCT.
 DISCHARGE TO STW SURFACE WATER NETWORK AT 2I/s.
 DISCHARGE RATE TO BE CONFIRMED BY STW.
 TO BE MAINTAINED BY PRIVATE MANAGEMENT COMPANY

3m x 3m LINED UNDERDRAINED RAIN GARDEN
 TO BE MAINTAINED BY PRIVATE MANAGEMENT COMPANY

FOR ACCESS LEVELS AND DETAILS SEE DRAWING CTP-0100-001 GENERAL ARRANGEMENT

250mm DEEP CUT OFF
 SWALE, 1 IN 5 SLOPES
 600mm WIDE BASE

INLETS VIA ACO
 SUDS SWALE INLETS

ATTENUATION
 CRATE UNDER
 SWALE FOR
 ADDITIONAL
 STORAGE 33m x
 7m x 0.4m DEEP
 IL 17.38

- Notes:**
- Do not scale from this drawing. All dimensions are in metres, unless stated otherwise.
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 - Drawing to be read in conjunction with all other drawings. Any discrepancies are to be reported to the engineer 5 working days in advance of undertaking any work.
 - All pipework to be 1000 PVC UNO
 - All chambers to be 4500 Type D Chambers UNO. Chambers marked with diameter to be Type B Chambers (except chamber at pump).

KEY

- SURFACE WATER MANHOLE AND SEWER
- FOUL WATER MANHOLE AND SEWER
- HIGHWAY GULLY AND CONNECTION
- DIFFUSER BOX AND CONNECTION
- FINISHED FLOOR LEVELS
- SWALE
- PROPOSED LEVEL
- RISING MAIN
- HEADWALL
- GRADIENT
- UNDERBUILD (WITH HEIGHT)
- ATTENUATION CRATE
- RAINWATER GARDEN

G	05.07.22	ARCHITECTS LAYOUT UPDATED	PG	KT
F	04.07.22	SECOND SWALE LOCATION AMENDED	PG	KT
E	30.06.22	PITCH CUT OFF SWALE ADDED	PG	KT
D	27.06.22	UPDATE FOLLOWING OCC COMMENTS	PG	KT
C	14.06.22	SWALE AMENDED	PG	KT
B	13.05.22	ARCHITECT AND DRAINAGE LAYOUT UPDATED	TB	KT
A	16.02.22	ROAD AND LAYOUT AMENDED	PG	KT



CLIENT:
Cotswold Oak Ltd

PROJECT:
**Paygrove Lane,
 Longlevens**

TITLE:
**Engineering Layout
 Sheet 1**

STATUS:
INFORMATION

SCALE @ A1:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:250	26/01/2022	PG	KT	KT
JOB NO:	DRAWING NO:	REVISION:		
CTP-0760	C002	G		





INLETS VIA ACO
SUDS SWALE INLETS

ATTENUATION
CRATE UNDER
SWALE FOR
ADDITIONAL
STORAGE 33m x
7m x 0.4m DEEP
IL 17.38

- Notes:**
- Do not scale from this drawing. All dimensions are in metres, unless stated otherwise.
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 - Drawing to be read in conjunction with all other drawings. Any discrepancies are to be reported to the engineer 5 working days in advance of undertaking any work.
 - All pipework to be 1000 PVC UNO
 - All chambers to be 4500 Type D Chambers UNO. Chambers marked with diameter to be Type B Chambers (except chamber at pump).

- KEY**
- SURFACE WATER MANHOLE AND SEWER
 - FOUL WATER MANHOLE AND SEWER
 - HIGHWAY GULLY AND CONNECTION
 - DIFFUSER BOX AND CONNECTION
 - FINISHED FLOOR LEVELS
 - SWALE
 - PROPOSED LEVEL
 - RISING MAIN
 - HEADWALL
 - GRADIENT
 - UNDERBUILD (WITH HEIGHT)
 - ATTENUATION CRATE
 - RAINWATER GARDEN

F	05.07.22	ARCHITECTS LAYOUT UPDATED	PG	KT
E	30.06.22	CUT OFF SWALE ADDED	PG	KT
D	27.06.22	AMENDED FOLLOWING GCC COMMENTS	PG	KT
C	14.06.22	SWALE AMENDED	PG	KT
B	13.05.22	ARCHITECT AND DRAINAGE LAYOUT UPDATED	TB	KT
A	16.02.22	RADC AND LAYOUT AMENDED	PG	KT



CLIENT:
Cotswold Oak Ltd

PROJECT:
**Paygrove Lane,
Longlevens**

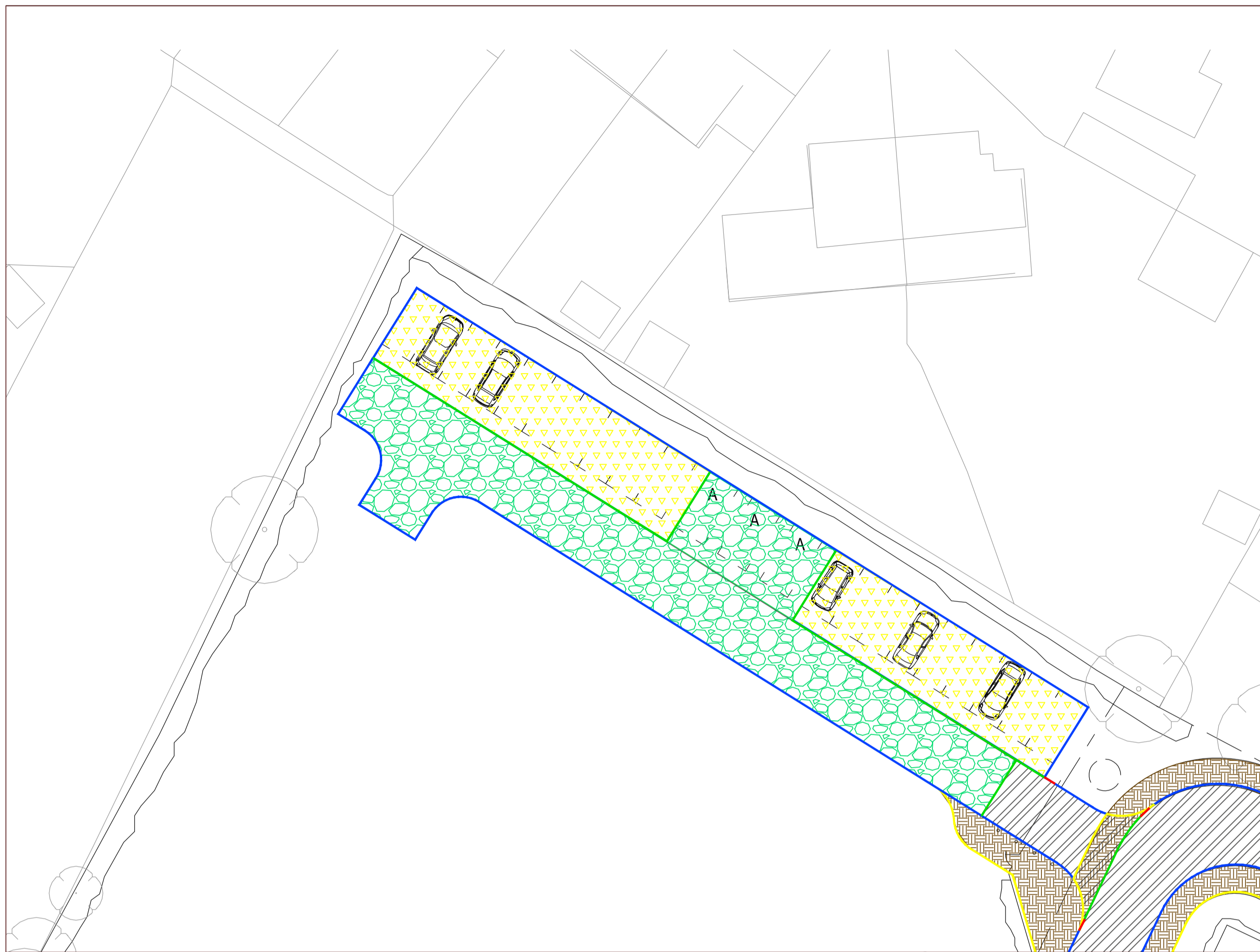
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**Engineering Layout
Sheet 2**

STATUS:
INFORMATION

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JOB NO:	DRAWING NO:	REVISION:		
CTP-0760	C003	F		




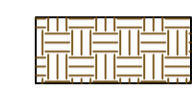
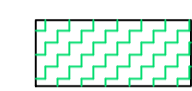
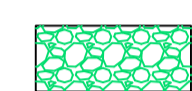





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3. Drawing to be read in conjunction with all other drawings. Any discrepancies are to be reported to the engineer 5 working days in advance of undertaking any work.

Key

-  MACADAM/TARMAC CARRIAGEWAY CONSTRUCTION
-  FOOTWAY CONSTRUCTION
-  PERMEABLE PRIVATE DRIVE CONSTRUCTION - BLOCK PAVED
-  GRASSCRETE OR GEOGRID-GRAVEL CONSTRUCTION
-  GRASSCRETE OR GEOGRID-GRASS CONSTRUCTION
-  HALF BATTERED 'H&B' KERB WITH 100mm UPSTAND
-  BN2 BULL NOSED KERB (3mm UPSTAND AT PEDESTRIAN CROSSINGS, 25mm ELSEWHERE)
-  TRANSITION/DROPPER KERB
-  EF EDGING KERB (0mm UPSTAND)

Rev	Date	Details	Drawn By	Checked By
E	20/06/22	PUBLIC PARKING FINISHES UPDATED	PG	KT
D	17/06/22	PLOT 10 FOOTPATH AND ENTRANCE TO POS UPDATED	PG	KT
C	14/06/22	GRASSCRETE ADDED	PG	KT
B	13/05/22	ARCHITECT LAYOUT UPDATED	TB	KT
A	17/02/22	DRIVE MATERIAL AMENDED	PG	KT



CLIENT: Cotswold Oak Ltd

PROJECT: Paygrove Lane, Longlevens

TITLE: Surfaces Plan

STATUS: **INFORMATION**

SCALE @ A1:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:250	16/02/22	PG	KT	KT
JOB NO:	DRAWING NO:	REVISION:		
CTP-0760	C005	E		



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Visibility Splay 2.4m x 17m (15mph)

2.4m x 15m Junction Visibility Splay (15mph)

2.4m x 15m Junction Visibility Splay (15mph)

Proposed Road Crossing and Pedestrian
Visibility Splay 1.5m x 17m (15mph)

1.5m x 15m Pedestrian Visibility Splay

1.5m x 15m Pedestrian Visibility Splay

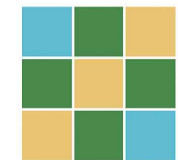
Notes:

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KEY:

- Junction Visibility Splay 2.4m x 15m
- Pedestrian Visibility Splay 1.5m x 15m

Rev	Date	Details	Drawn by	Checked by
B	04.04.22	Updated Layout & Visibility Splays	FA	JM
A	10.01.22	Updated Layout & Visibility Splays	RC	JM



COTSWOLD
TRANSPORT
PLANNING

CLIENT:

Cotswold Oak Ltd

PROJECT:

Paygrove Lane,
Longlevens

TITLE:

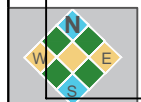
Internal Visibility Assessment

STATUS:

INFORMATION

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1: 250	10/02/22	RC	FA	JM

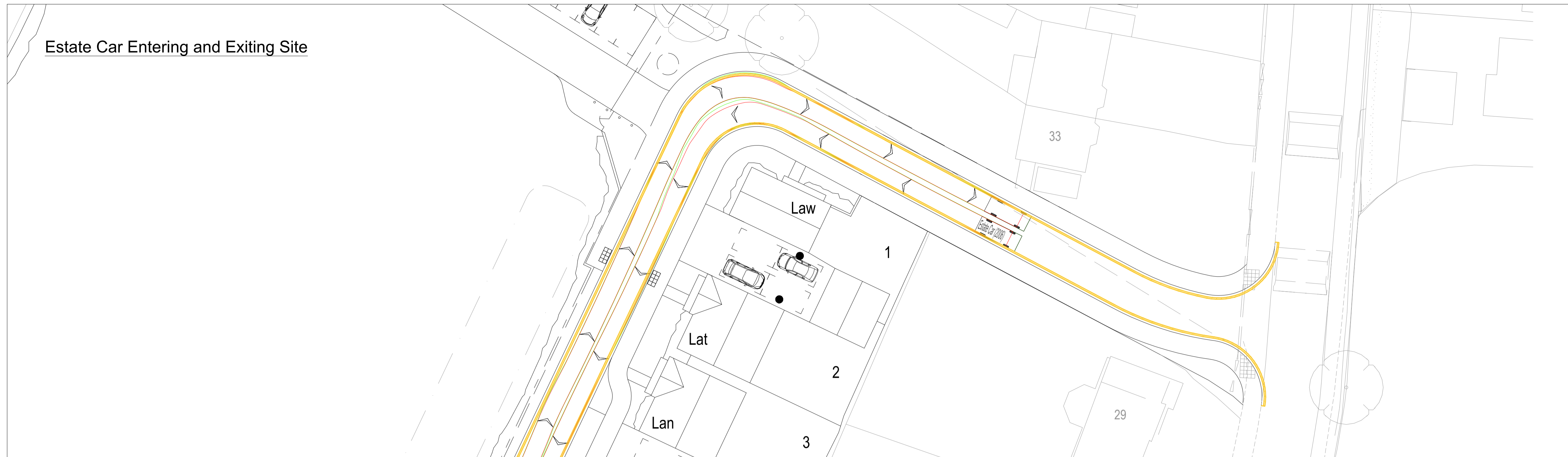
JOB NO:	DRAWING NO:	REVISION:
21-0760	SK03	B



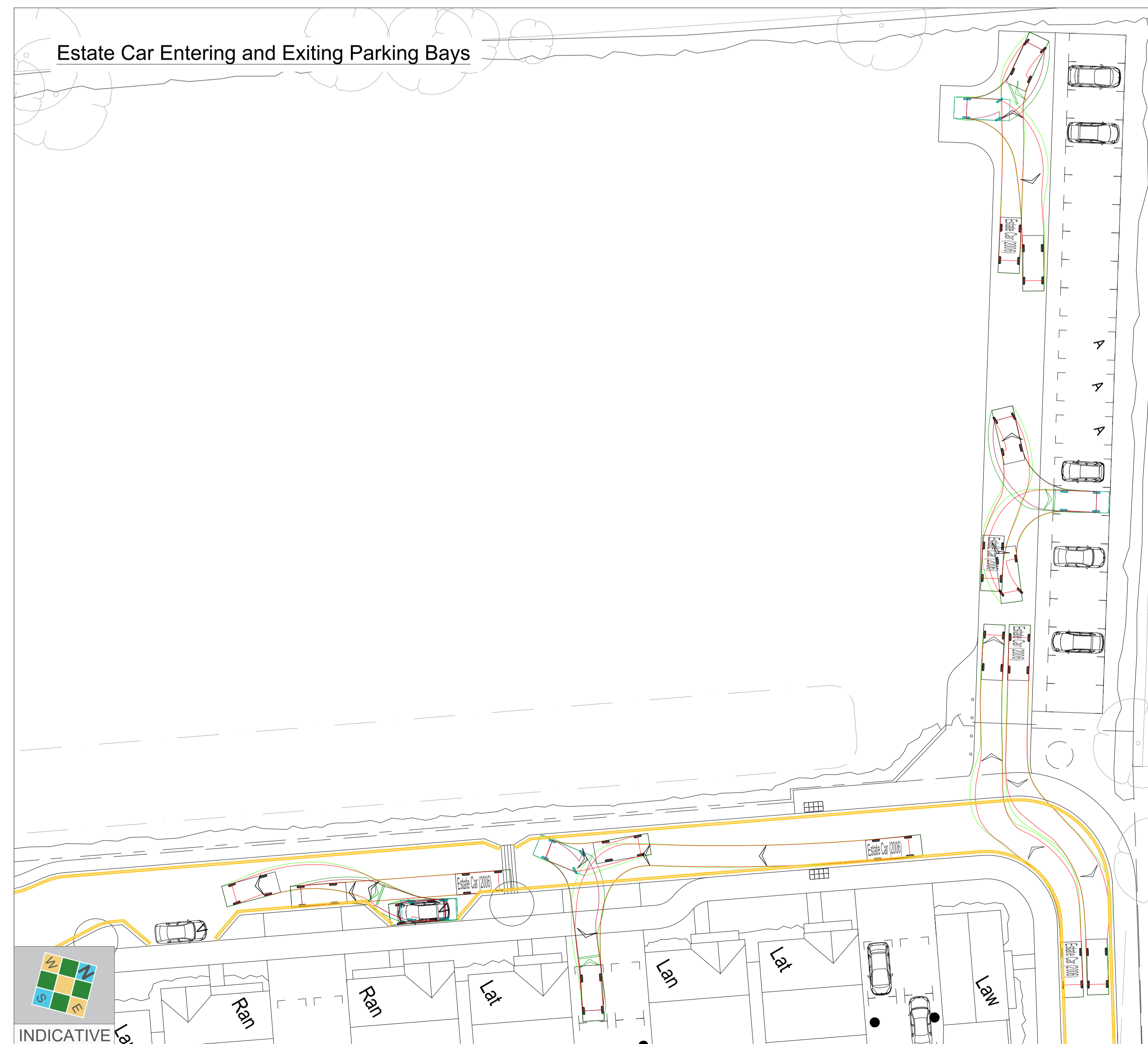
INDICATIVE

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Estate Car Entering and Exiting Site



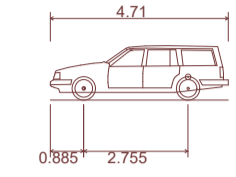
Estate Car Entering and Exiting Parking Bays



Notes:

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Vehicle Profile



Estate Car (2006)	
Overall Length	4.710m
Overall Width	1.804m
Overall Body Height	1.442m
Min Body Ground Clearance	0.207m
Max Track Width	1.756m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	5.950m

Rev	Date	Details	Drawn by	Checked by
C	26.04.22	Proposed Road Markings	FA	JM
B	04.04.22	Updated Layout & SPA	FA	JM
A	10.01.22	Updated Layout & SPA	FA	JM



COTSWOLD
TRANSPORT
PLANNING

CLIENT:

Cotswold Oak Ltd

PROJECT:

Paygrove Lane,
Longlevens

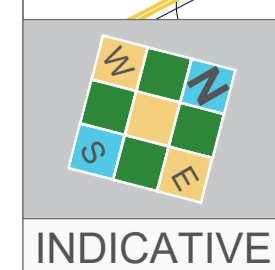
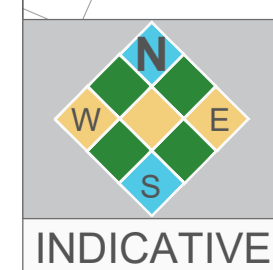
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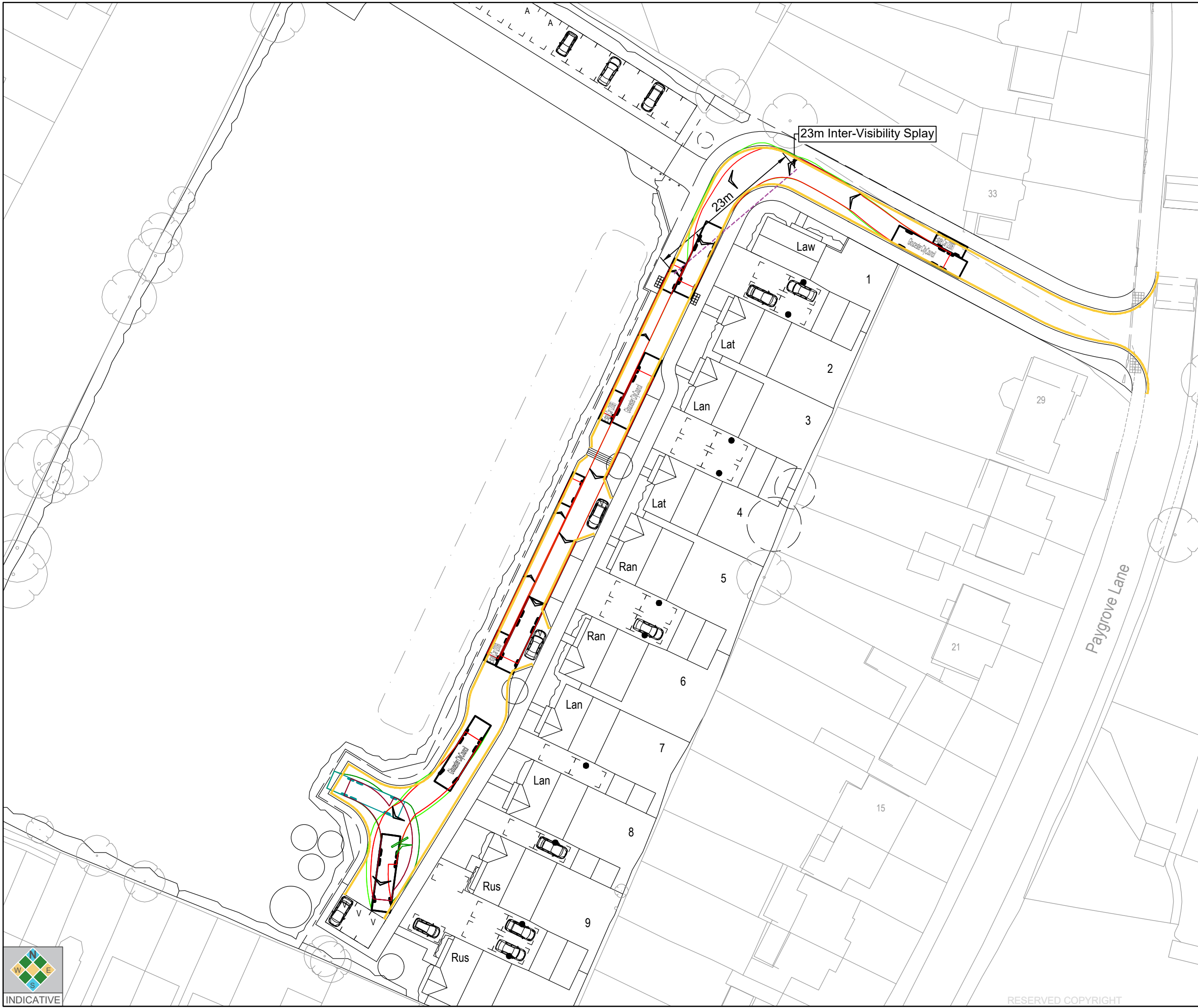
OnSite Swept Path Analysis -
Estate Car

STATUS:

INFORMATION

SCALE @ A3:	DATE:	DRAWN:	CHECKED:	APPROVED:
1: 500	26.01.2021	FA	JM	BQ
JOB NO:	DRAWING NO:	REVISION:		
21-0760	SP03	C		





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 3. Do not scale from this drawing. All dimensions are in metres, unless stated otherwise.

KEY:
 Inter-Visibility Splay

Vehicle Profile

Gloucester City Council	11.000m
Overall Length	2.650m
Overall Width	3.756m
Min Body Ground Clearance	0.333m
Track Width	2.650m
Lock to lock time	4.00s
Wall to Wall Turning Radius	11.500m

Estate Car (2006)	4.710m
Overall Length	1.804m
Overall Width	1.442m
Overall Body Height	0.207m
Min Body Ground Clearance	1.756m
Max Track Width	4.00s
Lock to lock time	5.950m
Kerb to Kerb Turning Radius	

Rev	Date	Details	Drawn by	Checked by
C	26.04.22	Updated Refuse & SPA	FA	JM
B	04.04.22	Updated Layout & SPA	FA	JM
A	10.01.22	Proposed Road Markings & Updated SPA	FA	JM



CLIENT:
Cotswold Oak Ltd

PROJECT:
Paygrove Lane, Longlevens

TITLE:
Onsite Swept Path Analysis - Refuse Vehicle Entering Site

STATUS:
INFORMATION

SCALE @ A3:	DATE:	DRAWN:	CHECKED:	APPROVED:
1: 250	26.01.2021	FA	JM	BQ
JOB NO:	DRAWING NO:	REVISION:		
21-0760	SP04	C		





COTSWOLD
TRANSPORT
PLANNING

Cotswold Oak Ltd

Paygrove Lane, Longlevens

SuDS Management Plan

May 2022



DOCUMENT REGISTER

CLIENT:	COTSWOLD OAK LTD
PROJECT:	PAYGROVE LANE, LONGLEVENS
PROJECT CODE:	CTP-21-0760

REPORT TITLE:	SUDS MANAGEMENT PLAN		
PREPARED BY:	██████████	DATE:	MAY 2022
CHECKED BY:	██████████	DATE:	MAY 2022

REPORT STATUS:	FOR PLANNING
REVISION:	01

Prepared by **COTSWOLD** TRANSPORT PLANNING LTD

CTP House
Knapp Road
Cheltenham
Gloucestershire
GL50 3QQ

██████████
██
Web: www.cotswoldtp.co.uk



Introduction

- 1.1 Cotswold Transport Planning were appointed by Cotswold Oak Ltd (herein referred to as “the Applicant”) to produce a SuDS Management Plan for a proposed residential development at Paygrove Lane, Longlevens.
- 1.2 The purpose of this Management Plan is to be read alongside drawings CTP-21-0760_C002 and CTP-21-0760_C003, the site engineering layouts. This document sets out the appropriate maintenance regime for the proposed SuDS features at the proposed development.

Maintenance Regime

- 1.3 Maintenance of SuDS features are essential to ensure that the surface water drainage system operates effectively and that flooding of the site and surrounding areas is prevented.
- 1.4 The responsibility of maintaining the shared surface water SuDS features will fall to a management company, unless within individual plot curtilages (for example individual downpipes and inspection chambers). Within individual plot curtilages, responsibility for the surface water drainage features, will be the responsibility of the plot owner.
- 1.5 For all drainage aspects a full maintenance regime should be carried out to ensure that drainage systems remain operational in accordance with manufacturer’s guidelines and drainage features maintenance requirements as set out in the SuDS Manual (C753).

Drainage Component	Required Action	Typical Frequency
Pipework, manholes, flow control chambers, catch pits and silt traps	Stabilise adjacent areas	As required
	Remove weeds	As required
	Clear any poor performing structures.	As required
	Inspect all structures for poor operation	Three monthly, 48 hours after large storms in first six months
	Monitor inspection chambers. Inspect silt accumulation rates and determine silt clearance frequencies	Annually
Swale	Remove litter and debris	Monthly (or as required)
	Cut the grass – public areas	Monthly (during growing season)

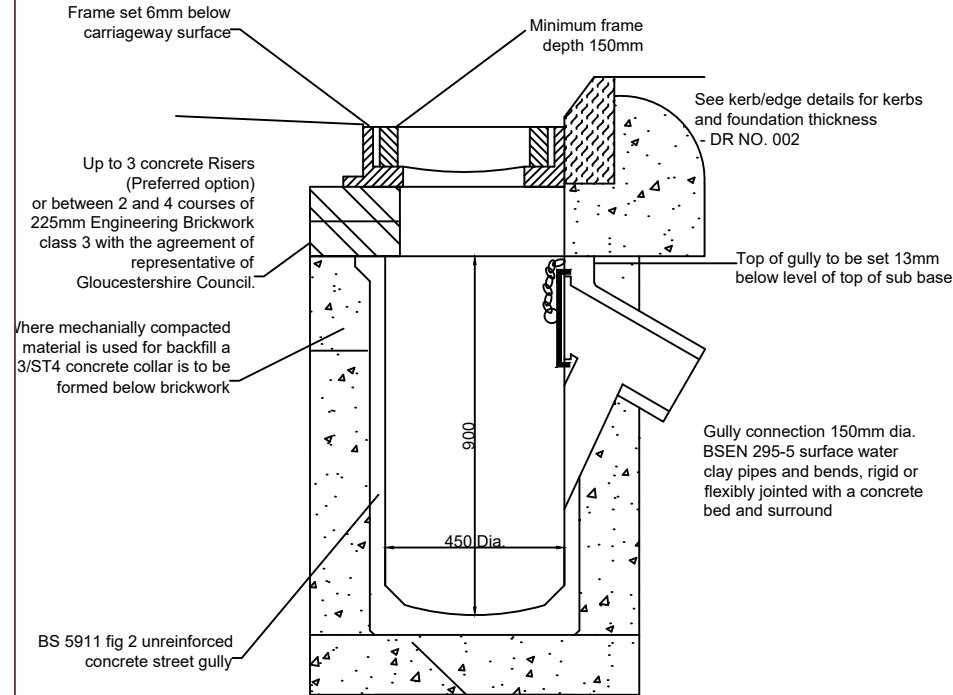
	Inspect marginal and bankside vegetation and remove nuisance plants (for first three years)	Monthly (at start, then as required)
	Inspect inlets, banksides, structures, pipework etc for evidence of blockage and/or physical damage	Monthly
	Inspect water body for signs of poor water quality	Monthly (May – October)
	Inspect silt accumulation rates and establish appropriate removal frequencies; undertake contamination testing once some build up has occurred, to inform management and disposal options.	Half yearly
	Hand cut submerged and emergent aquatic plants (at minimum of 0.1m above the pond base; include max 25% of pond surface)	Annually
	Repair erosion or other damage	As required
	Replant, where necessary	As required
	Aerate when signs of eutrophication are detected	As required
	Repair/rehabilitate inlets, outlets and overflows	As required
	Reseed areas of poor vegetation growth, alter plant types to better suit conditions, if required	As required
Permeable Paving	Brushing and vacuuming	Once a year or as required
	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required.
	Inspect for evidence of poor operation and/or weed growth	3 monthly, 48 hours after large storms in first 6 months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Table 1.1: Initial Operation and Maintenance Plan

BS EN:124(1994) Grade D400 rectangular hinged gully grating and frame bearing CE approval mark.

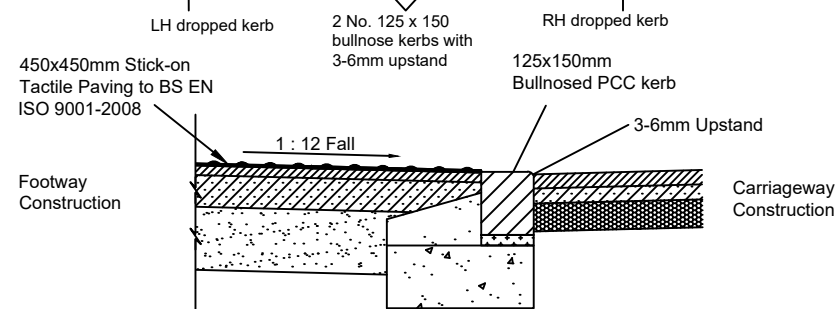
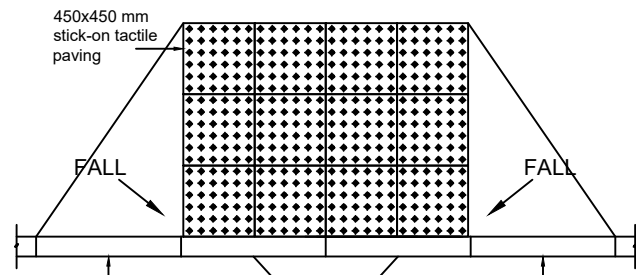
All products must satisfy the following:-

- CE Mark
- BSEN 124
- ISO9001 design & manufacture assessed by 3rd party accredited to BSEN45012.
- Product testing by 3rd party accredited to BSEN45001 & having BSEN124:1994 within its registration.
- Certificates issued by 3rd party accredited to BSEN45011 & having BSEN124:1994 within its scope of registration.
- All 3 elements of the 3rd party assessed certification to be undertaken by a single organisation.

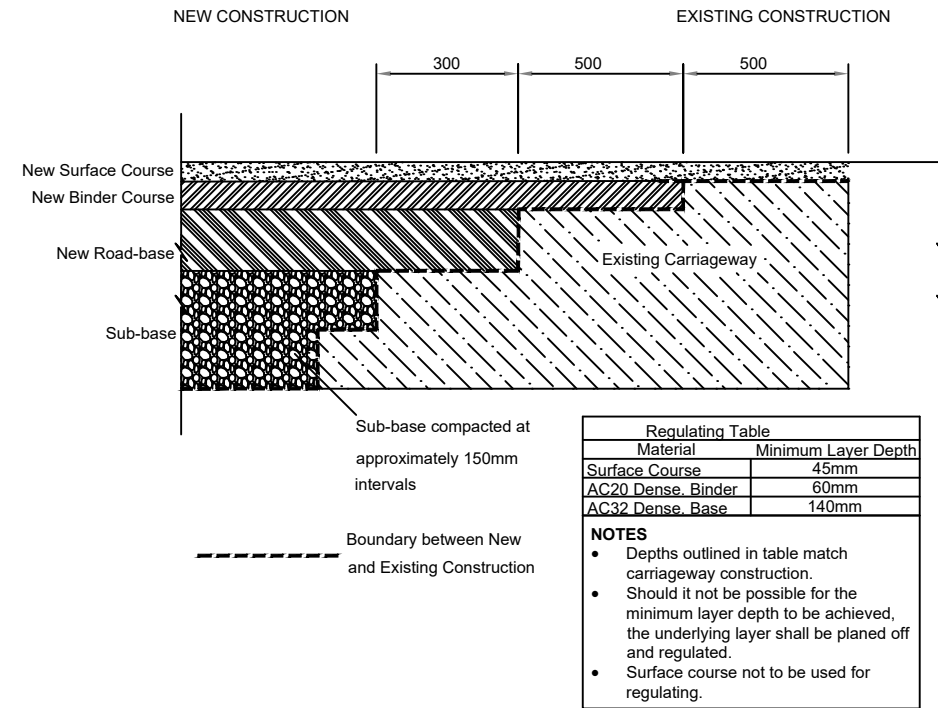


ROAD GULLY

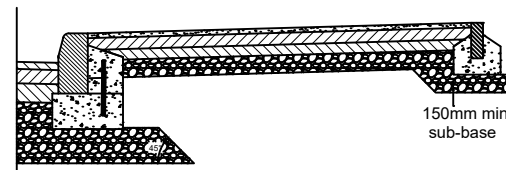
Gully set on and surrounded with a minimum of 150mm GEN3/ST4 concrete. Any over excavation to be similarly filled



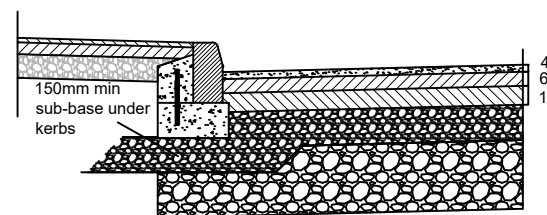
TACTILE PAVING



TIE IN TO EXISTING CARRIAGEWAY



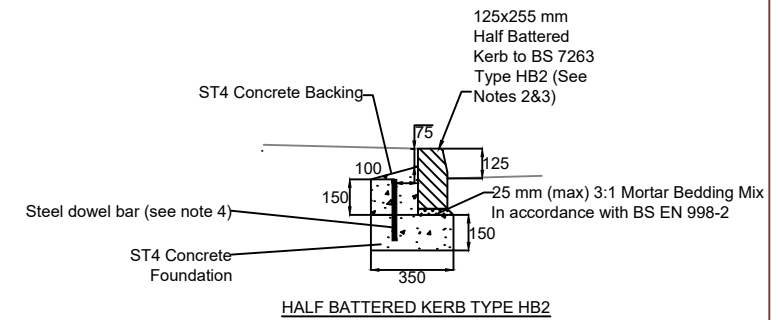
TYPICAL FOOTWAY CONSTRUCTION



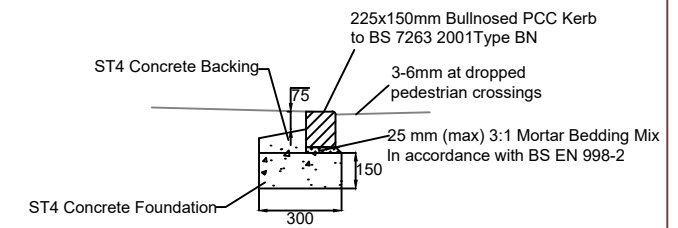
TYPICAL CARRIAGEWAY CONSTRUCTION

Sub-base and Capping

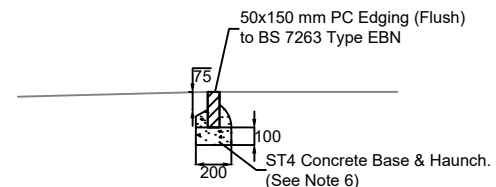
CBR	Sub-base	Capping
5% and Above	Type 1 sub-base to SHW Clause 803	225mm
+2.5%-5%	Type 1 sub-base to SHW Clause 803	150mm
	6F1 or 6F2 Capping Layer to SHW Clause 613	350mm
Below 2.5%	Type 1 sub-base to SHW Clause 803	150mm
	6F1 or 6F2 Capping Layer to SHW Clause 613	600mm



HALF BATTERED KERB TYPE HB2



BULL NOSED DROPPED KERB TYPE BN



DETAIL C - EDGING DETAIL

NOTES

1. Kerbs to be laid with slight crossfall so that water sheds from footway/cycleway wearing course without ponding in a channel on top of or behind kerb.
2. Kerbs to be laid with 2mm spaced joint.
3. ST4 Concrete manufactured in accordance with BS 8500-2 Laid in accordance with MCHW Series 2600 Pokered Finish to BS 8102:2009
4. HB2 Kerb: 250x16mm Mild Steel Dowel Bars to BS 4449 Shall be set 100mm into kerb race and spaced at 600mm centers such that dowel is closer than 150mm to kerb joint.
5. Edging kerbs may be laid onto concrete base in a plastic state

NOTES

1. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS ARE IN METRES, UNLESS STATED OTHERWISE.
2. DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ENGINEER 5 WORKING DAYS IN ADVANCE OF UNDERTAKING ANY WORK.
3. WORK TO BE UNDERTAKEN IN ACCORDANCE WITH THE GLOUCESTERSHIRE COUNTY COUNCIL SPECIFICATION.

Rev	Date	Drawn	Checked	By	By

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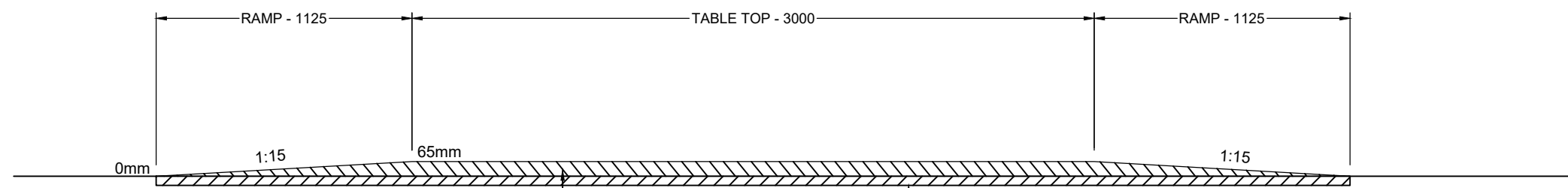
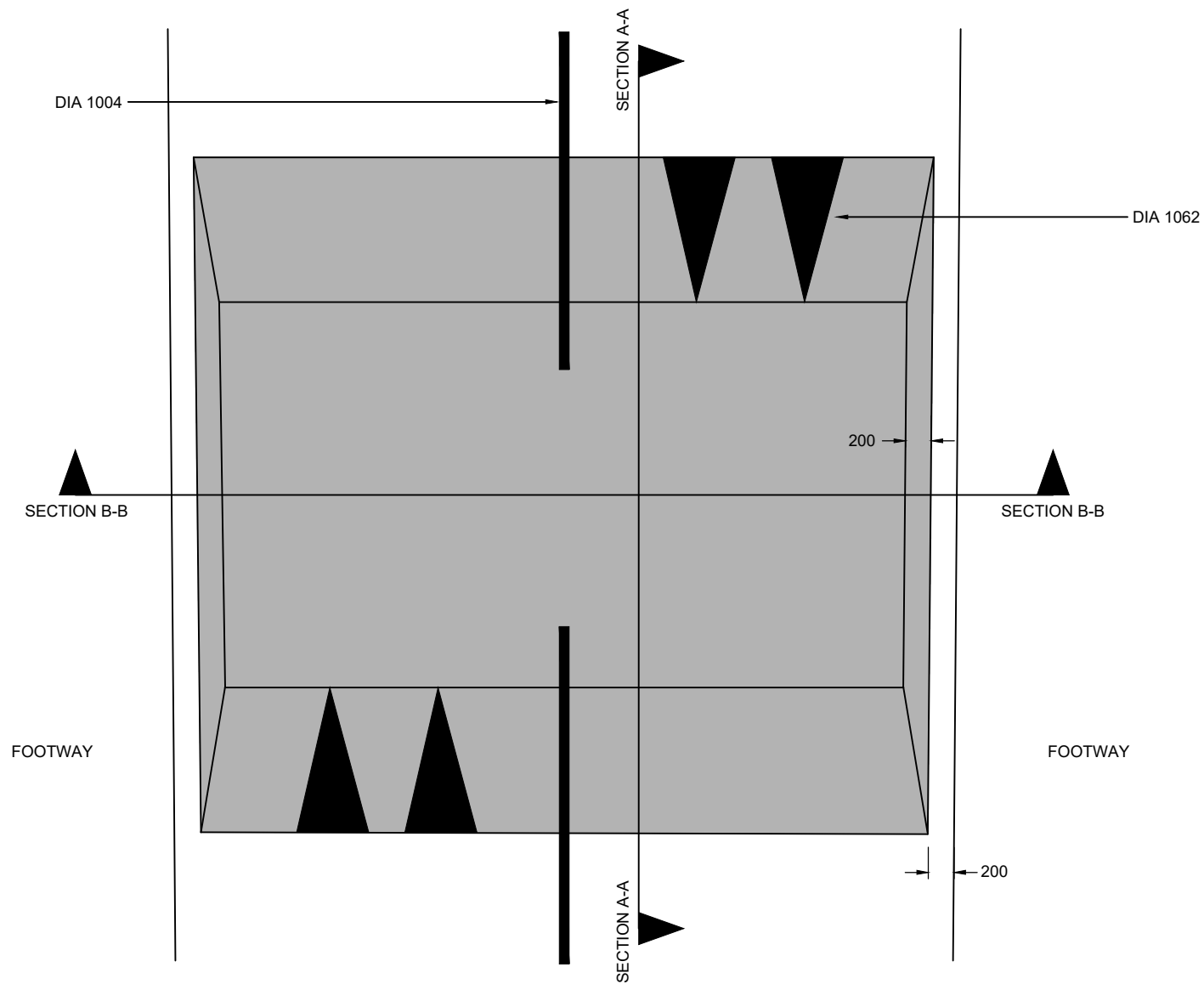
CLIENT: Cotswold Oak Ltd

PROJECT: Paygrove Lane, Longlevens

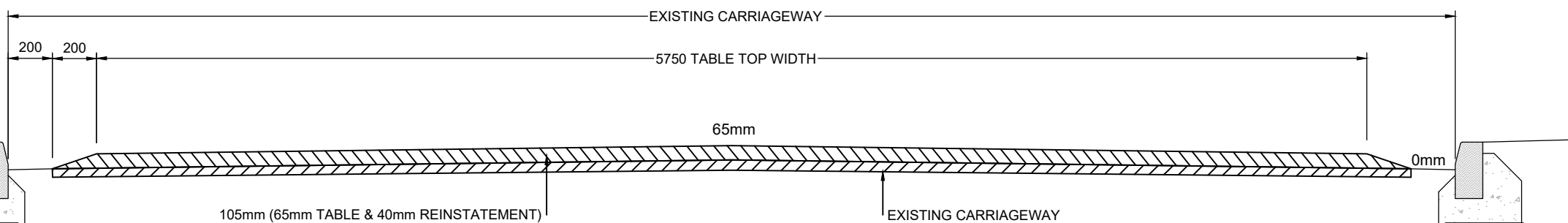
TITLE: Construction Details Sheet 1 of 2

STATUS: APPROVAL

SCALE @ A1:	DATE:	DRAWN:	CHECKED:	APPROVED:
NTS	27.04.22	SP	DH	MP
JOB NO:	DRAWING NO:	REVISION:		
21-0760	2500	-		



105mm (65mm TABLE & 40mm REINSTATEMENT)
HIGH STONE CONTENT/HOT ROLLED
ASPHALT-HSC/HRA 55/10F SURF 40/60 DES
MINIMUM PSV 55, TO DFT SHW 911



105mm (65mm TABLE & 40mm REINSTATEMENT)
HIGH STONE CONTENT/HOT ROLLED
ASPHALT-HSC/HRA 55/10F SURF 40/60 DES
MINIMUM PSV 55, TO DFT SHW 911

Rev	Date	Details	Drawn by	Checked by

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CLIENT:

Cotswold Oak Ltd

PROJECT:

Paygrove Lane,
Longlevens

TITLE:

Construction Details
Sheet 2 of 2

STATUS:

APPROVAL

SCALE @ A3:	DATE:	DRAWN:	CHECKED:	APPROVED:
As Shown	27.04.22	SP	DH	MP
JOB NO:	DRAWING NO:	REVISION:		
21-0760	2501	-		

Land at Paygrove Lane MHP Reference: 22084.101 Hedge Planting Proposals

NATIVE HEDGE (SITE PERIMETER)

Boundary vegetation and trees have been cleared. In some locations garden vegetation is growing into the site. It is suggested that where feasible this is trimmed back to the boundary to allow for the establishment of a dense hedge to the edge of the site.

GENERAL NOTES

All plants to be healthy and in compliance of BS3936 Specification For Nursery Stock and planting operations should be carried out in accordance with BS4428 Code of Practice for General Landscape Operations.

IMPLEMENTATION PROGRAMME

Bareroot whips to be planted within the dormant season (Nov-March) within the first available planting season.

GROUND PREPARATION

All soil areas to be cultivated prior to the commencement of planting and seeding operations. Works to include the loosening, aerating and breaking up soil to a depth of 400 mm, with weeds and stones/rubbish removed.

All areas to be planted are to be treated with roundup or similar approved herbicide at least 14 days before planting operations commence

NATIVE HEDGEROW PLANTING

All hedge planting shall be undertaken in a double staggered row to be pit planted in sufficient sized pits capable of fully accommodating the root system. Dead damaged or straggly branches shall be removed after planting. All plants shall be fitted with strim and protection guards, where possible these shall be supplied in black or green with sufficient support and means to allow for expansion.

MULCH

Bark mulch (not shredded timber) is to be applied to all hedge areas and spread to a minimum depth of 50 mm with particle size of 30-50mm. The mulch shall be free of disease, pest or weed contamination, treated with a fire retardant and be supplied with a certificate of quality.

REPLACEMENT

During each annual inspection any planting on site that is missing, has died or failed within the defects period will be replaced in accordance with the planting schedule in the next planting season.



Native hedge - North (65m)
Mixed native hedge planting to supplement existing vegetation to site boundary.

Native hedge - West (144m)
Mixed native hedge planting to supplement existing vegetation to site boundary.

Ornamental hedge - East (130m)
Mixed flowering hedge, predominantly evergreen

Native hedge - South (63m)
Mixed native hedge planting to supplement existing vegetation to site boundary.

Plant Schedules

All plants to be supplied from an HTA approved nursery and in accordance with the National Plant Specification.

NATIVE HEDGE MIX		
Species	% Mix	Size/Type
Acer campestre	10	1+1 Transplant 40-60cm Bareroot
Cornus sanguinea	5	1+1 Transplant 40-60cm Bareroot
Corylus avellana	5	1+1 Transplant 40-60cm Bareroot
Crataegus monogyna	65	1+1 Transplant 60-80cm Bareroot
Ilex aquifolium	10	40-60cm, 3L
Rosa arvensis	5	1+1 Transplant 60-80cm Bareroot

Native hedges: Plant in a double staggered row, 300 mm between plants and 400mm between rows. (7 plants per m). Protect with rabbit proof, biodegradable tree/shrub shelter/ guard 60cm in height.

ORNAMENTAL HEDGE		
Species	% Mix	Size/Type
Choisya tenata	20	30-40cm, Bushy, 4 breaks, 3L
Escallonia 'Apple Blossom'	20	40-60cm, Bushy, 4 breaks, 3L
Lonicera 'Baggesen's Gold'	20	30-40cm, Bushy, 3 breaks, 3L
Prunus x cistena 'Crimson Dwarf'	20	30-40cm, Bushy, 3 breaks, 3L
Prunus laurocerasus 'Otto Luyken'	20	30-40cm, Bushy, 3 breaks, 3L

Ornamental hedges: Plant in a double staggered row, 450 mm between plants and 400mm between rows. (5 plants per m).

IMPLEMENTATION PROGRAMME
All hedge planting stock to be planted within dormant season (Nov -March) within the first planting season following completion of the building works.

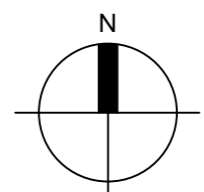
MAINTENANCE PROGRAMME
All planting shall thereafter be maintained for a period of 5 years. If during this time any hedge plants are removed, die, or are seriously diseased these shall be replaced during the next planting season with others of similar size and species unless the local planning authority gives written consent to any variation. If any plants fail more than once, they shall continue to be replaced on an annual basis until the end of the 5 year maintenance period.

Key

- Existing trees to be retained
- Tree planting - refer to planting details by Coombes Everitt
- Native hedge planting
- Ornamental hedge planting
- Amenity grass to play field area
- Meadow grass seeding to attenuation basin (Meadow mixture for wetlands)

Revisions:	Date:	Drawn:	Checked:
Project: Paygrove Lane, Longlevens			
Client: Cotswold Oak Ltd			
Title: Hedge Planting Proposals			
Drawing number: 22084.101		Rev:	
Status: For Planning			
Drawn By: HS	Checked By: BD	Date: 24.5.22	Scale @ A1: 1:250

Paygrove Lane, Longlevens Hedge Planting Proposals





Cotswold Oak Ltd

Paygrove Lane

Construction Environmental Management Plan

663578-00 (01)

APRIL 2022





RSK GENERAL NOTES

Project No.: RSK/663578-00 (01)

Title: Paygrove Lane Construction Environmental Management Plan

Client: Cotswold Oak Ltd

Date: 29 April 2022

Office: Manchester

Status: Rev01

Author

Signature

Date:

Project manager

Signature

Date:

RSK ENVIRONMENT Ltd (RSK) has prepared this report for the sole use of the client, showing reasonable skill and care, for the intended purposes as stated in the agreement under which this work was completed. The report may not be relied upon by any other party without the express agreement of the client and RSK. No other warranty, expressed or implied, is made as to the professional advice included in this report.

Where any data supplied by the client or from other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by RSK for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.

No part of this report may be copied or duplicated without the express permission of RSK and the party for whom it was prepared.

Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK ENVIRONMENT Ltd.

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1 INTRODUCTION

RSK Environment Ltd. has been commissioned by Cotswold Oak Ltd, to produce a Construction Environmental Management Plan (CEMP) to support the discharge of planning conditions associated with the proposed development of land at Playing Field Rear 3-29 at Paygrove Lane, Gloucester with Gloucestershire City Council (GCC) (ref: 16/1558/OUT).

1.1 Aim

The aim of this CEMP is to ensure that the construction works outlined in this document do not result in unacceptable environmental impacts. In particular, the CEMP shall:

- Provide a mechanism for ensuring that measures to mitigate potentially adverse environmental impacts are implemented
- Provide assurance to third parties that their requirements with respect to environmental performance will be met
- Provide a framework for compliance auditing and inspection to enable the Project to be assured that its aims with respect to environmental performance are being met.

1.2 Objectives

The main objective of this CEMP is to set out how construction works will be managed to reduce, avoid and mitigate adverse impacts.

Accordingly, this CEMP contains the site-specific control measures that will be applied by the main contractor and where relevant its sub-contractors during the construction stages. In preparing this CEMP the requirements of the client's Health and Safety and Environmental (HSE) management system, planning conditions and site-specific assessment and management plans were taken into consideration.

A copy of this CEMP will be provided to each Contractor working on behalf of Cotswold Oak Ltd. The Contractor is required to maintain a copy of the CEMP at the work site office for reference by the entire workforce. It must be accessible to all site personnel and representatives of the relevant enforcement authority, and all subcontractors.

1.3 Statutory Guidance and Best Practices

All site works shall be undertaken in compliance with this CEMP and with all applicable legal and regulatory requirements. It is the full responsibility of the contractors to ensure that their works do not contravene legal requirements, and adherence to this CEMP alone cannot be a full defence regarding legal action against the client.

The contractor shall comply as necessary with the Construction (Design and Management) Regulations 2015 (CDM) and shall comply with all applicable pollution control regulations in which case the contractor shall obtain and keep current any necessary consent, authorisation, approval or permission. The contractor shall actively maintain a regulatory compliance checklist (e.g. a Consents Register).

The contractor should where relevant undertake construction works in accordance with current guidance and best practice, including:

- Environmental Good Practice on Site Guide (C741, 4th edition, Ciria, 2015);
- Gloucestershire City Council (GCC) requirements;
- Design Manual for Roads and Bridges (DMRB) standards;
- Pollution prevention guidance set out at <https://www.gov.uk/guidance/pollution-prevention-for-businesses>
- Relevant pollution prevention guidance (PPG) and/or Guidance for Pollution Prevention (GPP) (both now withdrawn); see for instance <http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-pgps-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/>
- Control of Dust from Construction Sites (CRE DTi Feb 2003); and
- British Standard 5228-1:2009+A1:2014: 'Code of Practice for noise and vibration control on construction and open sites – Noise'.

This CEMP is a live document and is subject to change throughout the project. Where necessary, agreement to the changes will be sought from the local authority.

1.3.1 Environmental Management System

This document has been produced in accordance with principles outlined in ISO14001:2015. The Principal Contractor is required to adhere to these environmental values and standards whilst implementing this document, including the promotion of environmental awareness among their staff, sub-contractors and suppliers engaged on the construction works.

The Principal Contractor appointed to the Project will be expected to demonstrate the same level of commitment to the principles of ISO 14001:2015, and to have an EMS certified to the standard. The Principal Contractor is required to mirror the RSK environmental values and standards including the promotion of these values and standards among their staff, sub-contractors and suppliers engaged on the construction works.

2 THE PROJECT

The client is Cotswold Oak Ltd who shall have ultimate responsibility for the construction works. The client will employ contractor (and directly or indirectly as required) certain sub-contractors to carry out the works on site.

The main details of the project are summaries in this section; the description is limited to an overview of the main elements/approaches sufficient to provide an understanding of the approach to the planned works, and the roles of those main parties responsible for undertaking each part of the works.

2.1 Outline Project Description/Scope of Works

The proposed development was submitted for planning approval for the construction of a proposed residential development which comprises:

- A redevelopment of up to 10 dwellings (approximately 0.47ha);
- Public open space including associated landscaping; and
- 22 car parking spaces.

The proposed residential development covers an area of c.1.42ha for which outline planning permission was granted by GCC on the 12th of December 2021 (ref: 16/1558/OUT). The proposed site is a former sports field.

The CEMP has been prepared to discharge planning condition 17 which states:

“Prior to commencement of the development hereby permitted, an Environmental Construction Management Plan shall be submitted to and approved in writing by the Local Planning Authority which specifies mitigation measures in respect of the following issues (including preparatory groundworks) in order to prevent nuisance. The development shall not be commenced until the approved plan has been made fully operational, and thereafter it shall be operated and maintained for the full duration of the construction phase. The scheme shall include details of how dust will be qualitatively monitored:

1. *Dust from demolition*
2. *Dust from groundworks*
3. *Dust from haul roads*
4. *Dust from stockpiles and material handling/removal*
5. *Light from security compounds*
6. *Storage of waste*
7. *Keeping highways clear of mud*
8. *Parking for contractors*

Reason - To safeguard the amenities of the area and the waterway in accordance with Policies FRP.9, FRP.10, FRP.11 and BE.21 of the 2002 City of Gloucester Second Deposit Local Plan, Policy SD15 of the Gloucester, Cheltenham and Tewkesbury Joint Core Strategy Main Modifications 2017 and Paragraphs 17, 109, 120 and 123 of the

NPPF. This is necessary pre-commencement of development due to the harm that could otherwise be caused by early-phase works.”

A detailed drawing showing the proposed site perimeter and layout, prepared by Costwold Oak, has been included as Appendix 1 of this CEMP to discharge planning condition 17. Site offices, welfare facilities, wheel washing, delivery and laydown areas are to be identified at the detailed design stage of the development.

2.2 Site Location and Plan

The proposed residential redevelopment is located at land at Playing Field Rear 3-29, Paygrove Lane, Gloucester, GL2 0AZ, as shown in Figure 2.1 below.

The site is located approximately 2.5km to northeast of Gloucester City Centre. The site is rectangular in shape comprising mainly of a playing field grassland, existing hedgerow and hardstanding with an access track running north and east of the grassland. The site is bounded by residential areas with a park to the east adjacent to Paygrove Lane. The wider context of the site includes arable fields and woodland which lie approximately 850m to the east, separated from the site by residential development and the A417.

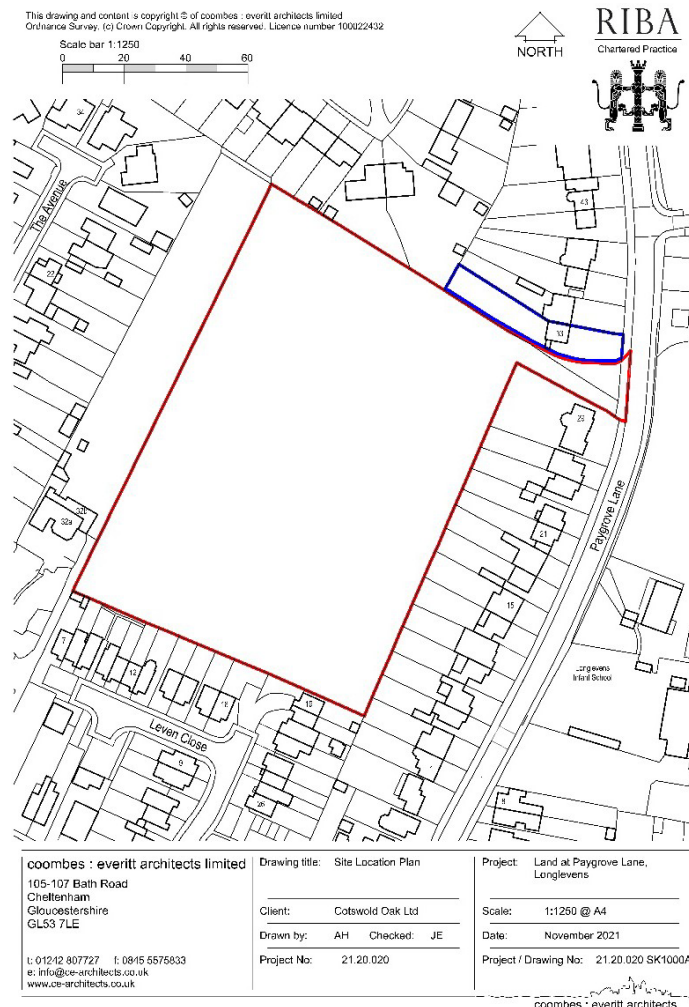


Figure 1.1: Location of the Site

2.3 General Site Arrangements

2.3.1 Site Set Up and Compound

The site and compounds shall be constructed in accordance with the client HSE Policy. Full details can be obtained by reference of the HSE Manual however as a minimum this will include the display of:

- Environmental Policy;
- Details of environmental constraints including mapping;
- Traffic Management Information; and
- Site Specific Information.

2.3.2 Fencing and Site Security

Fencing and security arrangements at the compound will include secure anti-tip fencing, CCTV Cameras security plazas and guards with canine units at night and out of hours. Such security measures will be provided 24/7.

The following measures may be used by the contractors to prevent unauthorised access to the site:

- Use of high perimeter fencing or hoarding, but only where necessary for site security and public safety, and placed so that Public Rights of Way (PRoW) PRoW are maintained or appropriately diverted;
- Site lighting at site perimeters;
- Adequate security guards and patrols;
- CCTV and infra-red surveillance and alarm systems where required;
- Communications initiatives for local schools to warn of dangers, and involving schools in response to incidents involving their pupils;
- Consultation with neighbours on site security matters;
- Consultation with local crime prevention officers on security proposals for the site with regular liaison to review security effectiveness and response to incidents; and
- Immobilisation of plant out of hours, removing or securing hazardous materials from site, securing fuel storage containers and preventing unauthorised use of scaffolding to gain access to restricted areas and neighbouring properties.

2.3.3 Site Lighting

Site lighting will be at the minimum luminosity necessary and use low-energy-consumption fittings. The luminosity of the perimeter lighting will be sufficient to provide a safe route for the passing public. Precautions will be in place to ensure site hoarding does not cast shadow on neighbouring footpaths, roads and amenity areas.

Lighting will be activated by motion sensors and will comply with the Institute of Lighting Professionals' Guidance notes for the reduction of obtrusive light and the provisions of BS 5489, Code of practice for the design of road lighting, where applicable.

Lighting will also be designed, positioned and directed so as not to unnecessarily intrude on adjacent buildings, ecological receptors, structures used by protected species and

other land uses to prevent unnecessary disturbance, interference with local residents, railway operations, passing motorists, or the navigation lights for air or water traffic. This provision will apply particularly to sites where night working will be required.

2.3.4 Working Hours

The normal hours of working (including access and egress) on any part of the development during the construction period will be:

- 07:30 hours to 17:00 hours Mondays to Fridays.
- 08:00 hours to 13:00 hours on Saturdays.

An additional one hour start up and shut down period is permitted at the start and end of each day. This time may be used for deliveries, movement to place of work, unloading, maintenance and general preparation work. There will be no operation of plant or machinery liable to cause a nuisance.

The following controls will also apply to the works:

- No works will take place on Sundays or Public Holidays
- There will be no stacking of lorries on the site boundary outside of the working hours.

Any works outside these normal hours will be subject to the requirement to obtain consent from the Local Authority. The agreement should include working hours and methods to ensure that the 'best practicable means' to control potential nuisance are included.

Normal hours of work set out above do not apply to emergency works nor to equipment that is required to operate continuously.

2.4 Project Programme and Key Dates

It is anticipated that the development will take approximately 12 months with works commencing June/July 2022.

3 ENVIRONMENTAL ASPECTS

For the Paygrove Lane development, the key environmental sensitivities of the sites and in the vicinity of the site are identified and described in this section. In addition, the potential for environmental impacts on these features, likely to arise as a result of the planned construction works to be undertaken, are also summarised in this section.

3.1 Residents and Local Community

The site is located within proximity to a number of residential and commercial properties including those located in the local settlement areas known as Longlevens and southeast is Barnwood. Further receptors, The University of Gloucestershire, is located southwest of the site, as well as properties east and north.

Given the location and nature of the development, the construction process may impact upon residential properties located within the vicinity of the proposed development. The particular sensitivity of each receptor to various construction activities will depend on location and proximity to the site and identified transport routes, however, it is anticipated that the following environmental issues will be of concern:

- Nuisance including:
 - Mud on roads spread by construction traffic;
 - Excessive or poorly directed light; and
 - Litter.
- Dust and fumes from transport and construction activity;
- Noise and vibration from transport and construction activity;
- Traffic and transport disruption;
- Disruption to business; and
- Reduction of access to amenity space.

3.2 Air Quality

Atmospheric emissions from construction activities will depend on a combination of the potential for emissions (the type of activity and prevailing conditions) and the effectiveness of control measures. In general terms, there are two sources of emissions that will need to be controlled to minimise the potential for adverse environmental effects:

- Exhaust emissions from site plant, equipment and vehicles; and,
- Fugitive dust emissions from site activities.

3.2.1 Exhaust Emissions from Plant and Vehicles

The operation of vehicles and equipment powered by internal combustion engines results in the emission of exhaust gases containing the pollutants Nitrogen Oxide (NO_x), Particulate Matters less than 10 µm (PM₁₀), volatile organic compounds, and carbon

monoxide (CO). The quantities emitted depend on factors such as engine type, service history, pattern of usage and fuel composition. The operation of site equipment, vehicles and machinery will result in emissions to atmosphere of exhaust gases, but such emissions are unlikely to be significant, particularly in comparison to levels of similar emission components from vehicle movements on the surrounding highways network.

Construction traffic is likely to comprise haulage/construction vehicles and vehicles used for workers' trips to and from the site.

3.2.2 Fugitive Dust Emissions from Construction Works

Fugitive dust emissions arising from construction activities are likely to be variable in nature and will depend upon the type and extent of the activity, soil type and moisture, road surface conditions and weather conditions. Periods of dry weather combined with higher-than-average wind speeds have the potential to generate more dust.

Construction activities that are considered to be the most significant potential sources of fugitive dust emissions are:

- Earth moving, due to the handling, storage and disposal of soil and subsoil materials;
- Construction aggregate usage, due to the transport, unloading, storage and use of dry and dusty materials (such as cement and sand);
- Movement of heavy site vehicles on dry or untreated haul routes; and
- Movement of vehicles over surfaces where muddy materials have been transferred off-site (for example, onto public highways).

Fugitive dust arising from construction and demolition activities is mainly of a particle size greater than the PM10 fraction (the particle size which can potentially impact upon human health); however, it is noted that demolition and construction activities may contribute to local PM10 concentrations.

Appropriate dust control measures, as described in the Control of Dust from Construction Sites (BRE DTi Feb 2003), will be implemented. These can be highly effective for controlling emissions from potentially dust generating activities identified above, and adverse effects can be greatly reduced or eliminated.

3.3 Noise and Vibration

Construction phase noise impacts arising from equipment, vehicular movements and processes related to the construction of the proposed development have the potential for a short-term impact however standard construction methodologies are to be employed to control noise and vibration during construction in accordance with current legislation and standards including British Standard 5228-1:2009+A1:2014: 'Code of Practice for noise and vibration control on construction and open sites - Noise'.

The Control of Pollution Act 1974 (COPA 74) gives local authorities power for controlling noise and vibration from construction sites. If deemed necessary by the Council, a Section 61 consent may be utilised to agree methods, times durations and noise levels with Cotswold Oak.

During site preparation, construction and maintenance, the movement of plant and vehicles on site will result in noise and vibration. Additionally, construction traffic routes can lead to elevated traffic noise for receptors alongside these routes. This will be temporary in nature (12 months).

Best practicable means (BPM) will be applied during construction works to minimise noise (including vibration) at neighbouring residential properties and other sensitive receptors (including local businesses and quiet areas designated by the local authority) arising from construction activities.

Jacksons Acoustic Fencing will be implemented to the site boundary, preventing noise for up to 28-32 decibels (Db). Examples of potential Jackson Acoustic Fencing as shown Figures 3.1 and 3.2 below.



Figure 2.1 Jacksons 12k Envirofence



Figure 2.2 Jacksons Acoustic Reflective

3.3.1 Measures to Reduce Potential Noise and Vibration Impacts

Best Practicable Means (BPM) are defined in Section 72 of the Control of Pollution Act 1974 and Section 79 of the Environmental Protection Act 1990 as those measures which are “reasonably practicable having regard among other things to local conditions and circumstances, to the current state of technical knowledge and to financial implications”.

3.4 Ecology

All Ecology was commissioned to undertake a Walkover Survey of the site in March 2022. There are no national or local designations for nature conservation along or adjacent to the route of the temporary access road, with the closest SSSI being 1.8km north of the site boundary.

Site Overview

The site is approximately 1.4ha in size comprising of improved grassland. On the west boundary there is a species-poor hedgerow, with the other boundaries being fenced with scrub. The immediate surrounding area comprises residential areas with rural, managed land of an agricultural nature approximately 830m to the east and is considered to be of limited ecological value, there is occasional residential green spaces surrounding the site.

3.4.1 Bats

There are no buildings on site and only small numbers of mature trees on the boundaries of the site. The trees were inspected for potential bat roosting features but none were

found. The site is generally open and any foraging areas are likely to be restricted to the boundary vegetation with west boundary hedge being the main area of interest. This hedge may also be used by bats commuting from possible roosting sites and foraging areas in the surrounding area although species are likely to be restricted to urban species.

3.4.2 Badgers

The grassland provides good foraging habitat for Badgers and a number of mammal pats were found through the grass. It is uncertain these were attributed to Badgers. The site was inspected for signs of Badger activity but none were found. It is likely that Badgers are absent from the site but they may pass through the site on occasion.

3.4.3 Hazel Dormouse

The potential for the site to support Dormice is negligible. Potential foraging habitat is limited to the species-poor hedge along the west boundary. The hedgerow is not connected to other suitable habitat such as woodland or extensive networks of hedges. Therefore it is likely that Dormice are absent from the site.

3.4.4 Other mammals

The section of species-poor hedge and scattered scrub provide cover for a range of mammal species, including Hedgehogs, but the majority of the site is open improved grassland and as such is only expected to support a limited number of common small mammals.

3.4.5 Birds

The species-poor hedge has potential to support nesting and foraging birds. The survey was carried out in January, which is outside the nesting season so All Ecology carried out a search for old nests, none were found. It is possible nests could have been missed in denser areas of the hedge and scrub and it is likely birds will nest in the future.

The grassland is unlikely to provide a foraging habitat for foraging resource for birds, but the species-poor hedge and areas of scrub are likely to be utilised by a range of birds.

3.4.6 Reptiles

The small area of scrub and hedgerow provide some cover for reptiles but the improved grassland is poor foraging habitat. The grassland is overgrown but has only recently developed from the short, regularly managed grassland that was previously recorded. The variation in structure and mosaic of habitats preferred by reptiles is still not present except for some small, isolated patches. The site is surrounded by residential dwellings and gardens in an urban area and therefore is isolated from any off-site optimal reptile habitat. It is therefore likely that they are still absent from the site.

3.4.1 Arboricultural Impact Assessment

An Arboricultural Impact Assessment has been carried out, prior to any site preparation works there is an outline for one small tree and one small tree group to be removed. They are of quality and amenity value. Once construction has been completed there will be new trees planted to mitigate for the loss of trees and enhance tree cover on site.

No trees of significant value shall be removed to enable the construction of the proposal.

3.5 Water Resources and Flood Risk

No main rivers are located in the vicinity of the site. The site sits within Flood Zone 1 as identified on the Environment Agency indicative flood map, and therefore, the probability of river or sea flooding is low with a 1 in 1,000 annual probability of river or sea flooding (<0.1%).

Temporary measures to manage runoff (quality and quantity) during construction to prevent impacts or pollution of the wet ditch will be addressed within Section 4 of this CEMP. These measures will be inclusive of any required mitigation and/or monitoring, as required as well as current best practice measures.

3.6 Traffic and Transport

The main access to the development will be via the B4063 to the east via Old Cheltenham Road, Church Road and Paygrove Lane. The A40 is north of the site and creates a separate access route.

There are 22 parking spaces on site suitable for accessible use as well as the additional housing parking spaces.

The development is inclusive of vehicle access for emergency service vehicles and car turning areas.

3.6.1 Public Rights of Way

There are no Public Rights of Way (PRoW) that pass through the site.

If works need to take place near the footpaths along Paygrove Lane it will only be for short duration and this would be managed to ensure nothing is causing nuisance to the public. Consents/ agreement for closure agreement with the Council is down to Cotswold Oak Ltd.

The development is inclusive of proposals for the creation of a new pedestrian prioritised streets, pass gates with foot access to the playing fields and pedestrian zones to the side of the car parks.

3.7 Waste Management

The proposed site is predominantly playing field and hardstanding meaning there would be limited, if any, demolition waste to dispose of due to the limited scale and nature of the proposed scheme. It is considered that this proposed development will make use of the existing utilities system and sustainable methods of recycling will be adopted as part of the proposals. This includes the provision of bin storage areas within the proposed layout. It is therefore considered that this proposed development will not have a significant environmental impact on the surrounding area as a result of waste production. Standard construction waste and materials management will be employed at the site in accordance with the Client HSE policies and current guidance and regulations.

3.8 Compliance Obligations

Certain aspects of the construction work for this Project could be subject to environmental permits, consents, authorisations and permissions. A full schedule of the various relevant obligations and the status of each consent is contained in Appendix 3.

4 ENVIRONMENTAL MANAGEMENT PROCEDURES

Environmental management measures shall be incorporated into the Risk Assessments and Methods Statements (RAMS) prepared by the Contractor. All RAMS shall be communicated to the workforce by the Site Manager.

4.1 Fuel Storage and Refuelling

Fuel storage and refuelling will be managed as follows during construction:

4.1.1 Fuel Storage

- Fuel levels shall be monitored and recorded regularly (sudden changes may be a sign of leaks).
- Fuel tanks, secondary containers and storage compounds shall be inspected regularly for damage, corrosion, leaks, faults and vandalism. Repair defects/faults immediately and retain records.
- The secondary containment system must provide storage for at least 110% of the tank's maximum capacity and ensure that any valves, filters, sight gauges, vent pipes or other ancillary equipment are also situated within the secondary containment system and arranged so that any discharges would be contained.
- Fully lockable and labelled 'Fuel Safe Static Tank' will be deployed.
- Sufficient spill kits will be provided. Spill kit supply to be monitored regularly to ensure adequate stock remains full.
- All drains located adjacent or near to refuelling points shall be covered by Gully Guards before commencing transfer. All fuel transfers to be supervised.
- Drums must be stored in a secure interceptor drum store within the designated refuelling area.
- Oil spill and oil impacted water must be collected in a fuel safe container with fuel tag and fuel spills must be contained using the spill kits provided. Spills should be reported to the contractor's Site Manager immediately.
- Records must be maintained of all environmental incidents, mitigation works, clean up method and validation.
- A suitable container for hazardous wastes must be provided within the waste compound.

4.1.2 Refuelling

- Where possible, refuelling should only be carried out in a designated area, which will be secured/locked out of hours.
- The refuelling area shall be located away from drains and watercourses (>10m from a watercourse and >50 metres from a spring, well or borehole).

- Refuelling will always be supervised by a competent supervisor.
- Mobile plant must be refuelled away from surface waters, drains, permeable pavements and open excavations. A fuel drip tray must be used.

4.2 Use and Storage of Hazardous Materials/Substances

The use and storage of solvents, cements, adhesives, grout and concrete shall be managed as follows during construction:

- All drains adjacent or near to concreting works shall be covered with Gully Guards before commencing mixing;
- Concrete washings must be treated in compliance with RPS 235 'Treating and using water that contains concrete and silt at construction sites'.
- Surplus dry concrete, cement and grout is to be collected and reused where possible e.g. as inert rubble; Reuse of dried materials may require environmental permits or exemptions.
- Areas of permeable pavement are not to be used for the temporary storage of cement bags. If unavoidable ensure adequate protection measures are in place to prevent the pavement from becoming blocked;
- All hazardous materials shall be labelled, sealed and stored with their COSHH assessment in a bunded and lockable container away from drains and watercourses when not in use;
- Hazardous liquids shall be transferred using a funnel and drip tray and sealed and returned to the container immediately after use. Damaged containers shall be reported to the Site Manager;
- COSHH datasheet will be read and understood before using any hazardous material. All usage shall comply with its requirements;
- Hazardous liquids must be re-sealed after use. Empty containers are to be disposed of to the designated container within the waste compound; and
- Construction workers are required to wear PPE such as gloves and face masks (where appropriate) to prevent dermal contact and inhalation or ingestion.

4.3 Use of Plant and Equipment

- Mains electricity shall be used where available. If not, generators are to be used and must be sized for the required output; if diesel they must be set up by the supplier.
- All plant shall be suitability maintained and noise screens shall be used where required. Use generators having a sound power level rating below 65db(A), fully canopied and silenced. Position exhausts away from site boundaries and occupied areas when in use
- To assist with noise attenuation, where possible, generators will be located away from adjacent residents, also taking account of prevailing wind conditions.

- Siting of portable generators must consider proximity to sensitive receptors (e.g. >10m from a watercourse and >50 metres from a spring, well or borehole) and must be fitted with a drip tray.
- Turn off all plant overnight.
- All equipment shall be inspected before use and any defects/faults reported to the Site Manager.
- Sufficient spill kits shall be provided. Kit must be replenished as required.

4.4 Site Set Up, Groundwork and Construction

Groundwork and construction will be managed as follows during construction:

- Local Authority consent must be obtained for particularly noisy activities before starting works. For example, crushing and piling. Contractors and operatives must be informed of consent conditions.
- Minimise the use of builders skips and inspect lifting and locking points, doors and door locks and general condition weekly as a minimum.
- Ordered materials shall be adequately managed to avoid spoilage or over-ordering and surplus materials shall be minimised: provide a suitable and sufficiently sized materials storage compound that is lockable and provides an above-ground covered area, protected from wind and rain. Encourage the reuse of cut-offs and arrange for suppliers to take back unused surplus materials and packaging.
- Surplus materials are to be reused on site where possible. All reuse and recycling to be carried out in accordance within the terms of a valid waste exemption or voluntary codes of practice/protocols.
- Excavated material surplus shall be minimised so far as practicable; details of all inert material reuse on site including composition and disposal location must be mapped and records retained.
- If necessary temporary bunding and/or settlement ponds will be installed to allow for isolation and onsite treatment of any sediment laden or contaminated water prior to discharge to the drainage system.

4.5 Pollution Control/ Nuisance and Disturbance

Mud, dust, noise, light, litter and water pollution have the potential to cause nuisance and in some cases complaints and statutory nuisance and therefore must be minimised. The following processes and procedures shall be implemented to manage potential nuisance issues.

4.5.1 Noise

- All work will be carried out where possible in accordance with BS 5228-1:2014 - Code of practice for noise and vibration control on construction and open sites.
- Plant shall be selected with noise levels in mind and it is important that quiet plant or silent plant is used. If possible, electrically powered plant should be used.

- Only plant that conforms to the relevant noise emission standards would be used during the construction of the proposed development.
- Use of acoustic screens or covers where required.
- Noisy works and deliveries to and from the site shall be conducted within the core working hours. Where necessary, deliveries outside of these core hours would be agreed in advance with the local authority.
- If operations involving high noise levels have to take place, consideration should be given to the people in the immediate vicinity and such works should be limited to the times which will have least impact on the neighbourhood.
- No radios to be permitted on site.

4.5.2 Lighting

- Lighting shall be switched off when not in use unless specifically needed for construction activities or for security and / or health and safety requirements.
- Glare (and the potential for complaints) caused by poorly directed security and floodlighting shall be minimised by ensuring that light fittings are horizontally mounted and directed inwards on Site.
- Temporary lighting fixtures are to be installed and designed to provide full cut-off or should be directionally shielded to ensure that artificial light is controlled and substantially confined to the defined area intended to be illuminated.
- Post-installation checks and monitoring of the lighting installations shall be undertaken to ensure that correct tilting angles and appropriate direction of lighting is achieved. This will allow adjustments to be made, where practicable, should undue light spill or glare be identified.
- Wherever possible, lighting shall be located and directed so that it does not cause unnecessary intrusion to adjacent buildings.
- The construction areas close to walkways or roadways shall be lit in an appropriate way to minimise glare and shall be clearly defined at all times to ensure the safety of motorists, cyclists, pedestrians. This will also assist in defining the limits of the construction area for motorists, cyclists and pedestrians.
- Temporary walkways, roads or parking areas shall be illuminated in accordance with current guidance stipulated in the current ILP Guidance Notes.
- Care should be taken to avoid casting shadows from hoarding on the surrounding and adjacent footpaths and roads.
- Light spillage shall be reduced by directing any construction lighting below the horizontal plane, at an angle of less than 70 degrees away from features that offer suitable bat roosting potential.

4.5.3 Dust and Mud

- All work will be carried out where possible in accordance with Control of Dust from Construction Sites (BRE DTi Feb 2003).

- Where foreseeable and significant dust is to be generated during an operation, dust fencing and/or barriers must be provided to minimise impact.
- Timing of earthworks and material movements shall be planned to reduce double handling and minimise traffic movements and therefore associated dust and mud.
- Stripping and stockpiling of soil shall be minimised where possible.
- Site roads shall be kept clear of soil and debris as much as possible.
- If dust levels remain excessively high when adequate control measures are in place and operating effectively, then reduce or postpone works during such times (e.g. during dry or windy periods).
- Water can be sprayed onto material to dampen down any potential contaminated dust and prevent it from becoming airborne.
- Construction vehicles shall be regularly maintained to ensure mud-flaps etc. are effective.
- Activities associated with the use of construction vehicles (such as washdown facilities) shall be appropriately managed to contain contaminants and regulate the release of water back into the natural environment.
- Site layout shall be planned so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Where feasible the site or specific operations shall be fully enclosed where there is a high potential for dust production and the site is active for an extensive period.
- The site shall be set up with hoarding to reduce the liberation of dust from the site. The contractor shall consider the use of a 'green'/ vegetated hoarding to reduce particles and reduce carbon dioxide levels.
- Haul routes shall be hard surfaced and/or effectively damped down.
- All vehicle engines will be switched off when not in use to reduce particulate emissions.
- Exhaust systems will be fitted with particulate filters and catalytic converters as necessary.
- Stockpiles shall be covered, seeded or fenced (as appropriate) to prevent wind whipping.
- Excavated materials undergoing treatment shall be covered to reduce the release of odours and vapours.
- Mechanical road sweepers shall be employed to clean roads after movement of soil and of any dust and debris if it is generated within the vicinity of the site entrance.
- All loads entering / leaving the site shall be covered.
- Drop heights must be kept to a minimum and conveyors and enclosed wherever possible.

4.5.4 Water Pollution

- Surface water and drains must be protected from silt run-off: use gully guards to protect drains and use straw bales, gravel traps or silt fencing to protect surface waters. All silt protection measures must be inspected frequently and maintained throughout the works.
- Stockpiles of contaminated material must be situated on an impermeable surface at least 10m from any surface waters or drains, and run-off collected within a bund.
- Tracking or washing out next to drains/surface waters must be avoided.
- When dewatering, any pump shall be switched off before removing the last portion of water and suspended solids will be allowed to settle out before discharging.
- All drains located adjacent or near to generators to be covered with gully guards.
- Potentially contaminated water must be tested before dewatering. Contaminated water must be treated or discharged off site.
- Road sweepers shall be utilised where necessary.
- Silty water and associated run-off to surface water and drains must be avoided: minimise any areas of soil stripping and stockpiling, control water volumes used to suppress dust, batter/sheet stockpiles where required.
- If a discharge consent is required, then all conditions within the consent must be understood before commencement of dewatering.

4.6 Good Housekeeping

- Maintain good housekeeping and site working practices to control litter, insects or vermin. For example, dispose of food into appropriate receptacles.
- The site boundary shall be secured appropriately, and all site gates shall be kept locked / closed out of working hours and kept closed and /or manned during working hours.

4.7 Landscape and Ecological Management Plan

Prior to any habitat clearance or construction works, the following section relating to species mitigation and habitats shall be considered.

4.7.1 Habitats

The NERC Priority Habitats include all hedgerows with at least 80% cover of at least one woody UK native species (JNCC, 2020). The hedge on site had at least 80% cover of native species and as such qualifies as NERC Priority Habitat although it was species-poor. It is understood that this hedgerow is to be retained and this being the case, no further assessment is necessary.

The improved grassland surveyed in January, which is outside the optimal period for grasses, fails to qualify as semi-improved grassland. No further grassland survey at the optimal time of year is required.

The remaining habitats on site are common, of low ecological value and easy to replace. Any impacts as a result of loss/changes to these habitats in terms of their vegetation are considered to be negligible.

Recommendations

All Ecology proposed the following recommendations from their walkover survey. Where new trees or shrubs are to be planted, native tree and shrub species should be used as these are most beneficial to invertebrates, and many also produce seeds, nuts and berries that are food for native mammals and birds. Planting of non-native plant species should be limited to those that are not invasive and should prioritise those that provide a good source of nectar for invertebrates e.g. Jasmine.

A new section of native hedge will be planted west of the new houses and road between the development and adjacent playing field. The following species mix is suggested:

- Hawthorn 40%
- Blackthorn 15%
- Hazel 10%
- Field Maple 10%
- Holly, Dog-rose, Spindle, Wild Privet and Wych Elm, all 5%.

The hedge should be planted in double staggered rows 500 mm apart at 400 mm centres to achieve 5 planted per linear meter. All stock would be protected from damage using approved proprietary 1200 mm shrub shelters, secured with stakes and ties.

4.7.2 Species

Bats

There were no buildings on site and only small numbers of mature trees on boundaries of the site. Trees were inspected for potential bat roosting features including rot holes, split bark, flaking bark, cracks and crevices of which none were found. The site is generally open and any foraging areas for bats are likely to be restricted to the boundary vegetation with west boundary hedge being the main area of interest. This hedge may also be used by bats commuting from possible roosting sites and foraging areas in the surrounding area although species are likely to be restricted to urban species such as pipistrelles.

The site is generally poor for bats being mostly open grassland but the boundary hedge and trees provide limited foraging habitats and the hedge could also be used as a flight line. The hedge and trees on the west boundary are to be retained and will not be subject to lighting and therefore no further bat activity surveys are required. The new residential gardens on site may also increase potential bat foraging opportunities on site. The site is generally poor for bats being mostly open grassland but the boundary hedge and trees provide limited foraging habitats and the hedge could also be used as a flight line. The hedge and trees on the west boundary are to be retained and will not be subject to lighting and therefore no further bat activity surveys are required. The new residential gardens on site may also increase potential bat foraging opportunities on site.

Recommendations

All Ecology have proposed the following recommendations from their walkover survey. The potential for foraging and commuting bats is likely to be limited to urban light tolerant species; however, a suitable lighting design strategy should be in place on site. In general, measures should include the use of lighting only where absolutely necessary utilising highly directional warm white LED lighting, an example being down spots at 2.5 m high using warm white (2700 K) 8W LED lamps, 550 lumens, 35 degree beam angle. These could be individually activated by PIR sensors on a 5-minute cut off to further reduce their impacts. These will assist in lighting only the areas where lighting is required and minimising light spill either directly or through reflected light. The retained hedges on the site should not be subject to lighting.

Four Ibstock Enclosed Bat Box “C” will be installed near the apex of gable end walls of the new buildings. These will be installed on different elevations in order to provide small variations in conditions within each box and therefore maximise the potential for use. The locations of new bat roosts are indicated on the enhancement plan presented in Appendix 2.

Badgers and other mammals

The potential for other species of protected or notable mammal species to use the site is deemed to be low. No constraints are predicted as a result of the potential presence of small mammals and passing Badgers.

Recommendations

All Ecology have recommended as a precaution that during the construction phase of the project any trenches and other excavations are back-filled before nightfall or a ramp left to allow animals to easily exit, and any open pipes larger than 150 mm should be capped off overnight.

Birds

The site provides bird foraging and nesting habitat within the hedge and trees with the grassland on site providing limited foraging opportunities for common bird species.

Recommendations

All Ecology have recommended the following for birds from the walkover survey. All nesting birds are protected under The Wildlife and Countryside Act 1981 (and amendments). No further surveys are recommended at this time but as a precaution it is recommended that any scrub removal and pruning of existing hedges should be carried out outside the bird nesting season of March – August. Where this is not possible, the vegetation would need to be surveyed for nesting birds by a suitably qualified ecologist prior to works. If they are found, then the nest and surrounding habitat must remain intact until the young have fledged.

The new development should include enhancements for nesting birds to compensate for any loss of areas of nesting habitat and generally enhance the site. The new buildings will provide a good opportunity to enhance the site for birds and the following will be installed on the north and/or east sides of the buildings:

The new development should include enhancements for nesting birds to compensate for any loss of areas of nesting habitat and generally enhance the site. The new buildings will provide a good opportunity to enhance the site for birds and the following will be installed on the north and/or east sides of the buildings:

- Schwegler House Martin nests 9 or equivalent) will be provided under the eaves or on the north to east sides of the buildings.
- Individual boxes, such as the Schwegler Bird Home 1MR (or equivalent), will be installed at a height of at least 2 m.

The locations of bird boxes are indicated on the enhancement plan presented in Appendix 2.

4.8 Waste Management

The contractor shall apply the principles of the waste hierarchy (eliminate, reduce, reuse, recycle, dispose) to waste management of the site.

The development shall seek to promote the re-use of excavated materials through optimisation of cut and fill operations in order to improve the sustainable and cost-effective development of land, as per the Definition of Waste: Development Industry Code of Practice (DoWCoP). In many instances the DoWCoP can provide an alternative to Environmental Permits or Waste Exemptions when seeking to reuse excavated materials.

The contractor shall prepare a Site Waste Management Plan. The measures to avoid waste issues are likely to include:

- A waste collection area shall be set up before site works start. This area shall be as close to the site compound as possible with adequate hardstanding for the waste containers and unobstructed access for telehandler and waste removal vehicles.
- Front-end loader (FEL) or rear-end loader (REL) skips shall be provided to segregate wastes including plasterboard, timber and metal. A designated area shall be provided for inert wastes, for example bricks, clay pipes and roof tiles. A designated container[s] shall be provided for hazardous wastes, which and must be clearly labelled.
- Wastes shall be collected by a licenced waste carrier. A copy of all Waste 'Duty of Care' documentation shall be held on site.
- Duty of Care documentation must be completed for all waste transfers and copies provided to the Client every week. Waste transfer notes or hazardous waste consignment notes and Duty of Care procedures are to be audited regularly (monthly as a minimum).
- The Site Waste Management Plan shall be made available on site and its requirements understood by all contractors and operatives before starting work on site.
- Road sweepers shall be deployed as necessary. All road sweepings must be removed from site accompanied with a completed waste transfer note from the driver. If road sweepings are inadvertently discharged on site, these should be disposed of appropriately.
- All waste incidents shall be reported immediately to the Site Manager and Works Environmental Manager.
- Soil and recycled aggregate transfers shall be carried out in accordance with an approved Materials Management Plan (or Remediation Strategy in Scotland) and all transfer tickets must be retained on site.
- Contact the Environmental Advice Line (0845 003 8752) or the Works Environmental Manager if specialist advice on waste segregation and disposal is required.

- Monthly updates on the amount of waste successfully recycled will be made available to the Site Manager and displayed in the site office and can also be issued to the council upon request.
- Skips and other storage receptacles used for the containment of construction, demolition and excavation waste will be colour-coded in line with the generic scheme developed by the Institution of Civil Engineers. They will also have appropriate signage to facilitate separation of waste for re-use, recycling or disposal and the separation of inert, hazardous and non-hazardous wastes. Plastic sheeting will be used to prevent leaching from waste soils and aggregates where these are not contained within skips or other storage receptacles.
- Skips and storage receptacles will be sheeted, or otherwise remain lidded or closed, when waste is not being deposited into them. They will also be covered to prevent the escape of waste whilst in transit and loaded for maximum payload efficiency.
- Skips and storage receptacles shall be inspected on arrival to ensure they are fit for purpose. Skips and storage receptacles that are not fit for purpose will be taken out of use immediately with appropriate signage used to signify that they should not be used.
- Mixing inert, hazardous and non-hazardous wastes, either whilst stored on site or upon collection, will not be permitted.
- Liquid wastes will be stored on hard-surfaced areas with secondary containment systems to prevent spillages.
- Waste will not be stored within 10m of any controlled watercourse, borehole, well, spring, surface water drainage system or foul water drainage system.
- Storage receptacles will be used for the collection and storage of waste within site operation facilities to facilitate the segregation of waste for re-use, recycling and recovering.

Wherever possible, the following waste streams will be diverted from landfill:

- All Plasterboard waste shall be segregated on site and returned for recycling (e.g. to British Gypsum).
- The site works shall be designed to retain as much soil on site as possible whilst maintaining protection of human health and the environment.
- All timber is to be segregated on site and sent to a local charity (or similar outlet) for recycling.
- All metal is to be segregated on site and sent for recycling.
- All inert waste (e.g. bricks, blocks, concrete) will be segregated on site and used under roads, driveways etc as appropriate.
- All mixed waste removed from site shall be taken to a material recycling facility for further segregation to maximise recycling and recovery.
- All hazardous waste shall be segregated from all other wastes and clearly labelled.
- All other site waste shall be segregated on site.

4.9 Traffic Management

The contractor shall provide for the safe and secure management and control of pedestrians and vehicular movements, both on and off site, to ensure the safety of all members of the general public and workforce at all times throughout the construction

work period in accordance with all requisite Acts and Regulations, including, but not limited to, the:

- Health and Safety at Work etc Act 1974
- Management of Health and Safety at Work Regulations 1999
- Construction (Design and Management) Regulations 2007
- Supply of Machinery (Safety) Regulations 1992
- Provision and Use of Work Equipment Regulations 1998.

The contractor shall be responsible for:

- Promotion, management and control of such general provisions and measures for traffic management and control to be implemented by all contractors and sub-contractors throughout the extent and duration of the construction.
- On-site provision for site access roads and pedestrian footways, with controlled access from the public domain for pedestrians and vehicles, on-site parking provisions, standing, lay-down and unloading facilities for delivery vehicles, and on-site compound, welfare facilities and material holding areas for use by all contractors and sub-contractors.
- Ensuring that the on-site provisions are controlled, managed and shall be safe at all times through the provision of planned and informed procedures and segregation between vehicular and pedestrian traffic.

The strategy, together with appropriate procedures and traffic management measures, as well as measures to encourage more sustainable transport choices, are contained in the Traffic Management Plan for the site.

5 EMERGENCY PREPAREDNESS AND RESPONSE

5.1 Emergency Preparedness

5.1.1 Spill Kits

Spill kits capable of dealing with hydrocarbon and chemical spills shall be available at all worksites. Each storage location shall be clearly visible to the workforce, for instance by deploying clear signage.

If a construction compound, fuel storage point or COSHH store is provided then additional spill kits will need to be available at each separate location.

The spill kit contents shall include absorbent pads, absorbent booms, absorbent granules and hazardous waste disposal sacks as a minimum. Regular checks of the spill kits shall be completed to ensure they remain adequately stocked to deal with environmental incidents.

Spill drills shall be performed periodically to confirm that the workforce can effectively contain and clear up potentially polluting spillages. All drills will be documented and details kept on record for the duration of the works.

5.1.2 Fire Prevention

Means to raise the alarm in the event of a fire shall be available at the points of work. An assembly point shall be designated a safe distance from the active works locations and will be communicated to all members of the workforce before works commence. The workforce shall assemble at the point for a roll-call and to receive further instructions. All individuals at the worksite, including visitors, will be obliged to immediately sign in on arrival.

5.1.3 Extreme Weather

The contractor's Site Manager shall register to receive Met Office weather warnings. All warnings issued by the Met Office with the potential to impact upon the works shall be communicated by the Site Manager to the workforce in a timely manner so that measures can be implemented where necessary. In the absence of the Site Manager the Works Environment Manager shall also receive and act upon all alerts.

Each Contractor shall maintain provisions to deal with extreme hot weather events. Measures shall include provision of safe drinking water and adequate shade.

5.2 Incident Reporting and Investigation

5.2.1 Reporting

All incidents, including near misses, shall be classified according to the categories outlined in Table 1.1. All categories of environmental incident shall be reported by the contractor to the Client as outlined below.

Table 1.1: Incident Classification

Incident Classification	Definition
Near Miss	An event, controlled through implementation of an effective incident control measure (e.g. drip tray used, effective use of noise barrier).
Minor Environmental Incident	Incidents that have caused minor harm or damage to the environment e.g. <ul style="list-style-type: none"> • a minor fuel spill below 20 litres onto ground which is immediately cleared; • a minor spill of a chemical not classified as presenting an ecotoxic risk; • exceeding noise levels; • silt runoff from site which does not enter into a surface water feature; or • excess dust emissions.
Major Environmental Incident	Incidents that have caused or may cause significant harm or damage to the environment e.g. <ul style="list-style-type: none"> • a minor fuel spill which impacts a sensitive land feature, a water body, or drains; • a major fuel spillage over 20 litres; • any spillage of a chemical which is classified as presenting an ecotoxic risk; • silt runoff from site which enters a water feature; or • receipt of a nuisance complaint.

Minor incidents and near misses must be reported to the Client within 24 hours. Major incidents must be reported to the Client as soon as reasonably practicable.

The contractor, after informing the Client, shall report all environmental incidents that are required to be reported to the Environment Agency and/or to any other relevant statutory or regulatory bodies. Emergency contact details are outlined in Section 6.2.3 for all contacts relevant to the works.

5.2.2 Investigation

Reporting of an incident to the Client shall where necessary commence the incident investigation which shall be jointly conducted between the Client and its contractor[s].

The contractor shall prepare an investigation report for all environmental incidents. The report is to include:

- Summary of the environmental incident, describing the:
 - nature of the incident;
 - details of any pollutant released including the type and quantity of pollutant released;
 - location for the incident (e.g. grid reference);
- Receptors that were or could have been impacted

- An analysis of what led to the incident occurring
- Summary of immediate actions taken to mitigate the incident
- Summary of any remedial action required
- Lessons learned and future measures or actions to be implemented.

The Client will verify the incident investigation and agree with its contractors any further actions which are to be implemented to prevent a reoccurrence of comparable incidents. A timeline for the implementation of all actions shall be established and the contractors shall provide details of when they have been implemented.

An incident investigation shall be complete when all details have been recorded on file.

5.2.3 Emergency Contacts

In the event of an emergency occurrence at the Site, the Client and its contractors shall determine the relevant statutory and regulatory bodies that must be notified. Notification shall be in accordance with the measures outlined above in Section 5.2.1.

Table 2.1: List of Emergency Contacts

Emergency Contacts	
Contact	Contact details
Principal Contractor – David Knight	[TBC]
Environment Agency Emergency Number	0800 807060
Health and Safety Executive (HSE Construction)	01519 229235
Local Authority – Gloucester City Council	
Fire	999 / 112
Police	999 / 112
Ambulance	999 / 112

5.3 Incident Response

This section consists of standard incident response procedures, intended to provide guidance for the containment and limitation of adverse effects. All pollution incidents should be managed through the STOP - CONTAIN - NOTIFY concept.

As soon as an incident is identified, the first action should be to **STOP** and prevent further discharge to drainage/river/ground.

CONTAIN may constitute control of discharge in the event of a spill, or cessation of works if it is the works that are resulting in the incident, e.g. halting excavations until silt runoff is contained. It is recognised that due to personal health and safety risks it may not always be safe to stop the source of the spill, for instance if a significant volume of an unidentified substance has been released.

NOTIFICATION should take place as soon as practicable, and frequently can take place while further release is being stopped or while a spill is being contained. The emergency contact numbers outlined in Table 6.2 should be used.

5.3.1 Oil, Fuel or Chemical spill to ground

- i. Wearing protective clothing, prevent further release at source e.g. switch off tap/ valve, correct leaking drum and make safe the area.
- ii. If the spill is migrating, create a temporary bund to prevent further spread by using spill kit materials / sandbags.
- iii. If drains or field ditches are located nearby, install drain seals/ deploy additional spill kit materials to prevent the spill discharging to the drain or ditch.
- iv. Apply absorbent granules or pads (available from spill kit) to the affected area.
- v. The Contractor will notify the Environment Agency regarding the nature and scale of incident. The following information should be included in the notification:
 - Time of discharge;
 - Type/quantity of material discharged;
 - Location of discharge; and
 - Site contact details.
- vi. The Contractor will notify the Client of the incident and communicate the information provided to the Environment Agency.
- vii. The Client will notify the Local Planning Authority regarding the nature and scale of the incident as per the requirements of the Environmental Damage (England and Wales) Regulations 2015.
- viii. Containment measures should remain in place until the nature and extent of the contamination can be assessed and a remediation strategy must be prepared.

All impacted materials shall be disposed of in accordance with relevant legislative and regulatory requirements and the Duty of Care requirements outlined in the CoCP.

5.3.2 Discovery of unexpected contamination

- i. On the discovery of unexpected contamination, the Contractor will immediately halt works in the area.
- ii. If impacted materials have already been removed they shall be returned to the excavation or placed on to a membrane, e.g. terram, to prevent migration of the contaminant to another area.
- iii. Contractor to report the situation to the Client.
- iv. Arrangements will be made between the Contractor and the Client for samples of the contamination to be collected and tested on fast turnaround.
- v. Contractor to only continue with works in the area once the test results have confirmed the contaminant and a safe means of working has been established.

The Contractor shall be free to continue works in areas unaffected by the contamination, BUT the Contractor will not speculatively continue to excavate material to find the extent of the contamination without supervision from a geo-environmental engineer.

All impacted materials will be disposed of in accordance with relevant legislative and regulatory requirements as well as relevant Duty of Care requirements.

5.3.3 Oil, Fuel or Chemical spill to Surface water feature

- i. Wearing protective clothing, prevent further release at source e.g. switch off tap/ valve, correct leaking drum and make safe the area.
- ii. If source not readily identifiable, contain first (see below) then identify and prevent further release at source.
- iii. Immediately deploy appropriate sized boom from nearest spill kit across affected surface water feature. Use stakes to attach it to the sides of the surface water feature. Tie booms together to increase length if required.
- iv. Supplement with additional booms across the surface water feature, as required, to contain any migration of the spill not halted by the first installation.
- v. The Contractor shall notify the Environment Agency regarding the nature and scale of incident. The following information should be included in the notification:
 - Time of discharge;
 - Type/quantity of material discharged to surface water feature;
 - Location of discharge; and
 - Site contact details.
- vi. The Contractor shall notify the Client of the incident and communicate the information provided to the Environment Agency.

All impacted materials will be disposed of in accordance with relevant legislative and regulatory requirements and relevant Duty of Care requirements.

5.3.4 Oil, Fuel or Chemical spill to Drainage system

- i. Wearing protective clothing, prevent further release at source e.g. switch off tap/ valve, correct leaking drum and make safe the area.
- ii. If source is not readily identifiable, contain the visible pollutant first, then identify and prevent further release at source.
- iii. Immediately deploy appropriate drain cover(s) to affected gullies.
- iv. Supplement with booms around the gully to contain any migration of the spill.
- v. The Contractor shall notify the Environment Agency and the relevant water company regarding the nature and scale of incident. The following information should be included in the notification:
 - Time of discharge;
 - Type/quantity of material discharged to the drain;
 - Location of discharge, specifically which drain; and

- Site contact details.
- vi. The Contractor shall notify the client of the incident and communicate the information provided to the Environment Agency.

All impacted materials shall be disposed of in accordance with relevant legislative and regulatory requirements and relevant Duty of Care requirements.

5.3.5 Explosion / Fire procedure

Explosion/fire incidents should also be dealt with through health and safety procedures. In the event that a fire is detected or an explosion occurs:

- i. Notify the emergency services and evacuate the area.
- ii. Attempt to tackle the fire with site equipment only when it is safe to do so.
- iii. Ensure that pollution of nearby water bodies including surface water drainage from fire control water or other substances is minimised. Where possible and safe to do so, any site drainage systems should be protected through the deployment of drain seals/ spill kit materials to ensure any firefighting waters are captured and can be disposed of appropriately.
- iv. At a time when it is acceptable to do so, the Environment Agency shall be notified regarding the nature and scale of incident. The following information should be included in the notification:
 - Nature of the incident;
 - Time and date of the incident;
 - Quantity of fire control water discharged to surface water feature/drainage, where relevant;
 - Location of discharge; and
 - Site contact details.

5.3.6 Silt

In the event of an unexpected discharge of silty water, then:

- i. Prevent further release at source e.g. cease dewatering the excavations.
- ii. Contain silt and protect sensitive receptors from further discharge:
 - If a drain is located nearby, install drain seals or deploy spill kit materials to prevent discharge.
 - If silt flow is in the direction of surface water features deploy hay bales around surface the feature.
 - If silt is being generated by runoff from stockpiles deploy spill kit materials, silt fencing or move soil to form a bund at the base to prevent further silt laden runoff from the stockpile.
- iii. If silt is discharged without prior approval the Environment Agency shall be notified. If the silt discharge enters the drainage system the relevant water company shall also be notified regarding the nature and scale of incident. The following information should be included in all notifications:

- Time of discharge;
- Type/quantity of material discharged;
- Location of discharge, e.g. which drain or surface water feature; and
- Site contact details.

5.3.7 Complaint over a nuisance

This procedure should be followed for all nuisance complaints including noise, dust and light.

- i. Immediately stop the activity leading to the complaint; or where not possible to entirely stop the activity reduce it to the lowest possible level e.g. shut off all non-essential plant.
- ii. Remain polite and courteous. If able to resolve the issue through discussion with the complainant, then determine what action is needed and put it into practice.
- iii. Record the details of the complainant including their name, contact details and address. Contractors shall report the details of the complaint and the complainant to the client.
- iv. The contractor and the client will register the complaint on the Complaints Log.
- v. The client will act on the complaint and remedial actions will be put in place within 24 hours.

5.3.8 Contamination of or by waste materials

- i. Assess whether the area needs to be evacuated, such as if fumes are being given off.
- ii. Assess whether the damage can be undone through segregation.
- iii. Complete a risk assessment for the task including consideration of any COSHH risks.
- iv. If it is safe to do so segregate the waste. If it is not safe to do so, then the full waste quantity is to be consigned as hazardous waste.
- v. Contractor to report the incident to the client.
- vi. Waste to be collected from site in accordance with normal practice.

5.3.9 Discovery of archaeological artefact or Heritage feature

- i. Immediately stop works in the area of the artefact or feature.
- ii. Ensure the area is isolated from interference by erecting fencing around the discovery. Prevent vehicles from navigating through this area.
- iii. Provide a safe means for pedestrians; and if possible vehicles, to move around the isolated area.
- iv. Contractor shall report the find to the client.

- v. Client to arrange for the find to be assessed by a qualified heritage or archaeological specialist. The Contractor is to prevent tampering with the find until it has been assessed.
- vi. Works to proceed in accordance with the recommendations given by the heritage or archaeological specialist.

5.3.10 Ecological discovery or Damage

- i. Immediately stop works in the area.
- ii. Contractor to immediately report the incident to the client.
- iii. Client to arrange for a qualified ecologist to assess the discovery or damage caused.
- iv. Works to proceed in accordance with the advice received from the ecologist.

5.3.11 Vandalism/Theft procedure

Acts of theft and vandalism present the risk that damage may be caused to equipment containing hazardous substances that could cause pollution, or damage may be caused to measures which have been installed to prevent the release of pollution. On identifying an act of vandalism or theft:

- i. The contractor shall notify the Police of the incident.
- ii. Inspect all fuel storage tanks/drums and equipment to ensure there has been no release of the fuel or other hazardous substances, e.g. hydraulic fluid.
- iii. If a spill is identified follow the procedures for Oil, fuel or chemical spills.
- iv. Inspect pollution protection measures, e.g. drainage or silt protection, to ensure it has not been interfered with. Where it is possible, correct any issues identified without causing further release.
- v. Inspect site boundaries to identify the access point if not immediately clear and secure the site.

6 GENERAL ENVIRONMENTAL REQUIREMENTS

6.1 Roles and responsibility and Authority

The contractor shall make available sufficient time and resources for the effective management of environmental risks that could arise during construction work. This includes appointing adequately qualified personnel with knowledge and capability in the environmental management of construction site works. Persons having responsibility for environmental site management, and in particular any persons required to undertake and oversee response to any incidents with potential environmental consequences, shall be empowered to make decisions and take appropriate action necessary to avoid or mitigate adverse environmental effects, even when this may lead to delay and/or additional cost to the contractor.

6.1.1 Project Roles

The Cotswold Oak project team and all appointed contractors will be responsible for ensuring that the potential risks to the environment are adequately avoided or controlled by the application of measures as documented within this CEMP, which shall be complied with throughout construction.

6.1.2 Principal Contractor

Cotswold Oak Ltd will be the Principal Contractor, who will be responsible for the CMP. This 'responsible person' (David Knight) as site manager and Principal Contractor will manage all construction traffic and will ensure that the preferred routeing for construction vehicles as identified under section 4.1 is always used unless it is otherwise agreed with Herefordshire District Council (HDC) as Highway Authority to use an alternative road network.

The roles of the Principal Contractor will include:

- Overall management of construction traffic;
- Ensuring that the preferred routes for construction vehicles are always used by construction traffic unless otherwise agreed with HDC as the Highway Authority;
- Ensuring that all vehicles accessing the site meet their legal obligations for safe operation and obey any traffic marshal, signs, road markings and traffic signals;
- The provision of safe and adequate vehicle loading/unloading areas;
- Ensuring that there is no parking on the highway during site operating hours; and
- Encouraging all suppliers and hauliers to seek the Fleet Operator Recognition Scheme (FORS) accreditation and favour those with the certification.

Table 3.1: Project Roles and Environment

RACI DETAILS – R - Responsible: The individual(s) who perform an activity responsible for action/implementation- although usually only one, Rs can be shared A - Accountable: the individual who is ultimately accountable including yes/no decision and power of veto – only one (A) can be assigned C - Consulted: the individual (s) to be consulted prior to a final decision being made or action taken – two-way communication I – Informed: the individual (s) who need to be informed after a decision is made or action is taken – one-way communication	Developer	Project Manager/Director	Site Manager/ Sub-contractor Manager	Works Environmental Manager	All Site Staff/	Engineers/ Foremen
Process Task						
Developing and maintaining the DCEMP	C	R	R	A	I	
Monitor environmental aspects through review of construction method statement, identify and control issues		R	I			
Monitoring construction works to ensure any necessary environmental issues and control measures are in place; ensuring they are effectively communicated and appropriate and implemented on site			R	C		I
Ensuring the work is performed by training and qualified staff; and providing training where necessary		R	R	A		I
Ensuring that adequate resources are allocated for environmental management;	I	C	R		I	
Ensuring that all relevant environmental documentation and information (including permissions, consents, permits and assessments) is communicated;	I	R	C		I	
Ensuring that environmental incidents and complaints are investigated, recorded and reported following the correct procedures and taking preventative action	C	C	C	R	C	I
Regular site inspections and maintaining a record of environmental performance; and reporting performance and monitoring environmental performance	I	A	C	R		
Following good practice and minimising impact of activities on the environment;					R	
Understanding project environmental obligations and mitigation measures;		A			I	R
Liaison with local authority, other statutory bodies, members of the public, press and the media.		R		C		
Supporting all site staff with environmental management including reviewing and commenting on method statements and risk assessments;				R		
Ensuring that the environmental policy of the client is delivered		R	A	C	I	I
Providing information on waste management/reduction procedures to relevant staff			R		I	

6.2 Competence, Training and Awareness

The contractor shall ensure that appropriate training is delivered to all site operatives and only appropriately qualified sub-contractors are appointed.

Every member of the workforce shall be required to participate in a site induction prior to starting to work on the Site. The level of induction training will depend upon the position and duties the person is to perform. The site induction will include:

- A brief overview of the works to be undertaken and any potential environmental aspects associated with the construction activities;
- A summary of the sensitive environmental receptors near the Site;
- An overview of the applicable environmental mitigation and pollution control measures; and
- An overview of the health & safety management measures in particular emergency response procedures required at the Site.

The Client will require its contractors to provide continuing training and awareness raising of the workforce. This shall be delivered in the form of Toolbox Talks tailored to the specific environmental mitigation measures required dependent on the work activities being undertaken and to raise awareness on environmental best practice.

Records of all inductions and Toolbox Talk deliveries shall be maintained at the site office. Copies shall be made available to the Client on request.

6.2.1 Internal Communication

Environmental mitigation measures shall be incorporated into the Risk Assessments and Method Statements (RAMS) prepared by the Client's contractors. All RAMS shall be communicated to the workforce by the Site Manager. The contractor's Site Manager, Works Environmental Manager and other relevant Team Members shall meet weekly to review the status of environmental aspects including but not limited to:

- Works activities underway and planned;
- Mitigation measures required to be implemented;
- Results of weekly inspections and any audit results/ feedback;
- Any corrective and preventive actions required to be implemented;
- Identification of areas for continual improvement;
- Status of staff competence and training needs; and
- Status of the CEMP and of any required consents and approvals and the need for review and updating.

The Client shall be informed of the outcome/ minutes of all such meetings.

Additional and ongoing communication of environmental performance and requirements is to be determined by the Works Environmental Manager and provided as appropriate.

Site notice boards will display the Environmental Policy of the Client, emergency contacts list, relevant statutory and non-statutory advice and guidance; and any other relevant information. These environmental notice boards will be situated in prominent positions including the main reception area of the site office.

6.2.2 Toolbox Talks

Toolbox Talks will be used to inform all site personnel of key information concerning the management of the site, procedures to be followed and expected standards / controls when working on the project. The Toolbox Talks will cover a broad range of topics including those related to best practise environmental management.

A record of Toolbox Talks will be kept on site, stating date, description of non-conformance, potential implications, proposed corrective actions, individual responsible and target date. Toolbox Talks shall include, but will not be limited to, instances where:

- There is a change to existing legislation, which requires an operational change;
- Site inspections or audits have identified corrective actions which require communicating; and
- There are significant changes in environmental conditions, i.e. heavy rainfall.

The frequency and topics of the Toolbox Talks shall depend upon the phase of construction. They shall be provided as often as necessary to address site-specific environmental requirements.

6.2.3 External Communication

The Contractor shall take reasonable steps to engage with local community groups and residents prior to and during construction, by newsletters and flyers. Neighbouring properties will be informed in advance of works taking place, where possible within 2 weeks. Details shall include planned work locations, type of works, duration, anticipated effects of the works, contact details for enquiries and complaints procedure.

The contractor, with the agreement of the Client, shall provide details visible at the site entrance so contact can be made if required.

All communications received by the contractor that are relevant to these works, including enquiries and complaints, shall be passed to the Client's Project Team.

All complaints will be acknowledged by the contractor or client on receipt and the Client and Contractor shall assess the complaint and determine what information is required from all parties in order to formulate a response. All complaints shall be recorded and investigated.

Through the induction all members of the workforce shall be made aware that any direct approaches from members of the public should be directed to their Site Manager. The Site Manager shall record all approaches made by members of the public and shall advise the Client's Project Team of all comments received at the worksite from members of the public.

6.3 Documentation

The Site Manager and/or Works Environmental Manager shall be responsible for documenting and retaining safe all suitable records relating to environmental issues at the site and/or arising from site operations. Documents shall be stored in a suitable manner and backups created to safeguard the records. This CEMP shall be a controlled document and authorised latest version shall be signed and dated by the responsible

person[s]. Other site data records and environmental management documentation would include, but not necessarily be limited to the following:

- Copies of relevant consents, permissions, or other approvals/ authorisations
- Environmental data records including waste transfer notes/ records of waste collection and treatment/disposal
- Records of any environmental incidents including actions taken and resolution
- Records of complaints including actions taken and resolution
- Records of all plant / equipment entering / leaving site together with any relevant compliance documentation (for instance in respect of noise or air pollutant emissions class)
- Copies of any enforcement notices or instructions issued by the local authority or any statutory regulatory body
- Record of any prosecutions pending or resolved and any penalties enforced
- Records of daily site inspections
- Records of weekly/monthly audits and minutes of environmental team briefings
- Records of staff training including site inductions and toolbox talks

6.4 Monitoring, Inspections and Audits

The Contractor shall be responsible for managing environmental performance during all site works. This will be supported with a programme of monitoring, inspections and audits.

6.5 Daily Inspections

Daily inspections shall be undertaken by the Contractor and recorded as follows:

- i. Visual inspection of the site perimeter to check for dust deposition (evident as soiling and marking) on vegetation, cars and other objects.
- ii. Visual inspection of the local haul roads to check their condition to ensure there is no build-up of dust or earth deposits liable to cause dust emissions as vehicles pass.
- iii. Vehicle, equipment and plant inspections shall be completed to check the absence of damage or maintenance issues and that it is correctly functioning.
- iv. Visual inspection of all acoustic barriers / screening to check they are present and in good condition.
- v. Visual inspection of waste containers and waste storage areas to verify wastes are being correctly segregated and to confirm the absence of mixing of hazardous and non-hazardous wastes.
- vi. Visual inspection of all site areas to ensure there is no deposited or wind-blown litter.
- vii. If a waste collection is made, a check shall be made of the Waste Transfer Note / Hazardous Waste Consignment Note provided for the collection.

On all days when potentially dust emitting activities are being conducted, the level of dust generation shall be kept under constant review. A record shall be added to the official site diary when such activities are conducted, the dust emission conditions observed and; when necessary, the mitigation measures taken.

Any elements of the site management found to be in an unsatisfactory condition during the site inspection shall be addressed on the day. In the event it is not possible to address the matter on the day it is raised, a note of the reason why shall be made on the inspection record sheet.

6.6 Monthly Audits

Only suitably trained and competent staff will be authorised to perform environmental audits.

Monthly Audits (or at a suitable frequency to be determined by the nature / duration of the work) of the worksites and Contractors shall be undertaken by or on behalf of the Client. All aspects of the environmental management at the site shall be assessed against this EMP. The audit shall include checks of the site records including the daily inspection record sheets, vehicle arrival logs and waste disposal paperwork. All audits shall be documented; where audit actions are raised, close out of these actions shall be assessed at the following audit.

An audit of an Environmental Management Process will be undertaken by the Environment Manager quarterly throughout the Project duration and will typically cover the activities identified in the above chapters.

6.6.1 Non-conformity and corrective action

Where the client has a concern or raises an issue for resolution, or where potential issues are raised from an inspection or audit of the site/ operations, or by a regulatory authority, the contractor shall investigate the root cause and any implications arising from the issue and shall if necessary following discussion with the client implement measures to rectify the problem.

The contractor shall monitor the effectiveness of the corrective action and report the outcome to the client and where relevant the regulatory authority. All documentation of the issue/ event and corrective action/ outcome shall be retained by the contractor.

Where necessary the CEMP and any associated documentation shall be revised and re-issued to avoid recurrence of the issue/ problem.

6.7 Review and Updates to the CEMP

This CEMP is a live document and will be continuously updated as required; or following any significant change to the work activities, client requirements, or legislation and updated as required.

6.8 Management Review

A management review of the performance of the Environmental Management System will be undertaken at least every 6 months and will include the client's Project Manager

and senior management (as a minimum this should include the Project Director and HSEQ Manager and a senior corporate representative) and key personnel including the Environmental Manager. Matters such as staffing, training, matters arising from audits and inspections and performance against Key Performance Indicators (KPIs) will be discussed and where there is a shortfall in performance, actions shall be agreed to rectify this.

6.9 Legal and Other Requirements

Certain aspects of the construction work for this Project may be subject to environmental permits, consents, authorisations and permissions.

6.9.1 Legal and Consents Register

The Legal and Consents Register identifies the key environmental legislation that applies to the works. The Register includes a schedule of all consent submissions and a tracker to confirm they are in place for the start of works.

The register is a live document and will be reviewed monthly. The Site Manager will be responsible for ensuring appropriate resources are available and work is planned to meet the legislative requirements.

6.10 Review and updates to the CEMP

The sitewide CEMP will be reviewed every 6 months as a minimum; or following any significant change to the work activities, client requirements, or legislation and updated as required. Therefore, this CEMP is a live document and will be continuously updated as required.

APPENDIX 1 PROPOSED SITE LAYOUT

Accommodation Code

Code	Bedrooms	Bathrooms	Number of Units	GFA (sqm)	Plot Area (sqm)
1	2	1	120	200	200
2	3	2	120	250	200
3	4	2	120	300	200
4	5	2	120	350	200
5	6	2	120	400	200



coombes + everitt architects limited 105-107 Bath Road Cheltenham Gloucestershire GL50 2LE t: 01242 597727 f: 0345 575553 e: info@coombes.co.uk www.coombes.co.uk	<input type="checkbox"/> Preliminary <input type="checkbox"/> Feasibility <input checked="" type="checkbox"/> Planning <input type="checkbox"/> Building Regulations <input type="checkbox"/> Tender <input type="checkbox"/> Construction issue <input type="checkbox"/> All Built	 RIBA REGISTERED ARCHITECTS	Drawn by: AP Checked: JE Project No: 21.20.020	Drawn by: AP Checked: JE Project No: 21.20.020	Project: Land at Paygrove Lane, Cheltenham Scale: 1:500, 1:200 @ A1 Date: January 2022 Project / Drawing No: 21.20.020 P_005
	coombes + everitt architects				



APPENDIX 2 SITE ENHANCEMENT PLAN





APPENDIX 3 ENVIRONMENTAL OBLIGATIONS TABLE



	Site Process	Consent/ License/ Permit	Controlling Regulations	Issuing Authority	Submission Date	Approval Period	Consent Approval Date	Reference No.	Surrender Date
Water	Discharging water to a river, stream, ditch	Discharge consent to controlled water	Water Resources Act Groundwater Regulations	Environment Agency	TBC	TBC	TBC	TBC	TBC
	Installation/operation of septic tanks.		Environmental Permitting (England & Wales Regulations)						
	Site set-up sewage discharge for enabling works	Permission to discharge trade effluent to sewer	Water Industry Act	Local Water Company	TBC	TBC	TBC	TBC	TBC
	Temporary and permanent works over and within 7-10m (note the distance may vary between EA regions). Anticipated works requiring consent are detailed in Section 2.1 and 3.7.	Flood defence consent (formerly known as land drainage consent/ works affecting watercourses consent)	Water Resources Act Land Drainage Act Local Byelaws	Environment Agency	TBC	TBC	TBC	TBC	TBC
Abstracting or taking water from rivers, streams, lakes, ponds, tidal waters or groundwater. Constructing or altering any impounding works in rivers, streams, ponds or tidal waters.	Abstraction licence: <ul style="list-style-type: none"> • Full licence – applicable to most abstractions over 20m³ a day. • Transfer licence – moving water from one 	Water Resources Act	Environment Agency	TBC	TBC	TBC	TBC	TBC	



	Site Process	Consent/ License/ Permit	Controlling Regulations	Issuing Authority	Submission Date	Approval Period	Consent Approval Date	Reference No.	Surrender Date
	Dewatering activities may require a licence. Note: licence is not required for abstraction for any purpose of less than 20 cubic metres a day.	location to another with no intervening use. Temporary licence – over 20m ³ a day over a period of less than 28 consecutive days.							
	Use herbicides near water	Prior permission	Food and Environmental Protection Act (Control of Pesticides Regulations)	Environment Agency	TBC	TBC	TBC	TBC	TBC
Waste Management	Transfer/disposal of controlled waste	Controlled waste transfer notes	Environmental Protection Act Waste (England and Wales) Regulations	Producer Haulier	As part of site records	As part of site records	As part of site records	As part of site records	As part of site records
	Transfer/disposal of hazardous waste (England & Wales)	Hazardous waste consignment notes	Hazardous Waste Regulations	Producer Haulier	As part of site records	As part of site records	As part of site records	As part of site records	As part of site records
	Carrying waste other than your own (controlled or hazardous)	Waste carrier's registration certificate	Waste (England and Wales) Regulations	Environment Agency	TBC	TBC	TBC	TBC	TBC
	Keep, treat and dispose of waste	Environmental permit May need planning permission	Environmental Permitting (England & Wales) Regulations	Environment Agency Local authority	TBC	TBC	TBC	TBC	TBC



	Site Process	Consent/ License/ Permit	Controlling Regulations	Issuing Authority	Submission Date	Approval Period	Consent Approval Date	Reference No.	Surrender Date
			Town and Country Planning Act						
	Reuse waste materials off site	Environmental permit or exemption from Environmental Permitting regulations	Environmental Permitting (England & Wales) Regulations	Environment Agency	TBC	TBC	TBC	TBC	TBC
	Treatment of contaminated land and water	Mobile Treatment Licence	Environmental Permitting (England & Wales) Regulations Contaminated Land (England) (Amendment) Regulations	Environment Agency	TBC	TBC	TBC	TBC	TBC
	Handling asbestos	Licence for work with asbestos from HSE Asbestos licensing unit	Control of Asbestos Regulations	HSE Asbestos Licences Unit	TBC	TBC	TBC	TBC	TBC
	Manufacturing of aggregates and soils from demolition, construction, tunnelling and excavation wastes or waste ash, slag, clinker or rock, e.g. screening of soils	Exemption from waste management licensing	Environmental Permitting (England & Wales) Regulations	Environment Agency	TBC	TBC	TBC	TBC	TBC
Nuisance	Crushing and screening operations	Environmental permit or exemption (T5/T7) Authorisation to operate a part B prescribed process.	Environmental Permitting (England & Wales) Regulations	Local authority environmental health Environment Agency	TBC	TBC	TBC	TBC	TBC



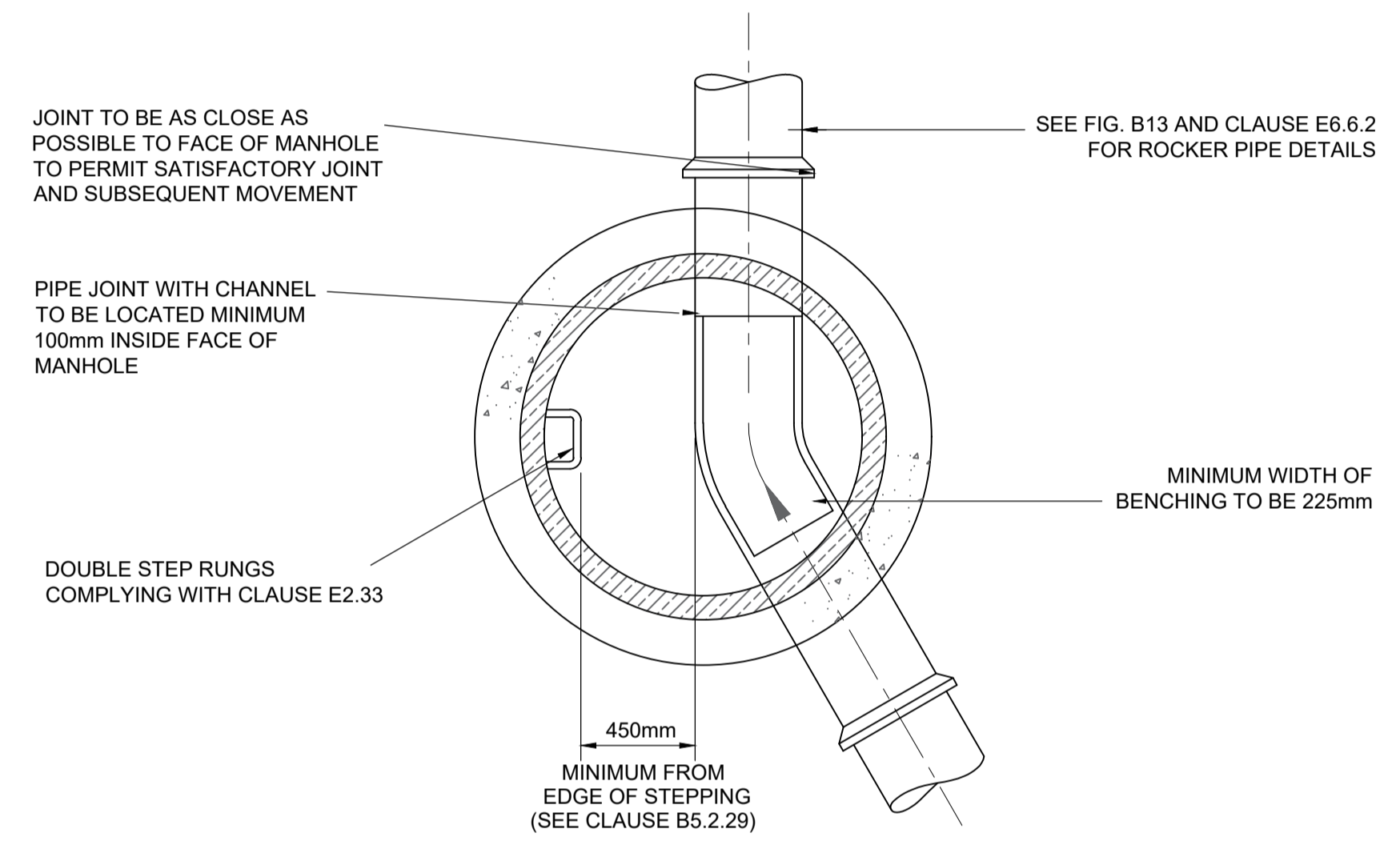
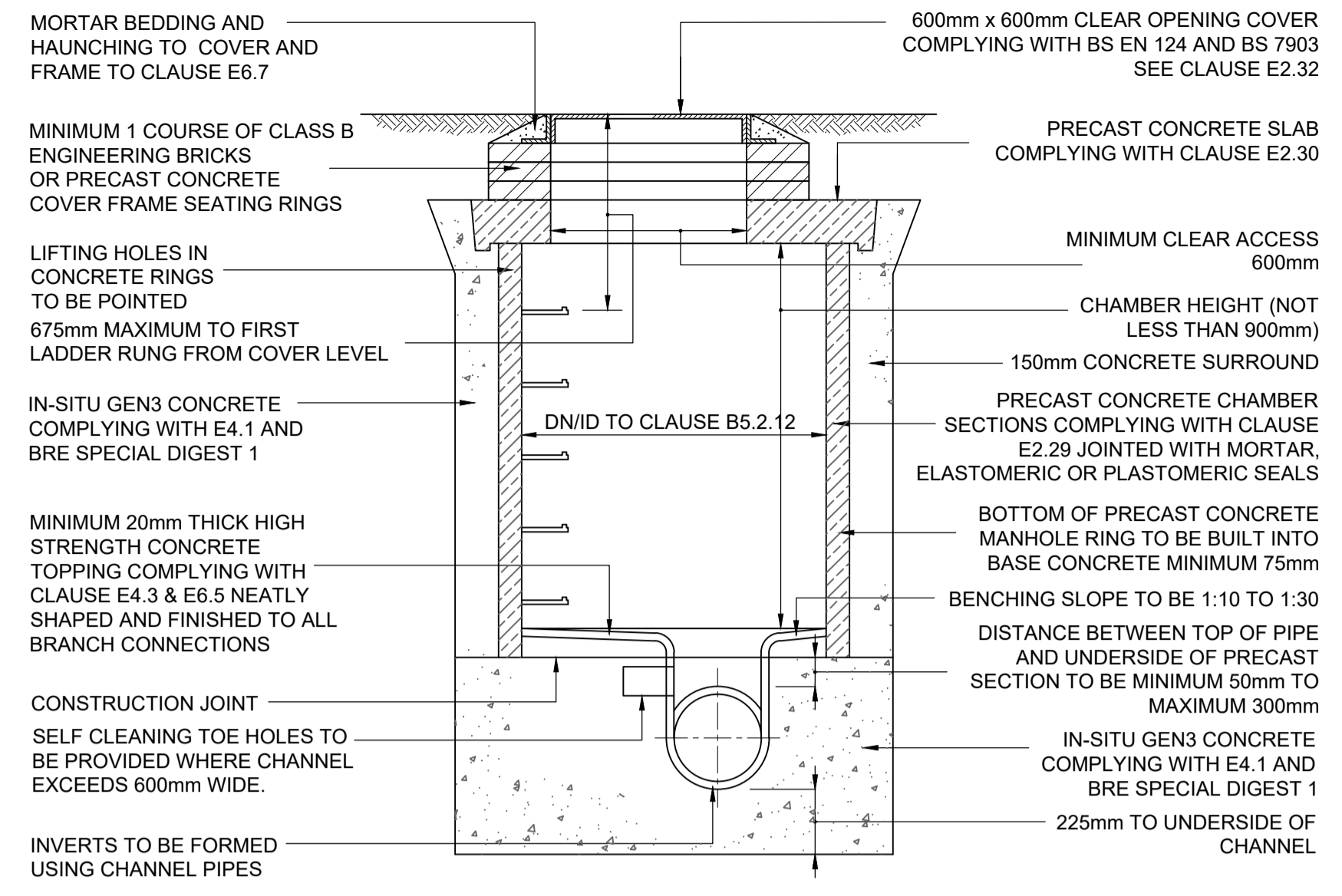
	Site Process	Consent/ License/ Permit	Controlling Regulations	Issuing Authority	Submission Date	Approval Period	Consent Approval Date	Reference No.	Surrender Date
			Pollution Prevention and Control (England & Wales) Regulations						
	Managing noise and vibration levels	Prior consent under Section 61 (optional)	Control of Pollution Act	Local authority environmental health	TBC	TBC	TBC	TBC	TBC
Biodiversity	Cutting, topping or uprooting protected trees	Prior consent	The Town and Country Planning (Tree Preservation) (England) Regulations	Local authority planning dept	TBC	TBC	TBC	TBC	TBC
	Works affecting hedgerows	Prior consent	Hedgerow Regulations	Local authority planning dept	TBC	TBC	TBC	TBC	TBC
	Works affecting designated areas i.e. SSSIs, AONB	Prior consent	Wildlife and Countryside Act Habitat Regulations Countryside and Rights of Way Act	Natural England	TBC	TBC	TBC	TBC	TBC
	Works near badger setts	Prior consent	Protection of Badgers Act	Natural England	TBC	TBC	TBC	TBC	TBC
	Disturb or translocate protected species (esp. bats, badgers and newts)	Licence	Wildlife and Countryside Act Habitat Regulations as amended	Natural England	TBC	TBC	TBC	TBC	TBC



	Site Process	Consent/ License/ Permit	Controlling Regulations	Issuing Authority	Submission Date	Approval Period	Consent Approval Date	Reference No.	Surrender Date
	Removal and/or introduction of fish with inland waters	Prior consent	Salmon and Freshwater Fisheries Act	Environment Agency	TBC	TBC	TBC	TBC	TBC
	Treatment of Japanese knotweed – burning on site	Prior consent	Wildlife and Countryside Act Clean Air Act Environmental Permitting (England & Wales) Regulations	Environment Agency Local authority environmental health	TBC	TBC	TBC	TBC	TBC
	Treatment of Japanese knotweed – burial	Formal notification	Wildlife and Countryside Act Environmental Permitting (England & Wales) Regulations	Environment Agency	TBC	TBC	TBC	TBC	TBC
Cultural Heritage	Demolition or alteration of a listed building and historic structures within its grounds.	Planning Permission & Scheduled monument consent	Planning (Listed Buildings and Conservation Areas) Act	Local planning authority	TBC	TBC	TBC	TBC	TBC
	Works on/near scheduled ancient monuments (SAM's)	Planning Permission & Listed building consent	Town and Country Planning Act Ancient Monuments and Archaeological Areas Act	Local planning authority English Heritage	TBC	TBC	TBC	TBC	TBC

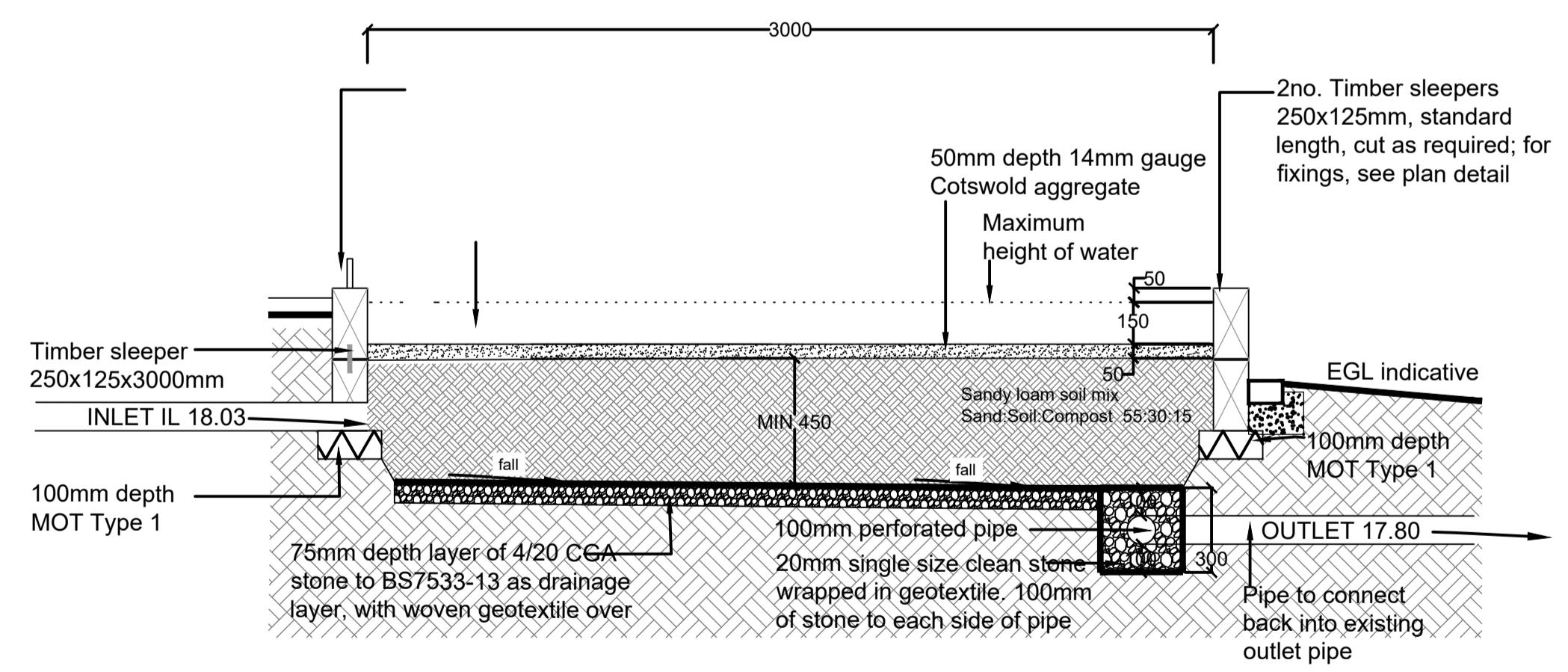


	Site Process	Consent/ License/ Permit	Controlling Regulations	Issuing Authority	Submission Date	Approval Period	Consent Approval Date	Reference No.	Surrender Date
	Demolition of an unlisted building in a conservation area.	Planning Permission & Conservation area consent	Planning (Listed Buildings and Conservation Areas) Act	Local planning authority	TBC	TBC	TBC	TBC	TBC

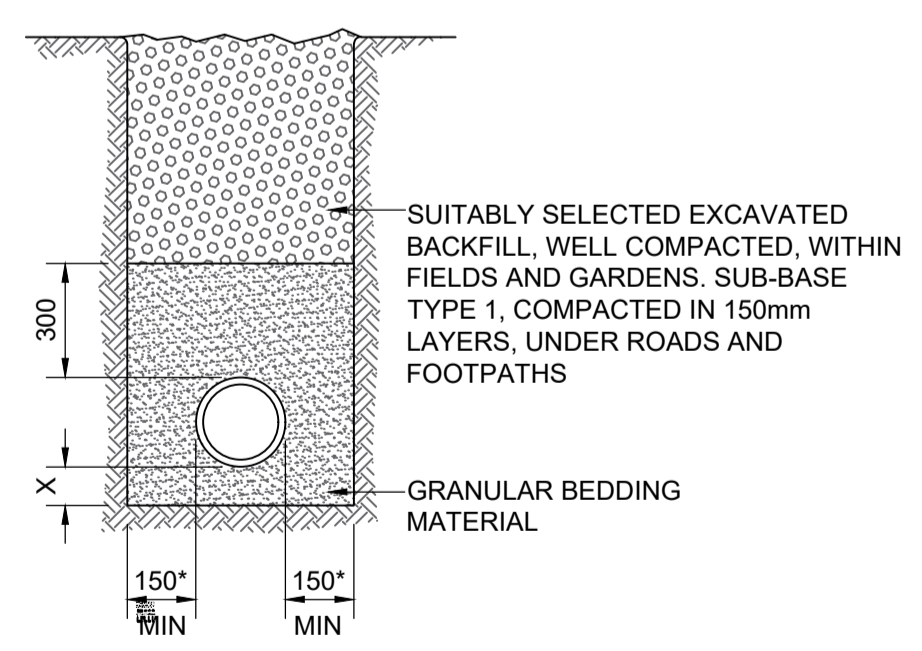


TYPICAL MANHOLE DETAIL - TYPE B

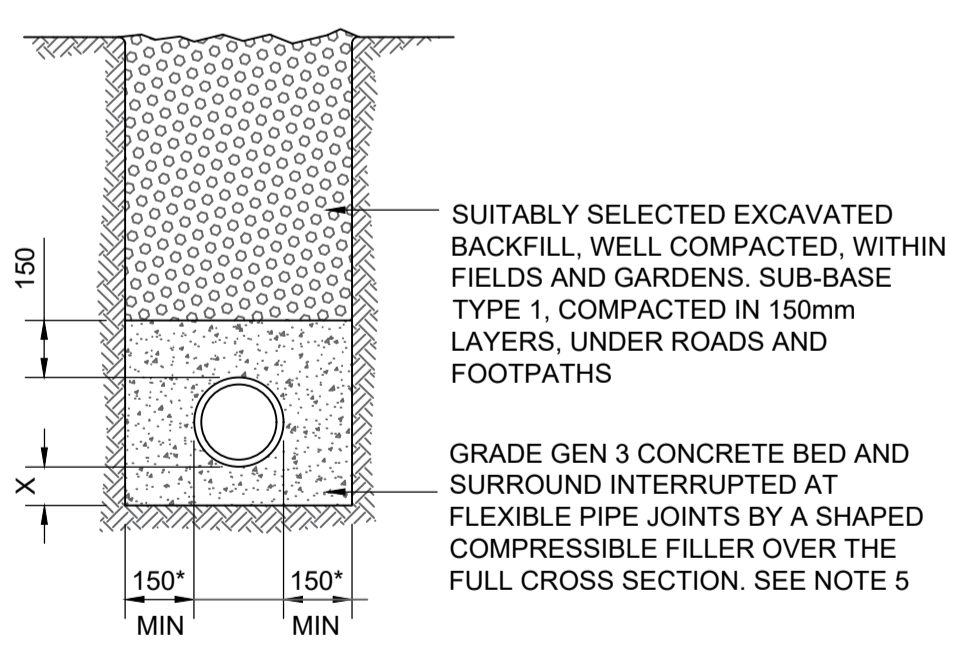
DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 1.35 TO 3.0m RIGID MATERIAL CONSTRUCTION WITH CONCRETE SURROUND NTS



RAINWATER GARDEN DETAIL



CLASS S BEDDING



CLASS Z BEDDING

TYPICAL PIPE BEDDING

SCALE 1:10

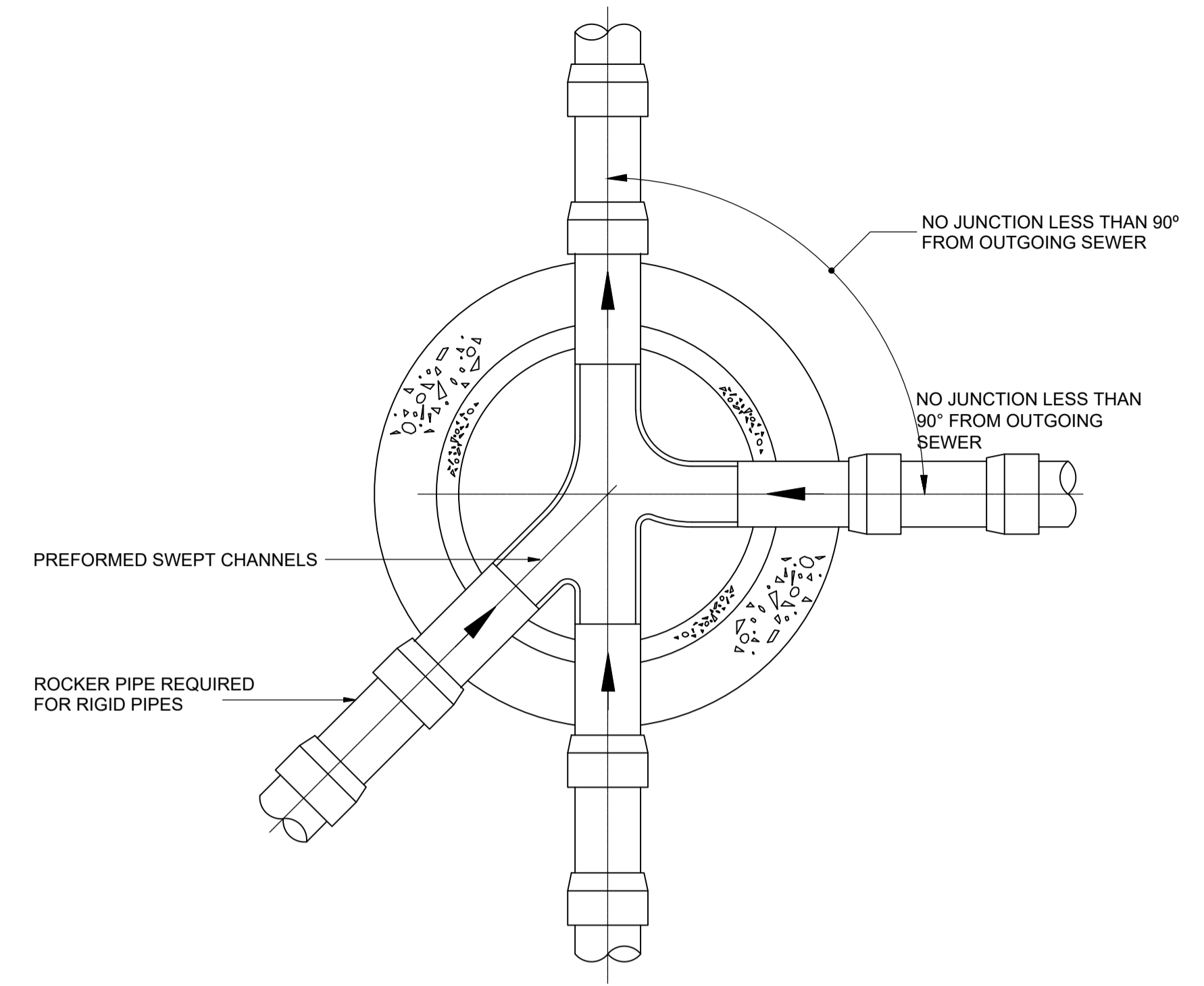


FIG B13 TYPICAL ARRANGEMENT OF PIPE JUNCTIONS WITHIN MANHOLES

RIGID PIPES BUILT INTO MANHOLES SHOULD HAVE A FLEXIBLE JOINT AS CLOSE AS FEASIBLE TO THE EXTERNAL FACE OF THE STRUCTURE AND THE LENGTH OF OF THE NEXT ROCKER PIPE SHOULD BE AS SHOWN.

Nominal diameter (mm)	Effective length (m)
150 - 600	0.6
601 - 750	1.00
over 750	1.25

ALL PIPES ENTERING THE BOTTOM OF THE MANHOLE TO HAVE SOFFITS LEVEL. NOT TO SCALE

BEDDING NOTES:

- * = 150 FOR PIPES DIAMETER UP TO 300mm, * = 200mm FOR PIPE DIAMETERS OVER 300mmØ BASED ON NARROW TRENCH THEORY: DESIGNER TO CONFIRM FOR SPECIFIC PIPELINE.
- BACKFILL MATERIAL TO BE SELECTED EXCAVATED MATERIAL WHERE THIS MATERIAL COMPLIES WITH CESWI. ADDITIONAL MATERIAL TO MAKE UP ANY DEFICIENCY TO BE GRANULAR SUB-BASE TYPE 1 UNLESS STATED OTHERWISE.

NOMINAL BORE OF PIPE (min)	AGGREGATE SIZE (mm)	
	SINGLE SIZED	GRADED
100	10	-
150	10 OR 14	14 TO 5
225-300	10,14 OR 20	14 TO 5 OR 20 TO 5
375-525	14 OR 20	14 TO 5 OR 20 TO 5
EXCEEDING 525	14,20 OR 40	14 TO 5 OR 20 TO 5 40 TO 5

DIM X > 100mm FOR PIPES < 100mmØ
 DIM X > 150mm FOR PIPES > 100mmØ
 DIM X > 200mm FOR PIPES TRENCHES IN ROCK

- IN WET, SOFT, OR SILTY SOILS, WHERE LATERAL SUPPORT IS NOT OBTAINED OR WHERE FINES MAY MIGRATE, THE GRANULAR BEDDING MATERIAL SHALL BE SURROUNDED BY GEOTEXTILE FABRIC WITH MIN 200 OVERLAP.
- TRENCH BACKFILL TO MEET HIGHWAY SPECIFICATION WHEN LAID IN ROAD OR FOOTPATH.
- COMPRESSIBLE FILLER SHALL BE BITUMEN-IMPREGNATED INSULATING BOARD TO BS 622-1, THICKNESS AS TABLE.

NOMINAL DIAMETER OF PIPE (mm)	THICKNESS OF COMPRESSIBLE FILLER (mm)
LESS THAN 450mm	18
450-1200mm	36
EXCEEDING 1200mm	54

- NOTES:**
- DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS STATED OTHERWISE.
 - ALL ADOPTABLE DRAINAGE SHALL BE CONSTRUCTED IN ACCORDANCE WITH SEWER SECTOR GUIDANCE - APPENDIX C, "DESIGN AND CONSTRUCTION GUIDANCE FOR FOUL AND SURFACE WATER SEWERS" VERSION 2 MARCH 2020.

Rev	Date	Drawn By	Checked By
A	27.06.22	PG	KT



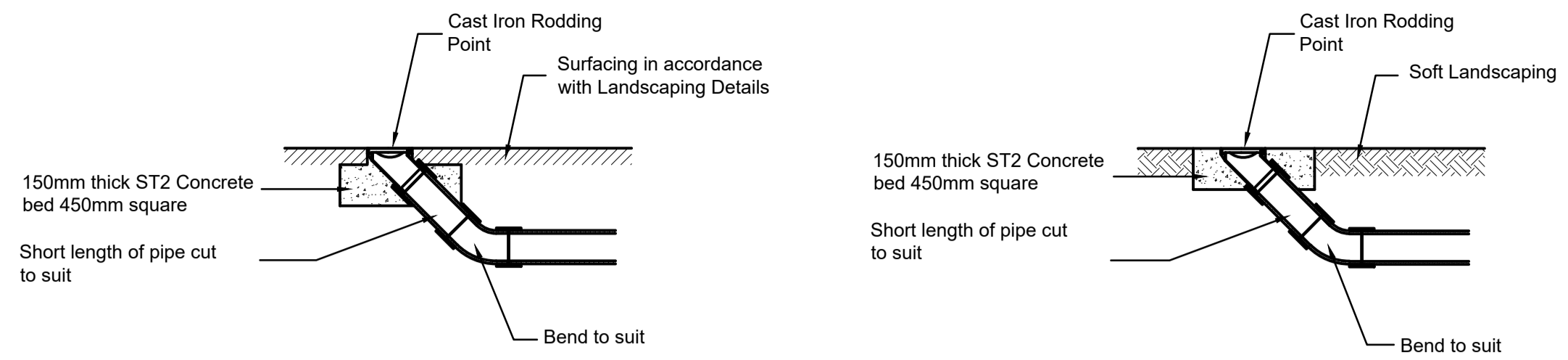
CLIENT: Cotswold Oak Ltd

PROJECT: Paygrove Lane, Longlevens

TITLE: Details Sheet 1 - Drainage

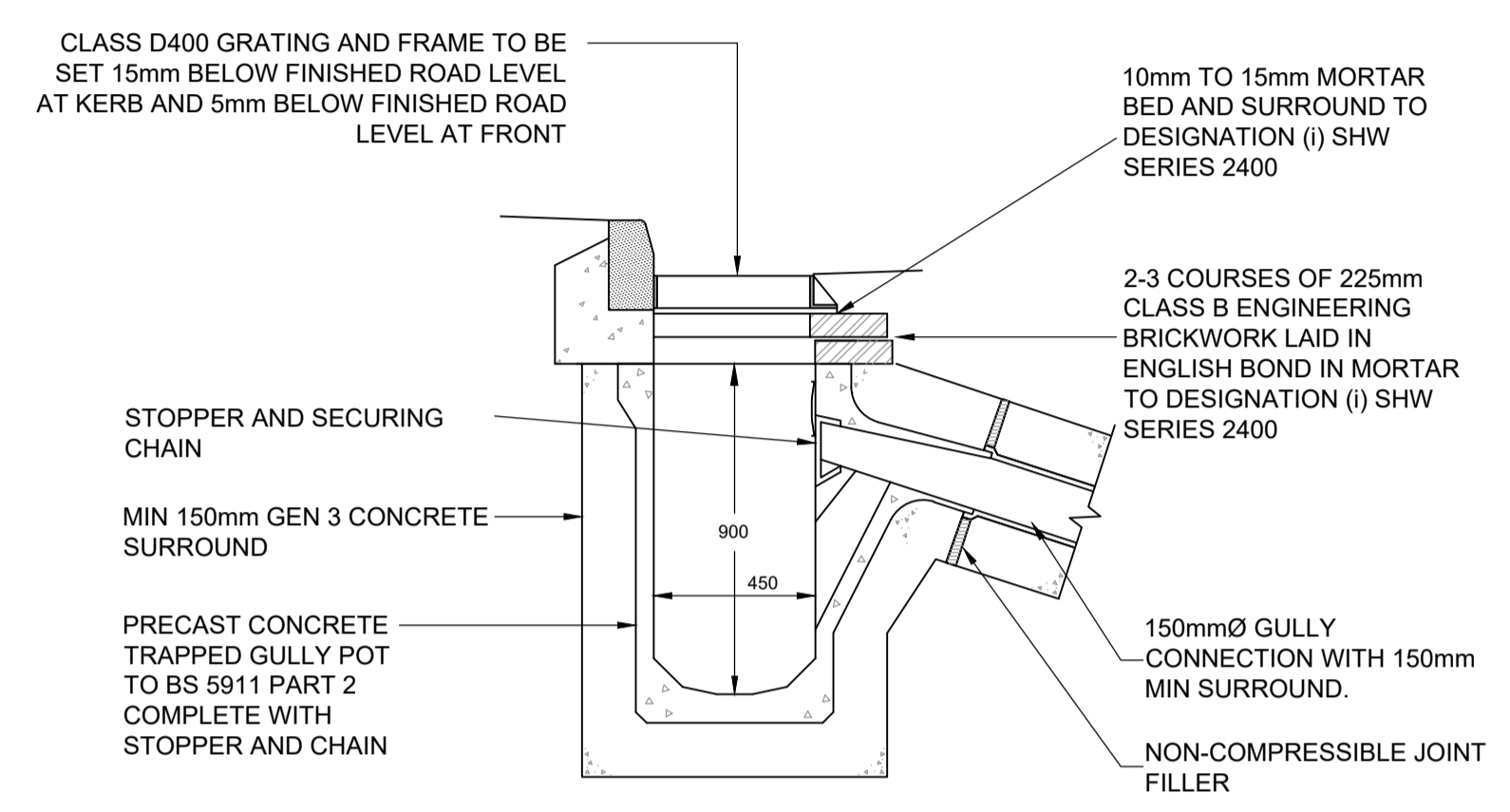
STATUS: APPROVAL

SCALE @ A1:	DATE:	DRAWN:	CHECKED:	APPROVED:
AS SHOWN	FEB 22	PG	KT	KT
JOB NO:	DRAWING NO:	REVISION:		
21-0760	C100	A		

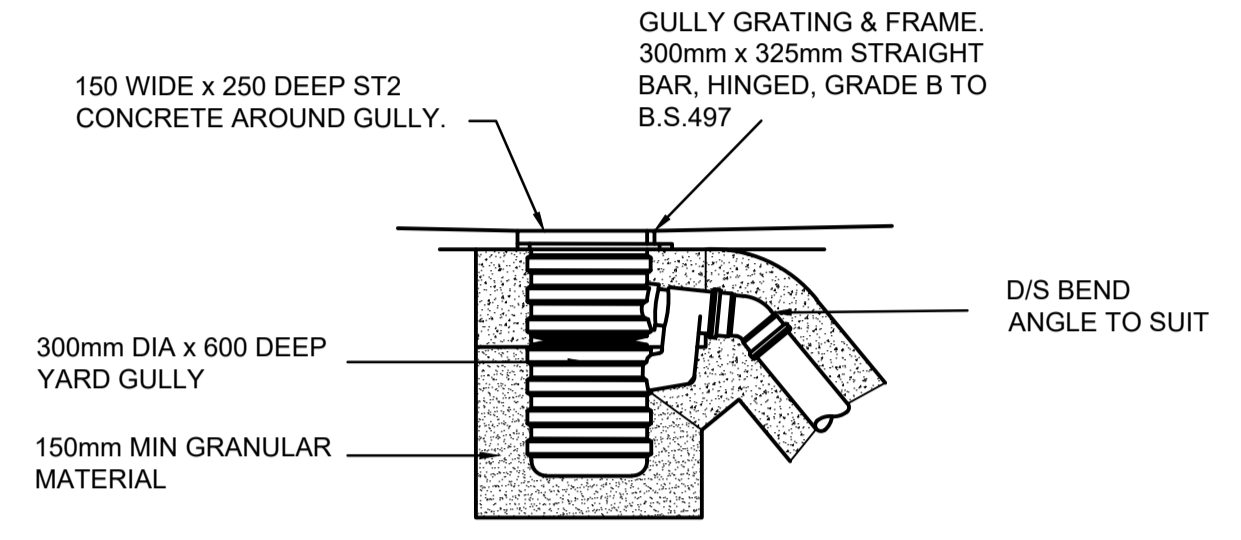


RODDING EYE DETAIL
(Hard landscape Areas)

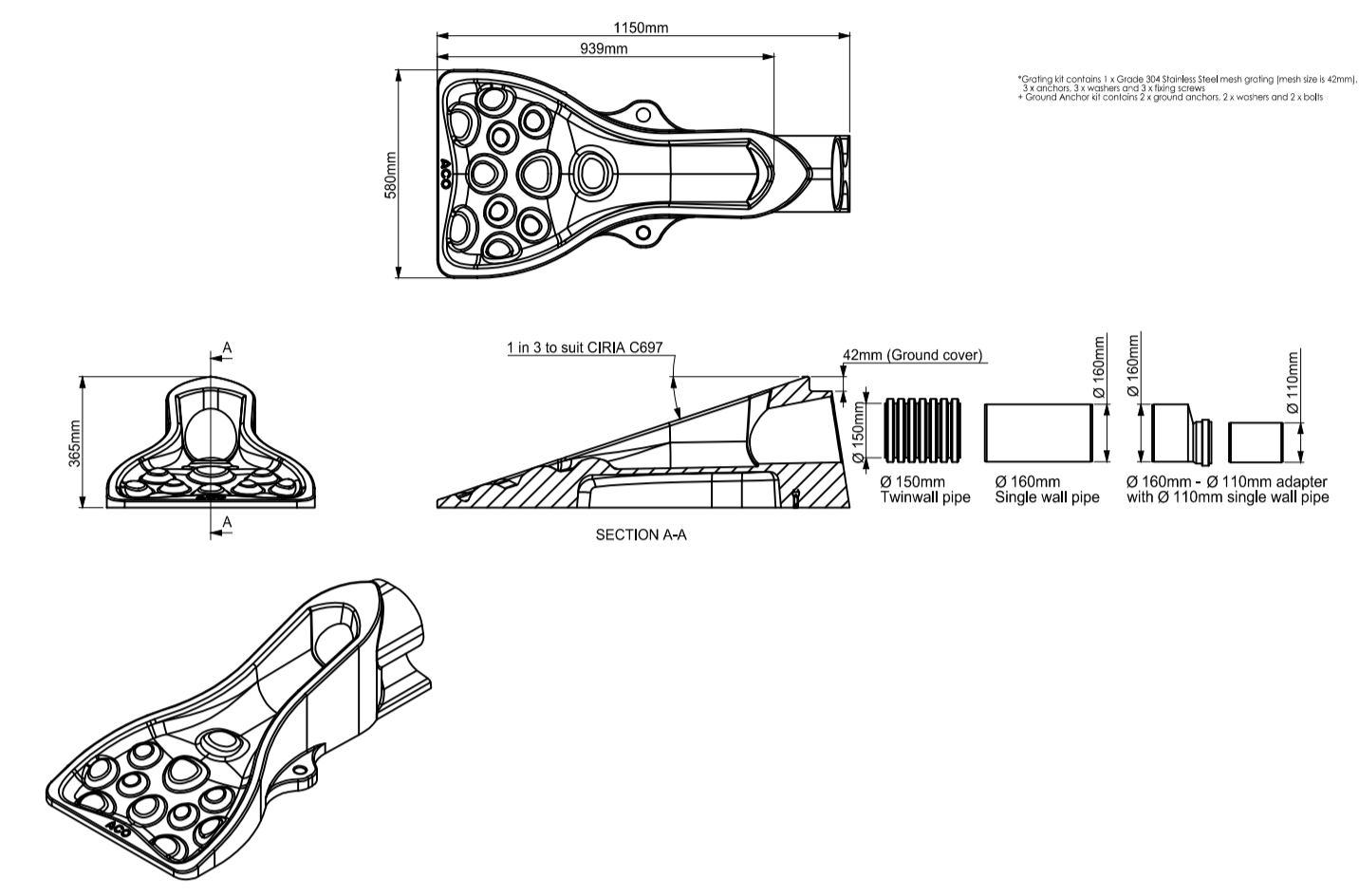
RODDING EYE DETAIL
(Soft landscape Areas)



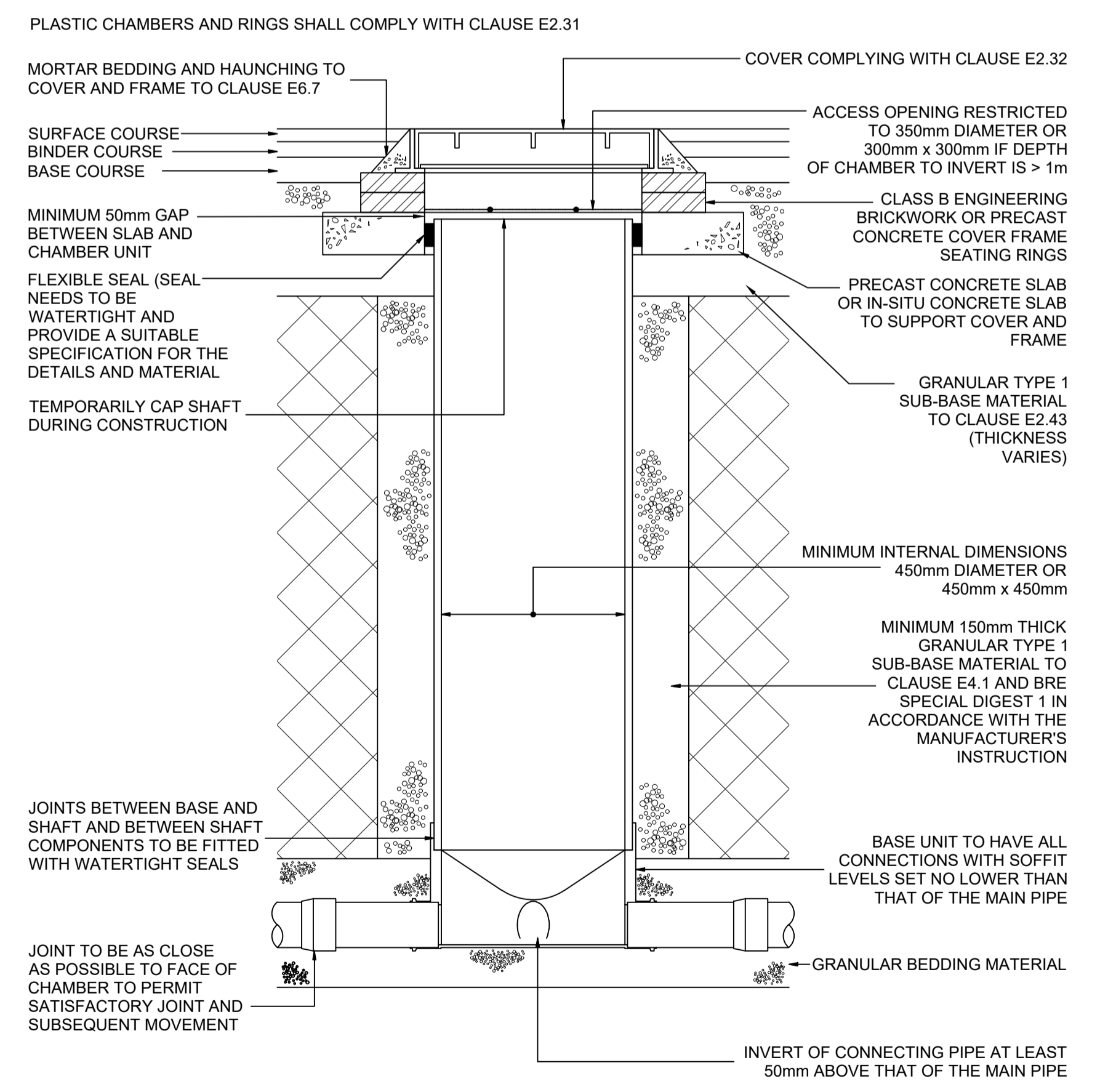
ROAD GULLY
SCALE 1:20



TYPICAL YARD GULLY DETAIL

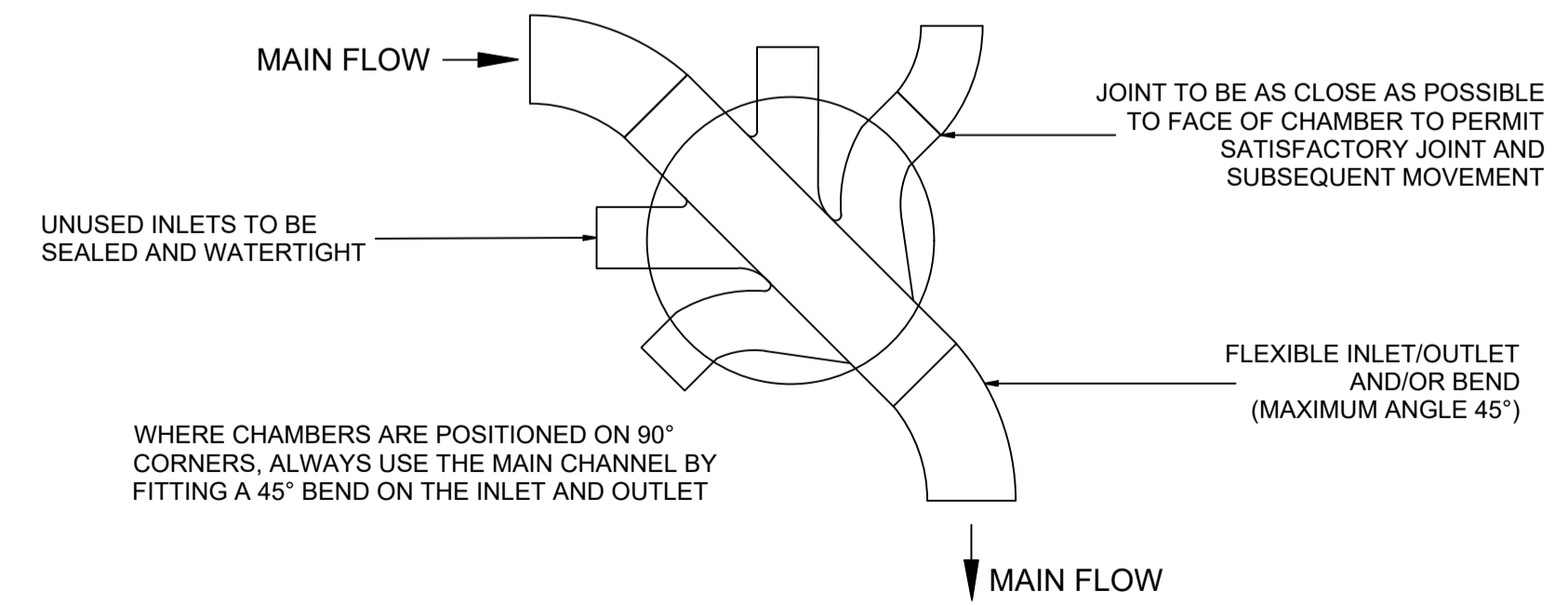
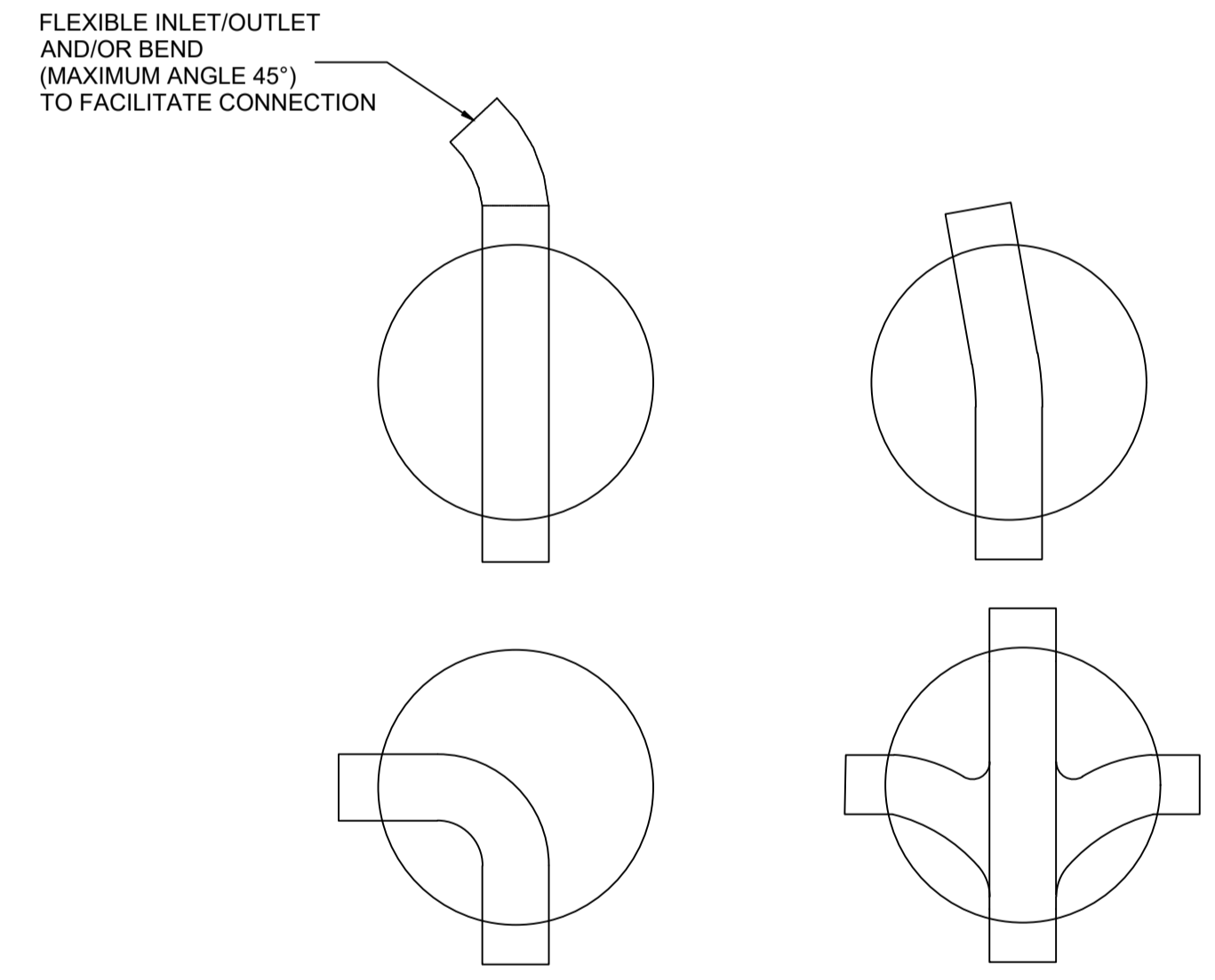


ACO SUDS SWALE INLET



TYPICAL INSPECTION CHAMBER DETAIL - TYPE D

DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE UP TO 2m
FLEXIBLE MATERIAL CONSTRUCTION FOR USE IN AREAS SUBJECT TO VEHICLE LOADING
NOT TO SCALE



TYPICAL BASE LAYOUTS FOR TYPE D CHAMBERS

NOT TO SCALE

NOTE: WHERE A BEND IS USED IMMEDIATELY OUTSIDE THE MANHOLE, THIS MAY BE USED AS THE ROCKER PIPE

- NOTES:**
- DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS STATED OTHERWISE.
 - ALL ADOPTABLE DRAINAGE SHALL BE CONSTRUCTED IN ACCORDANCE WITH SEWER SECTOR GUIDANCE - APPENDIX C, "DESIGN AND CONSTRUCTION GUIDANCE FOR FOUL AND SURFACE WATER SEWERS" VERSION 2 MARCH 2020.

Rev	Date	Details	Drawn By	Checked By
A	27.06.22	SUDS INLET DETAIL ADDED	PG	KT



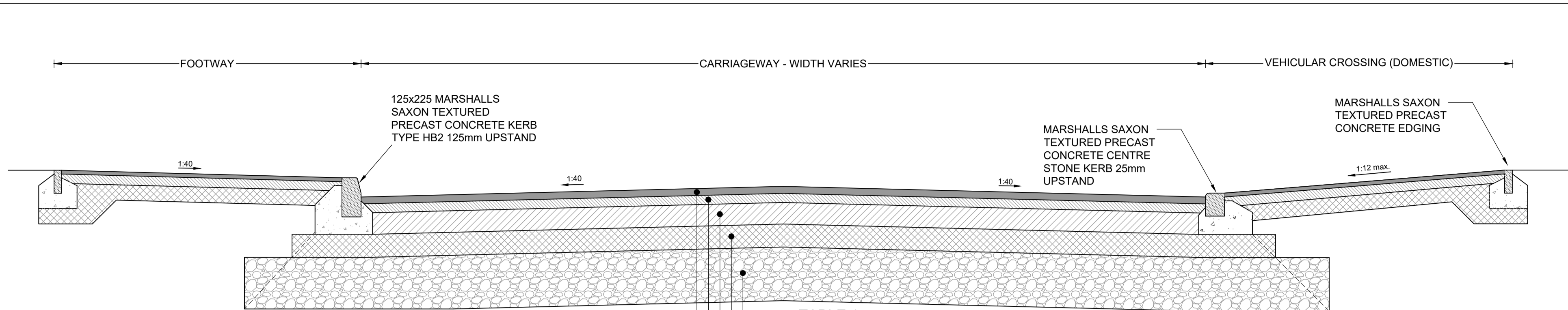
CLIENT:
Cotswold Oak Ltd

PROJECT:
Paygrove Lane, Longlevens

TITLE:
**Details
Sheet 2 - Drainage**

STATUS:
APPROVAL

SCALE @ A1:	DATE:	DRAWN:	CHECKED:	APPROVED:
AS SHOWN	FEB 22	PG	KT	KT
JOB NO:	DRAWING NO:	REVISION:		
21-0760	C101	A		



SURFACE COURSE 30mm AC10 CLOSE SURF 100/150

BINDER COURSE 60mm AC20 DENSE BIN 100/150

BASE COURSE 100mm AC32 HDM BASE 40/60

GRANULAR SUB BASE MATERIAL TYPE 1 DEPTH TO TABLE 1 VALUES.

GRANULAR CAPPING LAYER MATERIAL TYPE 1. DEPTH TO TABLE 1 VALUES.

TABLE 1

SUB GRADE CBR%	SUB BASE THICKNESS	CAPPING LAYER THICKNESS
<=2%	150mm	400mm
<=5%	150mm	200mm
<=15%	200mm	-
<=30%	150mm	-
>30%	0	-

NOTE: MINIMUM TOTAL THICKNESS 450mm IF SUB-GRADE IS FROST SUSCEPTIBLE

CARRIAGEWAY CONSTRUCTION DETAIL
SCALE 1:20

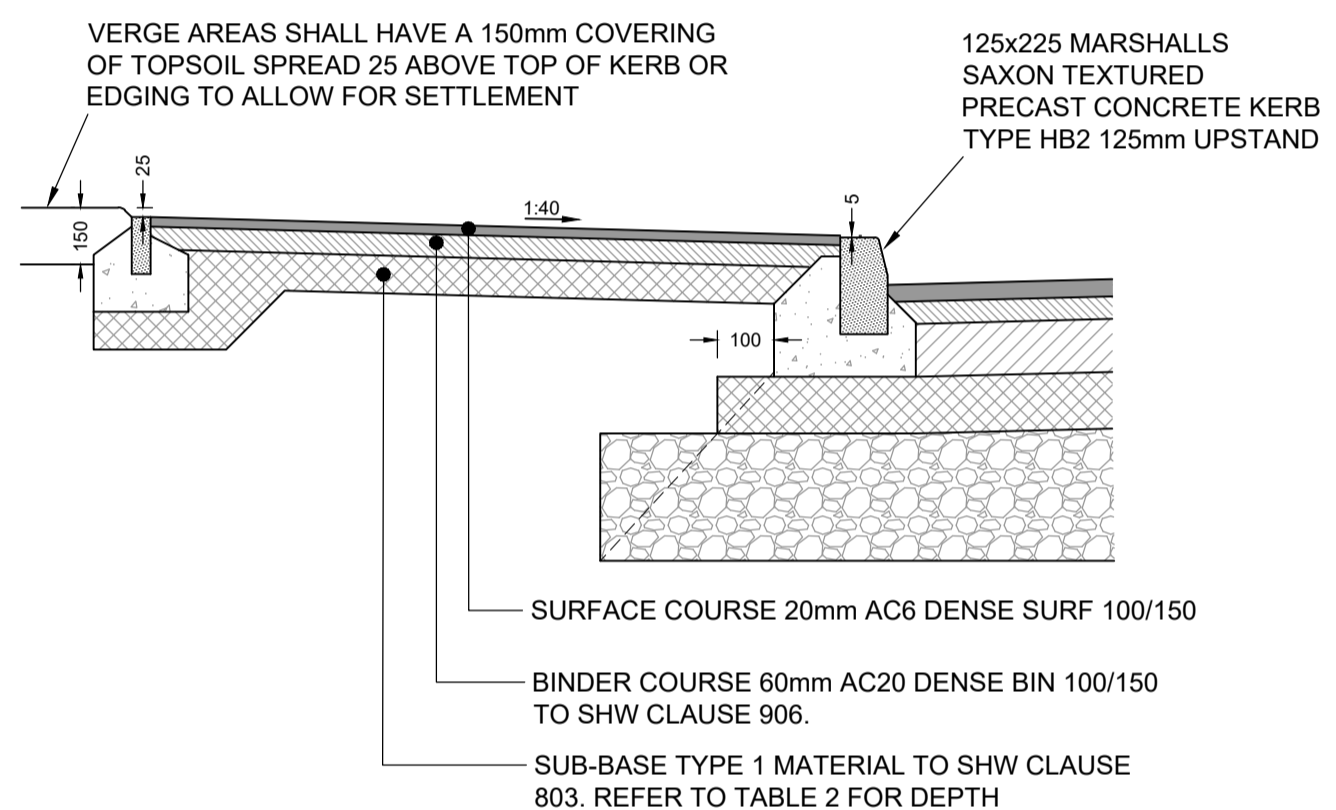
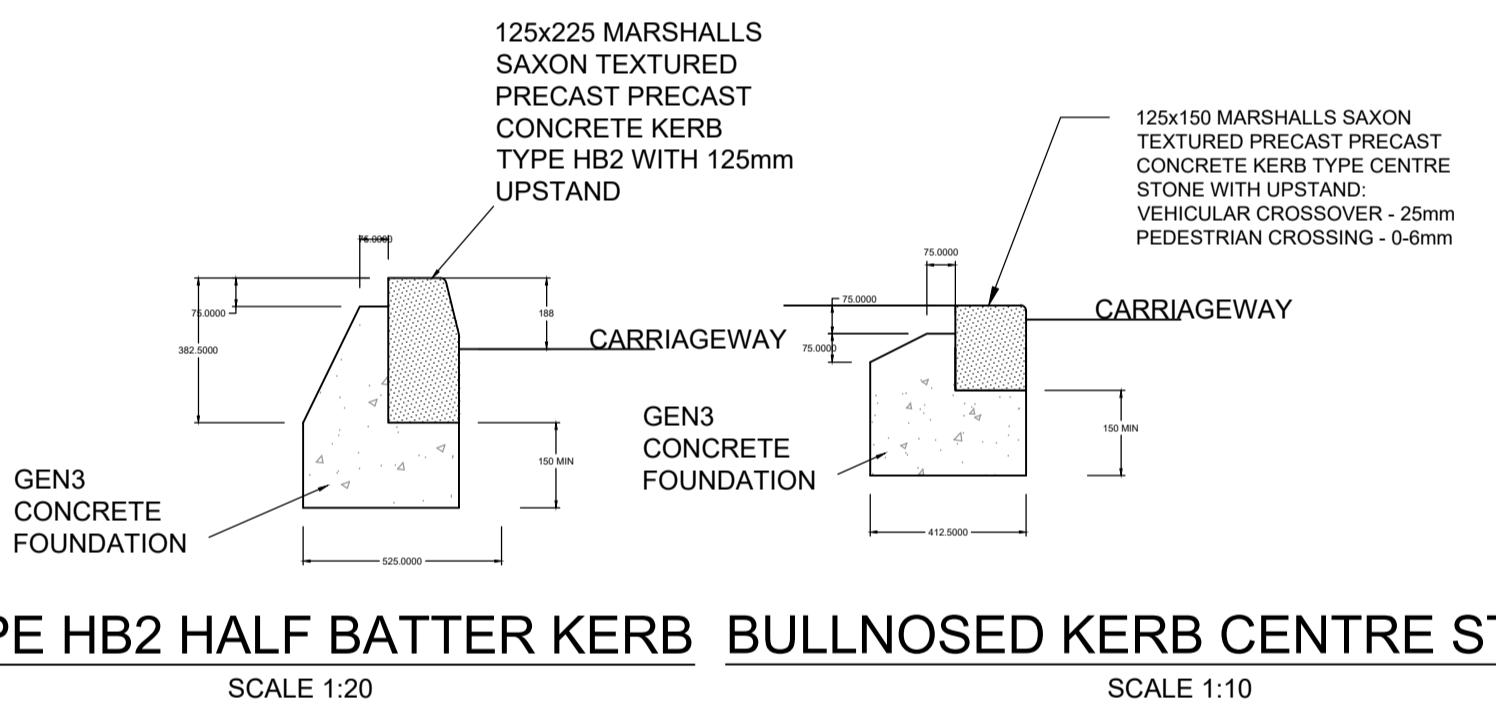


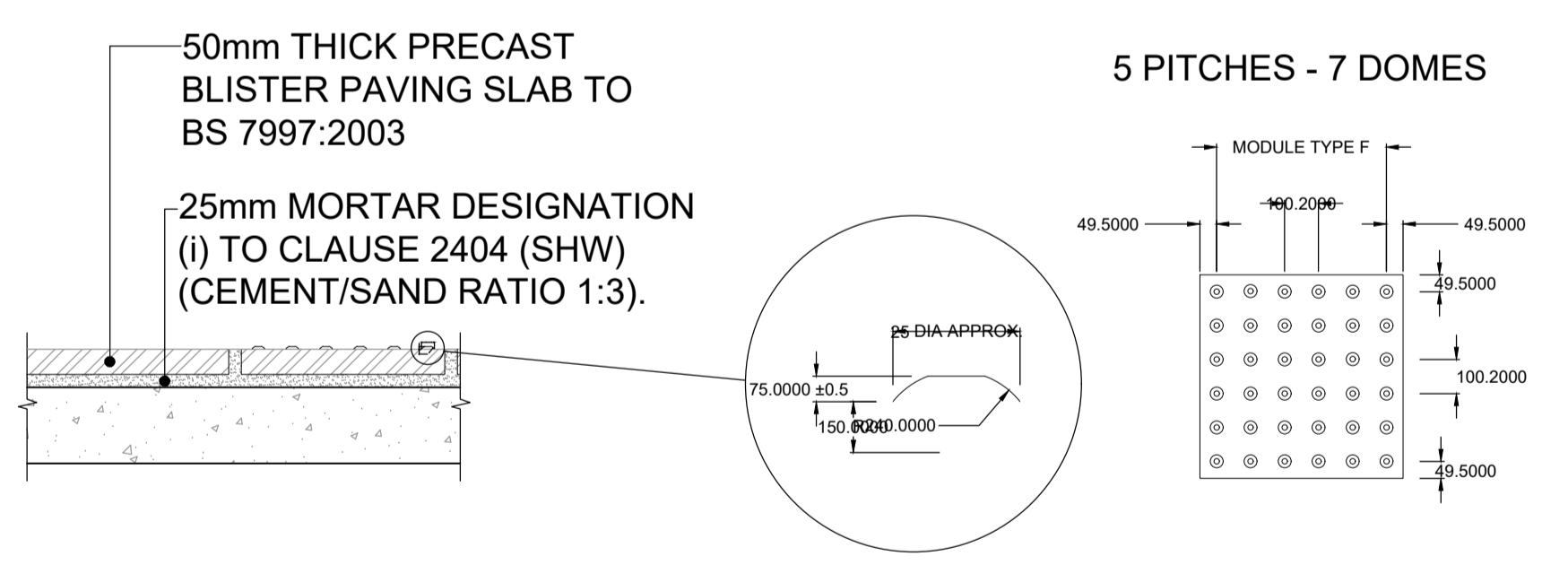
TABLE 2

SUB GRADE CBR%	SUB BASE THICKNESS
<=2%	300mm
>2%	150mm

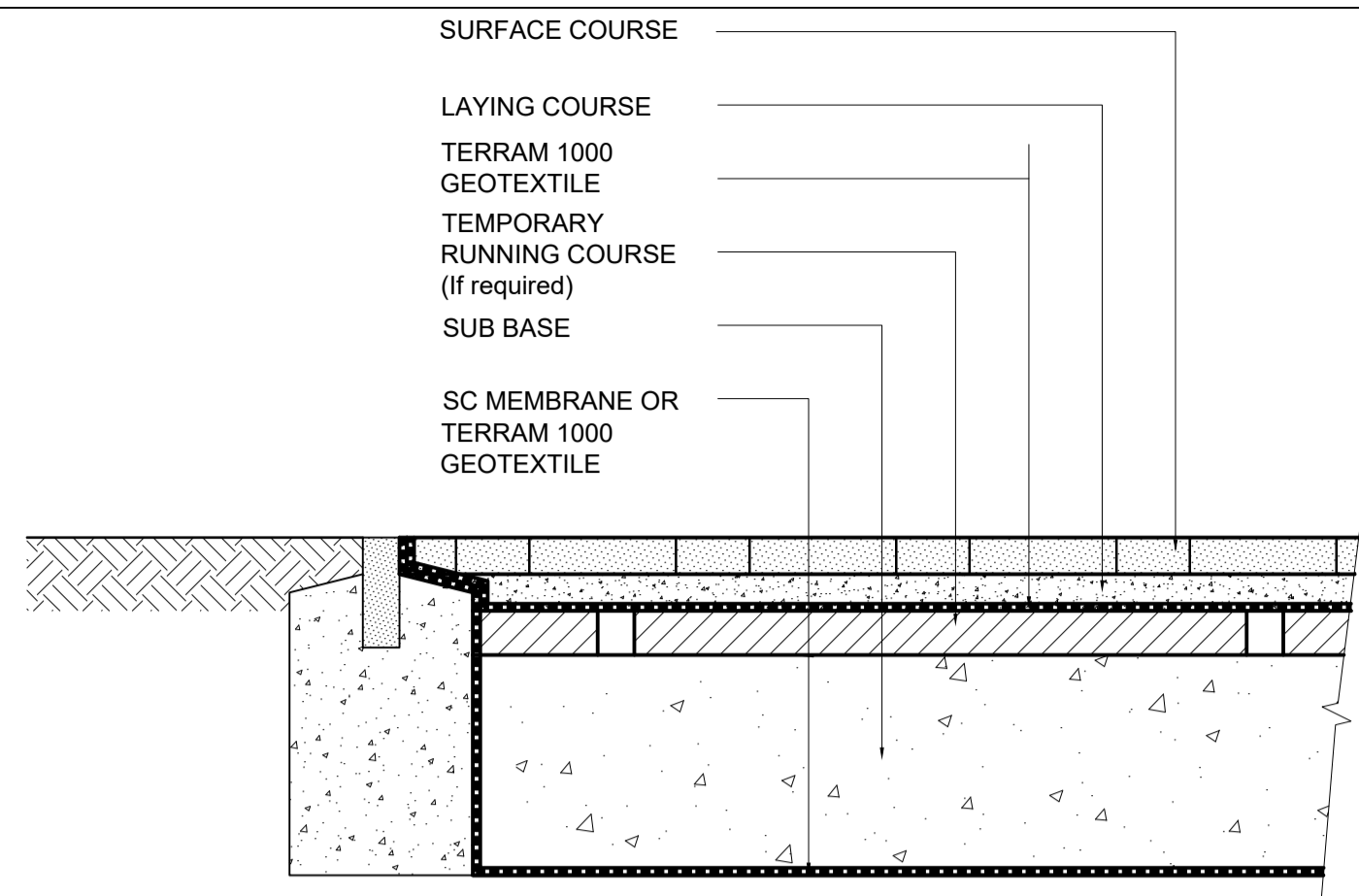
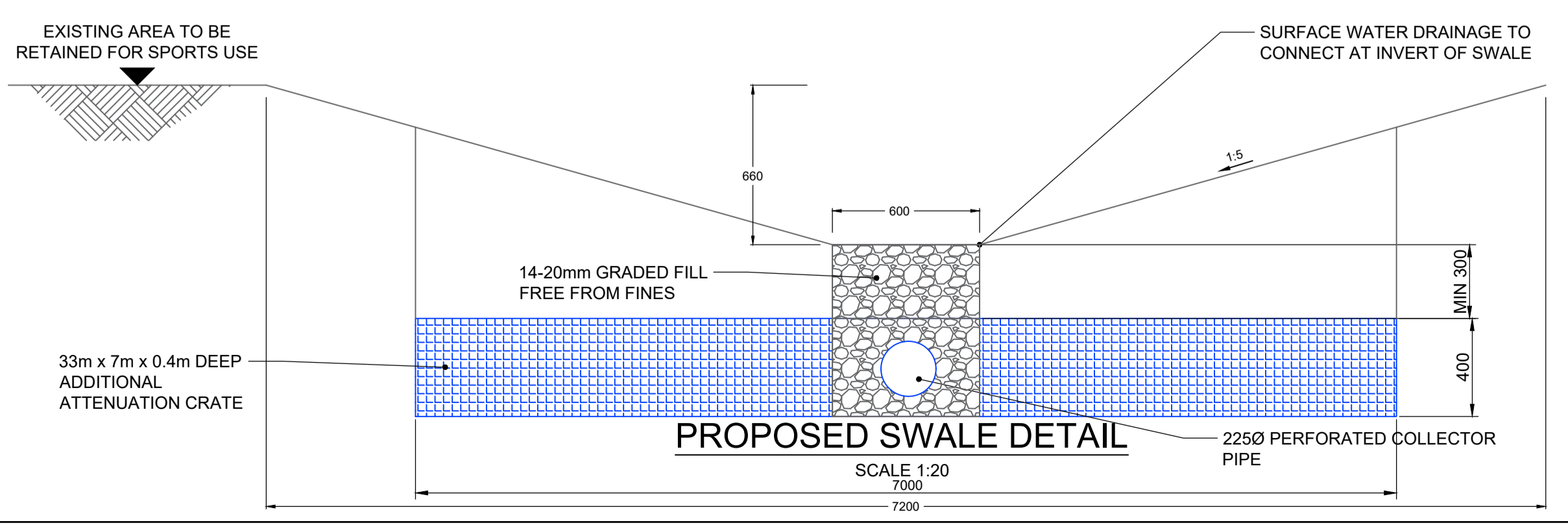
FOOTWAY EDGING (EF)
SCALE 1:10



TYPE HB2 HALF BATTER KERB BULLNOSED KERB CENTRE STONE
SCALE 1:20 SCALE 1:10



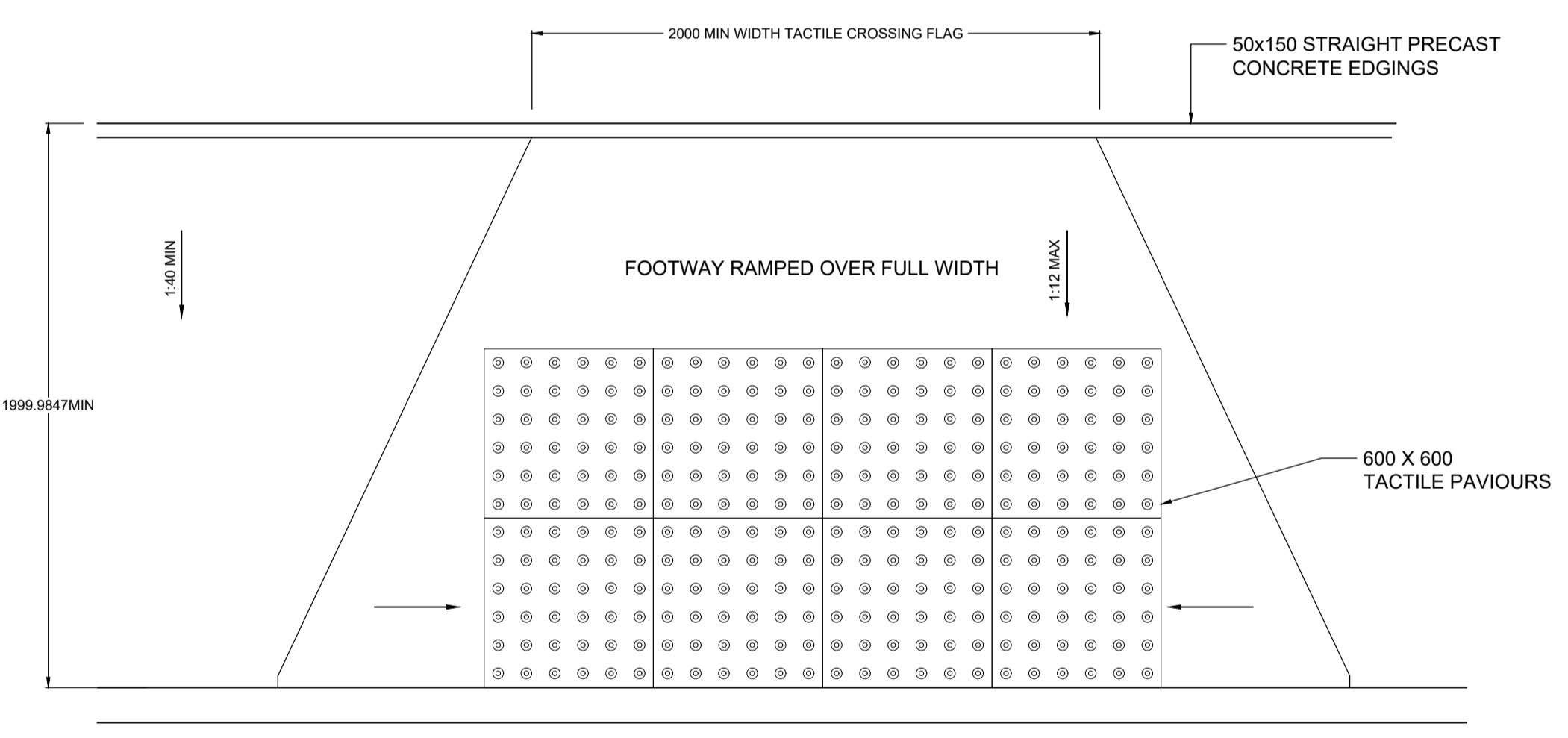
TACTILE PAVING - COLOUR BUFF
SCALE 1:20



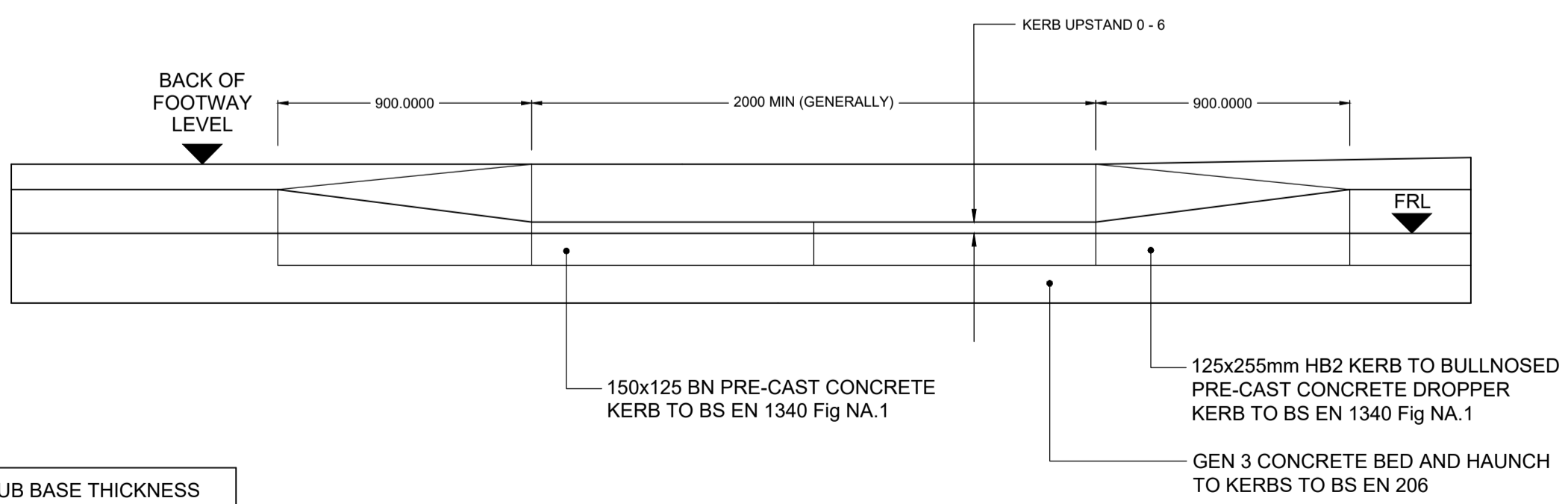
LAYER	SPECIFICATION	THICKNESS (mm)
SURFACE COURSE	PERMEABLE CONCRETE BLOCK PAVIORS TO BS EN 1338:2003 WITH JOINTING GRIT BRUSHED IN	60
LAYING COURSE	2/6.3mm OPEN GRADED CRUSHED ROCK TO BS EN 13242 AGGREGATE (mm)	50
TEMPORARY RUNNING COURSE (If required)	DENSE BITUMEN BINDER COURSE MACADAM, (0/20mm NOMINAL SIZE AGGREGATE) TO CLAUSE 6.5, BS 4987:100/150 PEN BINDER TO BE PUNCTURED WITH 50mm DIA. HOLES AT 1.0m CENTRES PRIOR TO RECEIVING LAYING COURSE	60
SUB BASE	10/20mm OPEN GRADED CRUSHED ROCK TO BS EN 13242 AGGREGATE (mm)	350

PRIVATE DRIVE CONSTRUCTION (PERMEABLE PAVING)

1. ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH "INTERPAVE PERMEABLE PAVEMENT MANUAL" 7th EDITION



PLAN



ELEVATION

NOTE: WHERE PEDESTRIAN CROSSING IS NOT PERPENDICULAR TO THE KERB, TACTILE PAVING IS TO BE ALIGNED WITH CROSSING DIRECTION AND A MINIMUM OF 800mm DEPTH OF TACTILE PAVING TO BE PROVIDED.

TABLE 2

SUB GRADE CBR%	SUB BASE THICKNESS
<=2%	550mm
<=5%	350mm
<=15%	200mm
<=30%	150mm
>30%	0

NOTE: MINIMUM TOTAL THICKNESS 450mm IF SUB-GRADE IS FROST SUSCEPTIBLE

UNCONTROLLED PEDESTRIAN CROSSING
SCALE 1:20

NOTES:

- DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS STATED OTHERWISE.
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Rev	Date	Details	Drawn By	Checked By
C	27.06.22	SWALE DETAIL UPDATED	PG	KT
B	13.05.22	PERMEABLE PAVING DETAIL ADDED	TB	KT
A	17.02.22	PRIVATE DRIVE SURFACE AMENDED	PG	KT



CLIENT: Cotswold Oak Ltd

PROJECT: Paygrove Lane, Longlevens

TITLE: Details Sheet 3 - Highways

STATUS: APPROVAL

SCALE @ A1:	DATE:	DRAWN:	CHECKED:	APPROVED:
AS SHOWN	FEB 22	PG	KT	KT
JOB NO:		DRAWING NO:	REVISION:	
21-0760		C102	C	

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Land to Rear of Paygrove Lane, Gloucester

Technical Note – Engineering

21-0760_TN002RevB

June 2022

1. Introduction

- 1.1 Cotswold Transport Planning Ltd (CTP) have been appointed by Cotswold Oak Ltd to provide an Engineering Technical Note (TN) in support of a reserved matters planning application for the residential development and associated open space on land to the rear of Paygrove Lane, Gloucester.
- 1.2 The application site benefits from outline planning permission, granted in December 2016 by GCC under LPA Ref: 16/01558/OUT, for the construction of up to 10 no. dwellings with associated parking and landscaping and public open space.

2. Site Location

- 2.1 The site consists of a 1.4ha playing field to the rear of 3 - 29 Paygrove Lane, Gloucestershire, which is located approximately 2.5km north-east of Gloucester City Centre.
- 2.2 A site location plan is contained in **Appendix A**.

3. Development Proposals

- 3.1 As mentioned above, outline planning permission for the erection of up to 10 dwellings, public open space and associated works was granted in 2016 (LPA ref: 16/01558/OUT).
- 3.2 The proposed site layout plan is included at **Appendix B**.

4. Existing Site Conditions

Topography

- 4.1 Refer to **Appendix C** for site topographical survey.
- 4.2 The site is predominantly flat with a gentle fall from the southwest boundary at 19.30m AOD to the northeast boundary at 18.80m AOD, with an average ground gradient of 1:300.



Ground Conditions

- 4.3 Infiltration testing was undertaken on site on 15-16th November 2018 and ground conditions found to be not suitable for soakaways as half drain times could not be achieved and high ground water present. Therefore, discharge to ground at source not possible.

Existing Drainage

- 4.4 There are no public sewer (Severn Trent) assets within the site boundary. A public foul rising main passes along Paygrove Lane. Existing public assets can be found in Leven Close to the south and College Fields to the north. Refer to Appendix D for ST records.
- 4.5 An existing Highways drain runs within the footpath of Paygrove Lane.
- 4.6 The nearest watercourse is the Horsbere Brook located approximately 200m to the east on third party land.

5. Proposed Drainage

Foul Drainage

- 5.1 Refer to **Appendix D** for Engineering Layout.
- 5.2 A gravity connection from the development to the public foul asset within College Fields is feasible with localised raising of ground levels and floor levels in the site.
- 5.3 Severn Trent Water have confirmed capacity within Leven Close and College Fields system. Refer to Appendix C for Severn Trent correspondence.

Surface Drainage

- 5.4 Refer to **Appendix D** for Engineering Layout.
- 5.5 In accordance with the SuDS hierarchy of surface water management the following should be considered, in order, for discharge of development surface water run off:
- Discharge to ground at source – soakaways
 - Discharge to water body
 - Discharge to a surface water sewer, highway drain, or another drainage system
 - Discharge to existing combined drainage



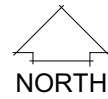
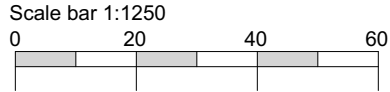
- 5.6 Infiltration testing was undertaken confirms discharge to ground at source not possible.
- 5.7 The nearest watercourse is 200m to the east and a level analysis has shown a gravity connection is not feasible. The connection would also require third party land agreement. Therefore, discharge to watercourse not possible.
- 5.8 A storm connection to the existing Highways drain within the footpath of Paygrove Lane was explored but following a CCTV of the system the condition and capacity was found to be inadequate. Gloucestershire County Council Highways confirmed a connection to highways assets for this development will not be permitted.
- 5.9 A pumped connection from the development to the public storm asset within College Fields is feasible with attenuation required via a SuDS swale, which shall be designed to cater for the 1 in 100 year event with a 40% allowance for climate change.
- 5.10 Severn Trent Water have confirmed capacity within Leven Close and College Fields system. An allowable storm discharge rate of 2 l/s has been confirmed.
- 5.11 Refer to **Appendix E** for Calculations.

6. External Works

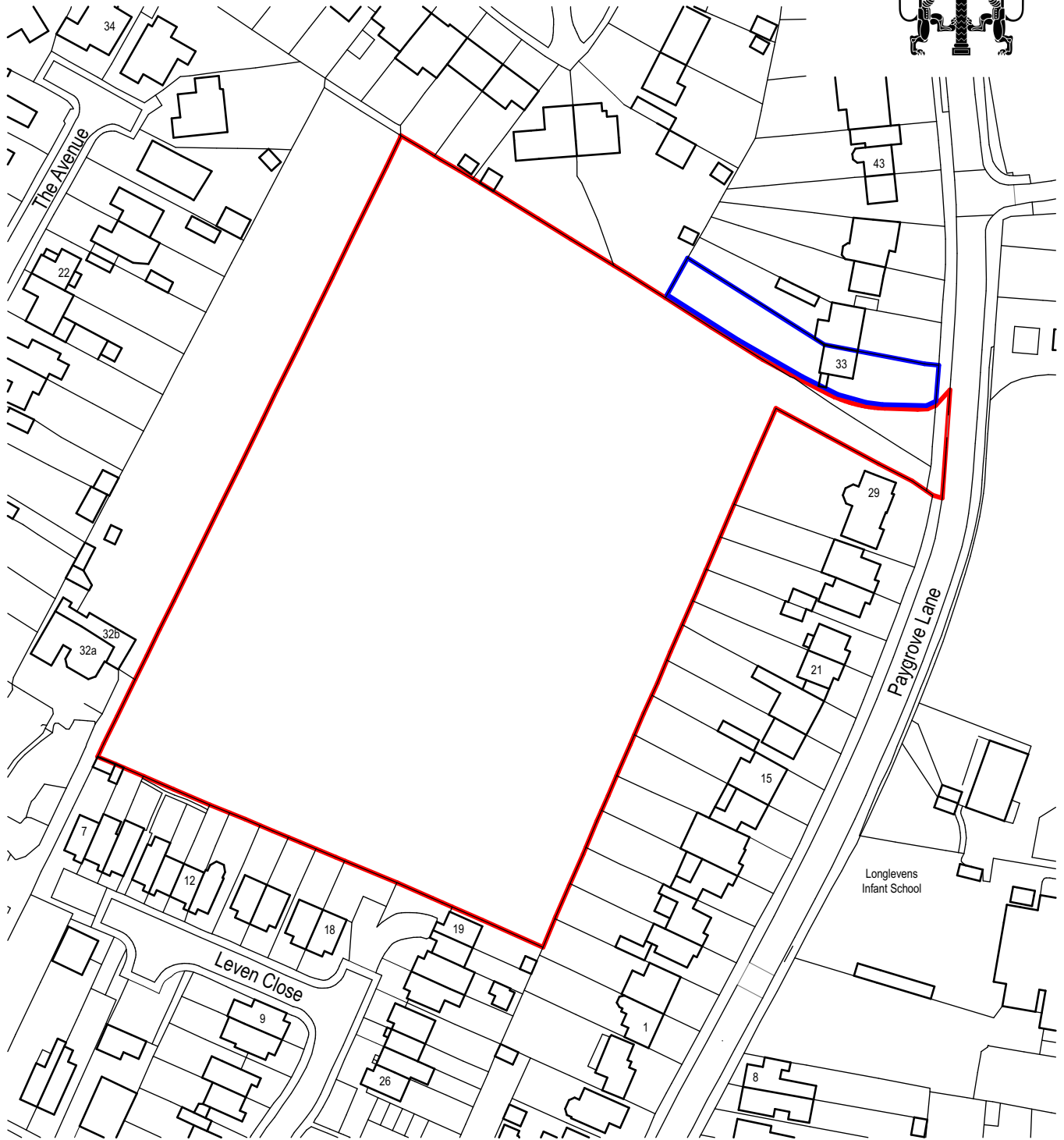
Access

- 6.1 Refer to **Appendix D** for Engineering Layout.
- 6.2 Access to plots to be in accordance with Building Regulations Part M – Category M4(1): Visitable dwellings.
- 6.3 Surface water from the highway will be collected by standard road gullies which connect to the proposed drainage system.
- 6.4 Highways to be of flexible construction comprising of asphalt surface finish..
- 6.5 Finished floor levels to be set a minimum 150mm above external ground level.

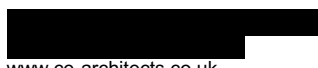
APPENDIX A



RIBA
Chartered Practice



coombes : everitt architects limited
105-107 Bath Road
Cheltenham
Gloucestershire
GL53 7LE



www.ce-architects.co.uk

Drawing title: Site Location Plan

Client: Cotswold Oak Ltd

Drawn by: AH Checked: JE

Project No: 21.20.020

Project: Land at Paygrove Lane,
Longlevens

Scale: 1:1250 @ A4

Date: November 2021

Project / Drawing No: 21.20.020 SK1000A

APPENDIX B



Landscape and Finishes Legend

FFL 19.350	Proposed floor level
T	Tarmac finishes to highway and drives
PT	Permeable Tarmac finishes to drives
P	PCC block paviors, charcoal grey to GCH / LPA approval
G	Grasscrete block paving
[Grid Pattern]	Paths and patios formed out of 600x600x40mm pcc turf riven paving slabs by Tobermore laid over 100mm concrete oversite and drained to adjacent soft landscaped areas.
[Dark Grey Box]	Russell Bute roof tile Anthracite
[Blue Box]	Brick - Istock Forterra Chelsea Smoked Red
[Red Box]	Brick - Istock Forterra Atherstone Red Multi
Turf	Areas prepared and laid to turf
[Light Green Box]	Areas prepared and seeded to form playing field
pg	Pea gravel lain over weed suppressing membrane
[Planting Symbols]	Prepared and planted borders with individual specimen shrub planting
[Hatched Box]	Existing boundary planting retained and reinforced as necessary. Refer to specification by MHP landscape consultants
[Green Box]	New hedgerow planting. Refer to specification by MHP landscape consultants
[Circle with X]	Existing trees to be retained
[Circle]	New tree planting
[Circle with X]	Trees to be removed
[Star]	16 Amp power supply to facilitate electric vehicle charge point.
[Line]	1.8m high close board timber fence with solid timber gates fitted with bolts top and bottom and lock operable from both sides. Indicates 130x130mm hole formed at ground level to provide access for hedgehogs between plots and through boundary
[Line]	Black painted, five bar estate railings to demark residential development + pedestrian / maintenance pass gate as indicated
[Line]	2.0m high acoustic fence - 12k Envirofence Jacksons Fencing
[Box]	Paved hardstanding for on plot bin storage. Collection from kerbside to LA regime
[Box]	Ecological enhancement in accordance with report by All Ecology Istock Enclosed bat box 'C' 2 x Schwieger single nest for House Martins No.13 Schwieger bird home 'B'
[Box]	Duel use litter / dog waste bin to LA specification. Wybone MLB112 galvanised steel bin, powder coated black (RAL 9005), pitched lid, litter and dog waste logo in gold applied to two sides. GCC logo applied to two sides, four standard litter apertures. NB In accordance with GCC requirements, temporary signage will be provided adjacent to each bin confirming developer's management co. details as point of contact for collection issues until formally adopted by GCC
[Box]	Steel and recycled plastic bench. Wybone RPS/5 steel framed bench painted black (RAL 9005) with brown recycled slats
Trees	
AC	Acer Campestre 'streetwise' (Field Maple)
SA	Sorbus Aria (Whitebeam)
PA	Prunus Avium (Cherry)
QR	Quercus Robur (Oak)

Planting Notes

Ground preparation and planting works to include:
 Excavate planting areas to a minimum depth of 600mm and remove all unsuitable material from site.
 Ensure supply and spread 400mm depth of approved topsoil in areas to be planted. Light harrow to provide a fine tilth. Collect and remove from areas to be planted or turfed all stones greater than 50mm in any dimension.
 Supply and plant shrubs incorporating 20g / plant of slow release fertilizer into the backfill.
 Provide and spread evenly over planting areas 75mm depth of coarse grade bark mulch.

Planted Borders

To be planted in groups of 3, 5, 7 per box in a random mix at a rate of 5 plants per sqm

Type (i)	%
Cotoneaster Dameri	20
Berberis Candidula	15
Hedera Colchica Denata Variegata	25
Mahonia Aquifolium	20
Spiraea Japonica Bullata	20
Type (ii)	%
Comus Canadensis	25
Euonymus Fortunei Radicans	25
Pachysandra Terminalis Variegata	20
Vincia Major Variegata	20
Hedera Hibernica	10

Specimen Shrub Planting

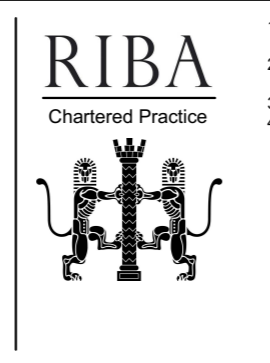
Individual container grown specimen shrubs (minimum 3 litre) shown thus

BD	Berberis Darwini
CT	Choisya Ternata
FO	Forsythia Ovata
IQ	Ilex Aquifolium Golden Queen
IK	Ilex Altipirensis Golden King
PV	Philadelphus Virginal
VA	Viburnum Aurora



coombes : everitt architects limited
 105-107 Bath Road
 Cheltenham
 Gloucestershire
 GL53 7LE

- Preliminary
- Feasibility
- Planning
- Building Regulations
- Tender
- Construction issue
- As Built



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 2. Do not scale drawing. All dimensions to be checked on site prior to construction and any discrepancies reported to contract administrator.
 3. Do not use this drawing for setting out unless drawing specifically indicates setting out points.
 4. Engineering information is indicative only and should be taken from structural engineers design.

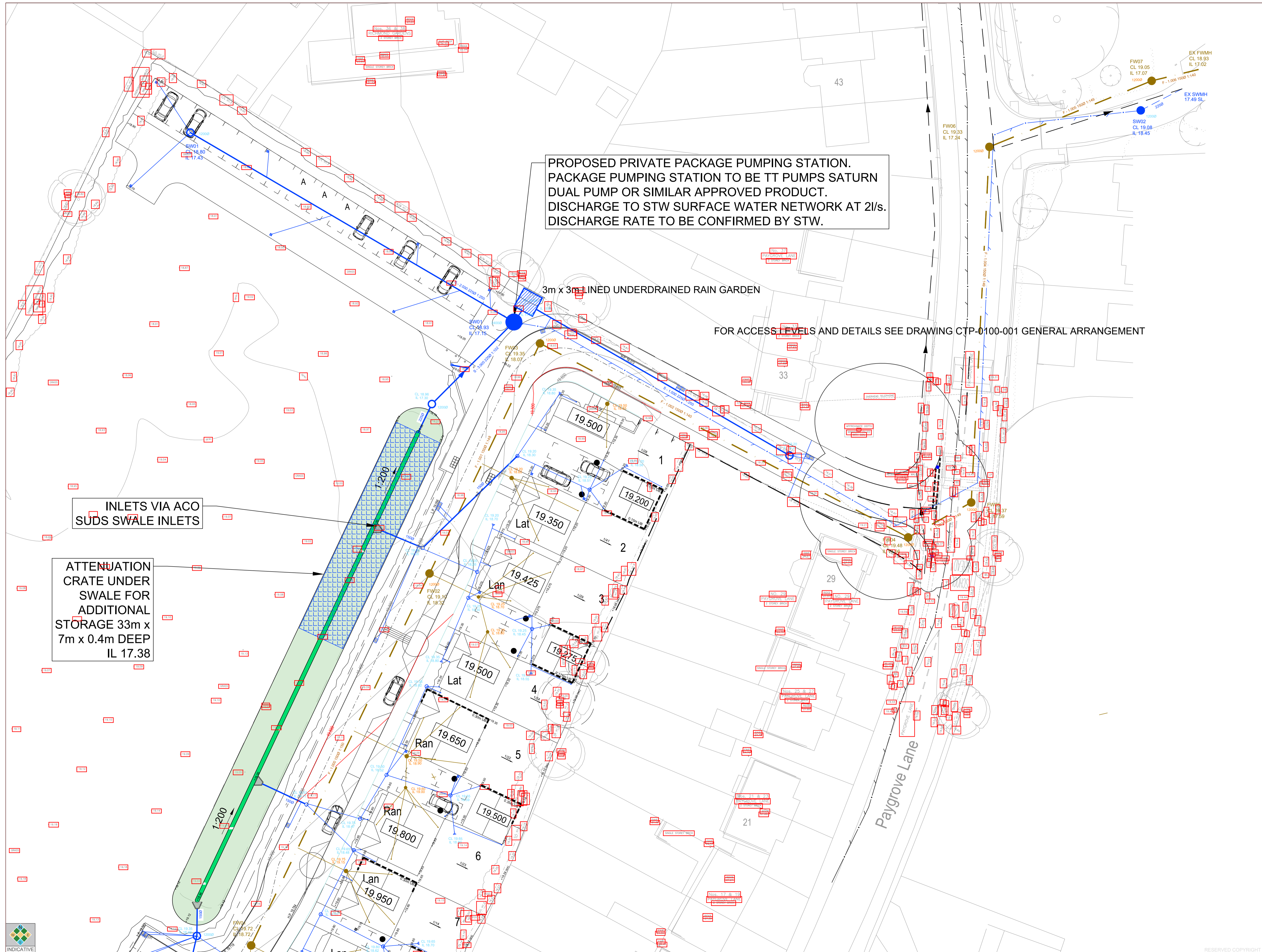
Revision	Description
A	03/2022 AH Hedgerow mix amended
B	03/2022 AH Proposed layout plan to accord with access indicated on Outline approval
C	03/2022 AH Access for hedgehogs indicated to new boundary fences
D	04/2022 AH Ecological enhancement for birds and bats added, in accordance with report by All Ecology
E	05/2022 AH Revisions to LPA comment
F	06/2022 AH Surfaces to parking and barrier to POS noted
G	06/2022 AH Permeable tarmac finishes to drives
H	06/2022 AH Additional tarmac finishes at entrance to POS parking
I	06/2022 AH Attenuation area up-dated to Engineering layout

Drawing title:	Materials Distribution and Landscaping
Client:	Cotswold Oak Ltd
Drawn by:	AH
Checked:	JE
Project No:	21.20.020

Project:	Land at Paygrove Lane, Longlevens
Scale:	1:250 @ A1
Date:	January 2022
Project / Drawing No:	21.20.020 PL006 I

APPENDIX C

APPENDIX D



PROPOSED PRIVATE PACKAGE PUMPING STATION.
 PACKAGE PUMPING STATION TO BE TT PUMPS SATURN
 DUAL PUMP OR SIMILAR APPROVED PRODUCT.
 DISCHARGE TO STW SURFACE WATER NETWORK AT 2l/s.
 DISCHARGE RATE TO BE CONFIRMED BY STW.

3m x 3m LINED UNDERDRAINED RAIN GARDEN

FOR ACCESS LEVELS AND DETAILS SEE DRAWING CTP-0100-001 GENERAL ARRANGEMENT

INLETS VIA ACO
SUDS SWALE INLETS

ATTENUATION
CRATE UNDER
SWALE FOR
ADDITIONAL
STORAGE 33m x
7m x 0.4m DEEP
IL 17.38

- Notes:**
- Do not scale from this drawing. All dimensions are in metres, unless stated otherwise.
 - Ordnance Survey, (c) Crown Copyright 2020. All rights reserved. Licence number 100022432.
 - Drawing to be read in conjunction with all other drawings. Any discrepancies are to be reported to the engineer 5 working days in advance of undertaking any work.
 - All pipework to be 1000 Ø PVC UNO
 - All chambers to be 450 Ø Type D Chambers UNO. Chambers marked with diameter to be Type B Chambers (except chamber at pump).

- KEY**
- SURFACE WATER MANHOLE AND SEWER
 - FOUL WATER MANHOLE AND SEWER
 - HIGHWAY GULLY AND CONNECTION
 - DIFFUSER BOX AND CONNECTION
 - FINISHED FLOOR LEVELS
 - SWALE
 - PROPOSED LEVEL
 - RISING MAIN
 - HEADWALL
 - GRADIENT
 - UNDERBUILD (WITH HEIGHT)
 - ATTENUATION CRATE
 - RAINWATER GARDEN

Rev	Date	Details	Drawn By	Checked By
D	27.06.22	UPDATE FOLLOWING OCC COMMENTS	PG	KT
C	14.06.22	SWALE AMENDED	PG	KT
B	13.05.22	ARCHITECT AND DRAINAGE LAYOUT UPDATED	TB	KT
A	16.02.22	ROAD AND LAYOUT AMENDED	PG	KT



CLIENT:
Cotswold Oak Ltd

PROJECT:
**Paygrove Lane,
Longlevens**

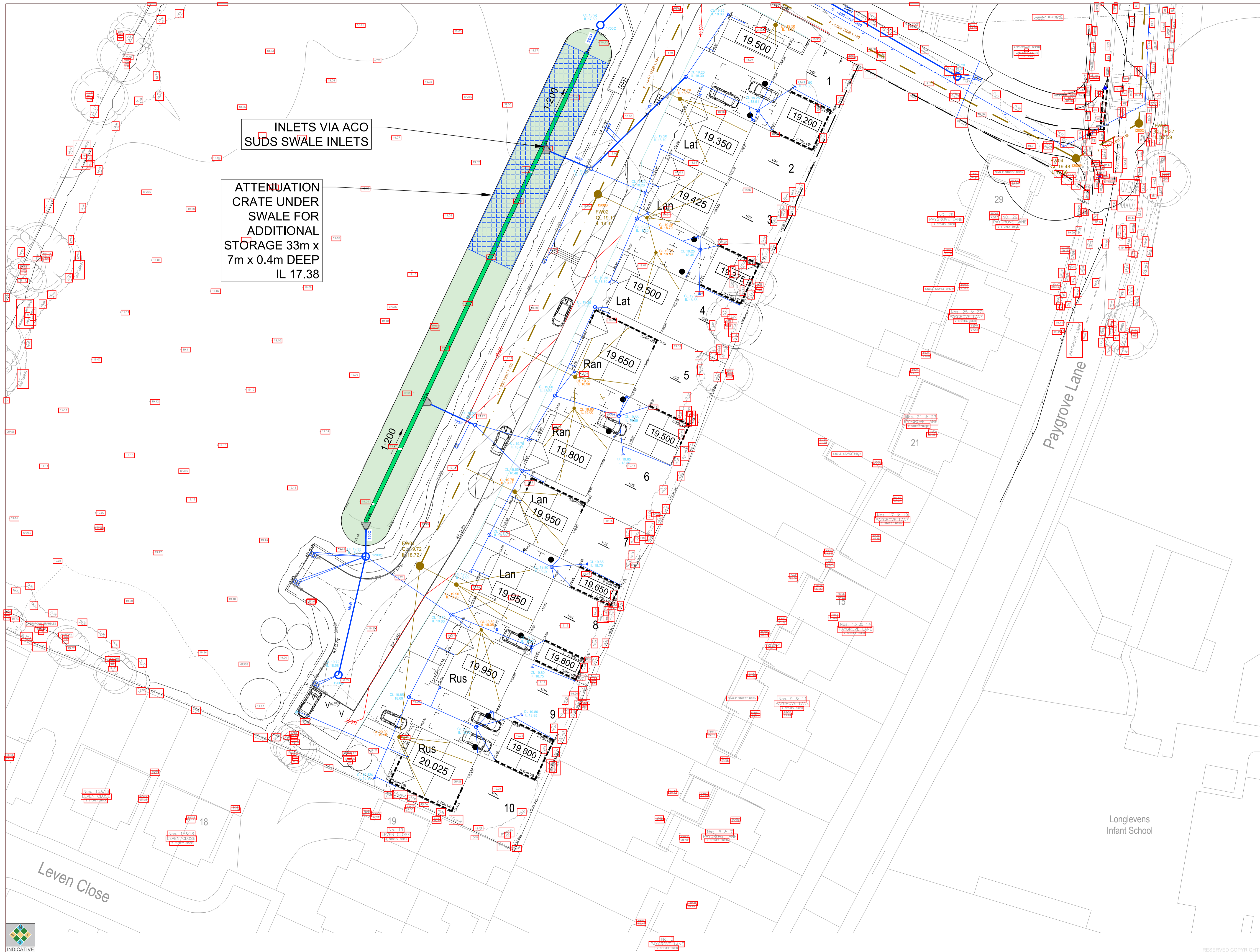
TITLE:
**Engineering Layout
Sheet 1**

STATUS:
INFORMATION

SCALE @ A1:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:250	26/01/2022	PG	KT	KT
JOB NO:	DRAWING NO:	REVISION:		
CTP-0760	C002	D		



RESERVED COPYRIGHT



INLETS VIA ACO
SUDS SWALE INLETS

ATTENUATION
CRATE UNDER
SWALE FOR
ADDITIONAL
STORAGE 33m x
7m x 0.4m DEEP
IL 17.38

- Notes:**
1. Do not scale from this drawing. All dimensions are in metres, unless stated otherwise.
 2. Ordnance Survey, (c) Crown Copyright 2020. All rights reserved. Licence number 100022432.
 3. Drawing to be read in conjunction with all other drawings. Any discrepancies are to be reported to the engineer 5 working days in advance of undertaking any work.
 4. All pipework to be 1000Ø PVC UNO
 5. All chambers to be 450Ø Type D Chambers UNO. Chambers marked with diameter to be Type B Chambers (except chamber at pump).

- KEY**
- SURFACE WATER MANHOLE AND SEWER
 - FOUL WATER MANHOLE AND SEWER
 - HIGHWAY GULLY AND CONNECTION
 - DIFFUSER BOX AND CONNECTION
 - FINISHED FLOOR LEVELS
 - SWALE
 - PROPOSED LEVEL
 - RISING MAIN
 - HEADWALL
 - GRADIENT
 - UNDERBUILD (WITH HEIGHT)
 - ATTENUATION CRATE
 - RAINWATER GARDEN

Rev	Date	Details	Drawn By	Checked By
D	17/06/22	AMENDED FOLLOWING GCC COMMENTS	PG	KT
C	14/06/22	SWALE AMENDED	PG	KT
B	13/05/22	ARCHITECT AND DRAINAGE LAYOUT UPDATED	TB	KT
A	16/02/22	RADC AND LAYOUT AMENDED	PG	KT



CLIENT:	Cotswold Oak Ltd			
PROJECT:	Paygrove Lane, Longlevens			
TITLE:	Engineering Layout Sheet 2			
STATUS:	INFORMATION			
SCALE @ A1:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:250	26/01/2022	PG	KT	KT
JOB NO:	DRAWING NO:	REVISION:		
CTP-0760	C003	D		



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APPENDIX E

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 1206 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m ³)	Status
15 min Summer	18.405	1.025	0.0	2.0	2.0	105.7	O K
30 min Summer	18.575	1.195	0.0	2.0	2.0	141.6	O K
60 min Summer	18.695	1.315	0.0	2.0	2.0	180.0	Flood Risk
120 min Summer	18.792	1.412	0.0	2.0	2.0	219.1	Flood Risk
180 min Summer	18.839	1.459	0.0	2.0	2.0	240.4	Flood Risk
240 min Summer	18.866	1.486	0.0	2.0	2.0	253.7	Flood Risk
360 min Summer	18.895	1.515	0.0	2.0	2.0	268.4	Flood Risk
480 min Summer	18.911	1.531	0.0	2.0	2.0	276.7	Flood Risk
600 min Summer	18.919	1.539	0.0	2.0	2.0	280.7	Flood Risk
720 min Summer	18.921	1.541	0.0	2.0	2.0	281.9	Flood Risk
960 min Summer	18.915	1.535	0.0	2.0	2.0	278.8	Flood Risk
1440 min Summer	18.888	1.508	0.0	2.0	2.0	264.8	Flood Risk
2160 min Summer	18.857	1.477	0.0	2.0	2.0	249.0	Flood Risk
2880 min Summer	18.828	1.448	0.0	2.0	2.0	235.3	Flood Risk
4320 min Summer	18.767	1.387	0.0	2.0	2.0	208.6	Flood Risk
5760 min Summer	18.702	1.322	0.0	2.0	2.0	182.5	Flood Risk
7200 min Summer	18.629	1.249	0.0	2.0	2.0	157.5	O K
8640 min Summer	18.547	1.167	0.0	2.0	2.0	134.1	O K
10080 min Summer	18.448	1.068	0.0	2.0	2.0	112.6	O K
15 min Winter	18.406	1.026	0.0	2.0	2.0	105.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
15 min Summer	117.448	0.0	108.8	26
30 min Summer	79.010	0.0	146.5	41
60 min Summer	50.812	0.0	188.4	70
120 min Summer	31.621	0.0	234.7	130
180 min Summer	23.637	0.0	263.0	188
240 min Summer	19.105	0.0	283.6	248
360 min Summer	14.037	0.0	312.5	366
480 min Summer	11.286	0.0	335.0	486
600 min Summer	9.522	0.0	345.3	604
720 min Summer	8.282	0.0	345.2	724
960 min Summer	6.640	0.0	345.1	962
1440 min Summer	4.854	0.0	342.3	1238
2160 min Summer	3.541	0.0	472.9	1604
2880 min Summer	2.828	0.0	503.7	1996
4320 min Summer	2.055	0.0	548.9	2816
5760 min Summer	1.637	0.0	583.0	3632
7200 min Summer	1.371	0.0	610.7	4400
8640 min Summer	1.186	0.0	633.4	5192
10080 min Summer	1.049	0.0	654.0	5944
15 min Winter	117.448	0.0	108.8	26

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (1/s)	Max Control (1/s)	Max Σ Outflow (1/s)	Max Volume (m ³)	Status
30 min Winter	18.575	1.195	0.0	2.0	2.0	141.7	O K
60 min Winter	18.695	1.315	0.0	2.0	2.0	180.3	Flood Risk
120 min Winter	18.793	1.413	0.0	2.0	2.0	219.5	Flood Risk
180 min Winter	18.840	1.460	0.0	2.0	2.0	241.1	Flood Risk
240 min Winter	18.868	1.488	0.0	2.0	2.0	254.6	Flood Risk
360 min Winter	18.898	1.518	0.0	2.0	2.0	269.7	Flood Risk
480 min Winter	18.914	1.534	0.0	2.0	2.0	278.4	Flood Risk
600 min Winter	18.923	1.543	0.0	2.0	2.0	282.9	Flood Risk
720 min Winter	18.926	1.546	0.0	2.0	2.0	284.7	Flood Risk
960 min Winter	18.923	1.543	0.0	2.0	2.0	283.1	Flood Risk
1440 min Winter	18.896	1.516	0.0	2.0	2.0	268.8	Flood Risk
2160 min Winter	18.854	1.474	0.0	2.0	2.0	247.5	Flood Risk
2880 min Winter	18.813	1.433	0.0	2.0	2.0	228.3	Flood Risk
4320 min Winter	18.716	1.336	0.0	2.0	2.0	187.9	Flood Risk
5760 min Winter	18.599	1.219	0.0	2.0	2.0	148.6	O K
7200 min Winter	18.446	1.066	0.0	2.0	2.0	112.4	O K
8640 min Winter	17.745	0.365	0.0	2.0	2.0	80.0	O K
10080 min Winter	17.618	0.238	0.0	2.0	2.0	52.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
30 min Winter	79.010	0.0	146.6	41
60 min Winter	50.812	0.0	188.5	70
120 min Winter	31.621	0.0	234.7	128
180 min Winter	23.637	0.0	263.1	186
240 min Winter	19.105	0.0	283.6	244
360 min Winter	14.037	0.0	312.4	360
480 min Winter	11.286	0.0	334.9	476
600 min Winter	9.522	0.0	344.2	590
720 min Winter	8.282	0.0	343.8	706
960 min Winter	6.640	0.0	342.9	928
1440 min Winter	4.854	0.0	340.3	1348
2160 min Winter	3.541	0.0	473.2	1672
2880 min Winter	2.828	0.0	503.4	2132
4320 min Winter	2.055	0.0	549.2	3024
5760 min Winter	1.637	0.0	582.6	3856
7200 min Winter	1.371	0.0	610.1	4616
8640 min Winter	1.186	0.0	633.0	5360
10080 min Winter	1.049	0.0	653.9	6048

CTP House, Knapp Road
Cheltenham
Gloucestershire, GL50 3QQ

Paygrove Lane



Date 27/06/2022 15:50
File 21-0760 Swale_B.SRCX

Designed by CG
Checked by KT

Innovyze Source Control 2020.1.3


Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	1.000
M5-60 (mm)	18.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.371

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From:	To:	From:	To:	From:	To:
0	4	0.124	4	8	0.124
				8	12
					0.124

Cotswold Transport Planning		Page 4
CTP House, Knapp Road Cheltenham Gloucestershire, GL50 3QQ	Paygrove Lane	
Date 27/06/2022 15:50 File 21-0760 Swale_B.SRCX	Designed by CG Checked by KT	
Innovyze	Source Control 2020.1.3	

Model Details

Storage is Online Cover Level (m) 18.930

Complex Structure

Cellular Storage

Invert Level (m) 17.380 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	231.0	0.0	0.401	0.1	0.0
0.400	231.0	0.0			

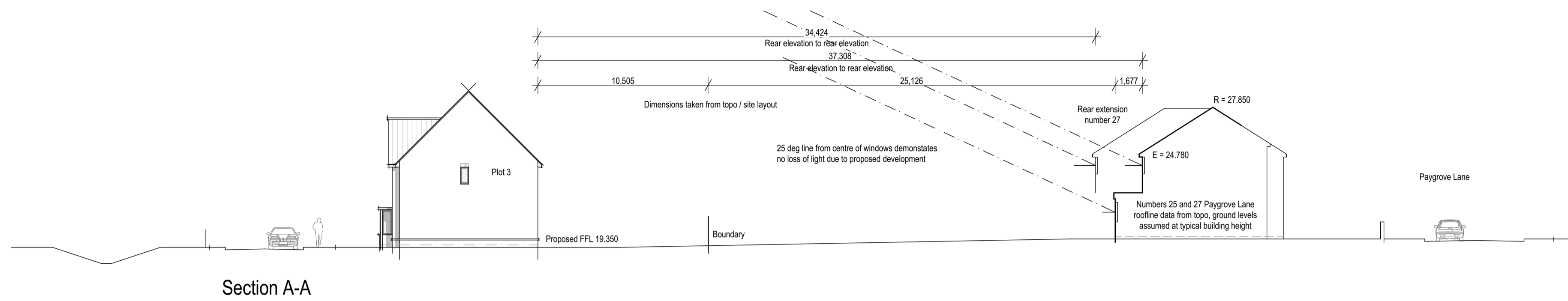
Swale

Infiltration Coefficient Base (m/hr) 0.00000 Length (m) 75.0
 Infiltration Coefficient Side (m/hr) 0.00000 Side Slope (1:X) 5.0
 Safety Factor 2.0 Slope (1:X) 200.0
 Porosity 1.00 Cap Volume Depth (m) 0.000
 Invert Level (m) 18.080 Cap Infiltration Depth (m) 0.000
 Base Width (m) 0.6

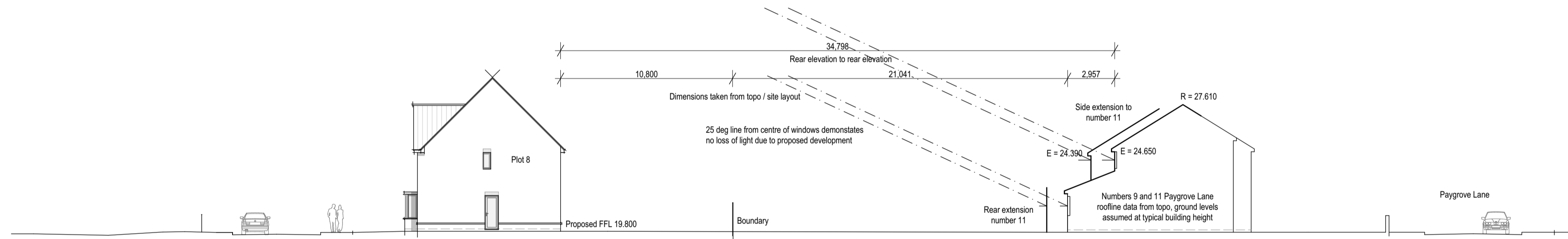
Pump Outflow Control

Invert Level (m) 17.150

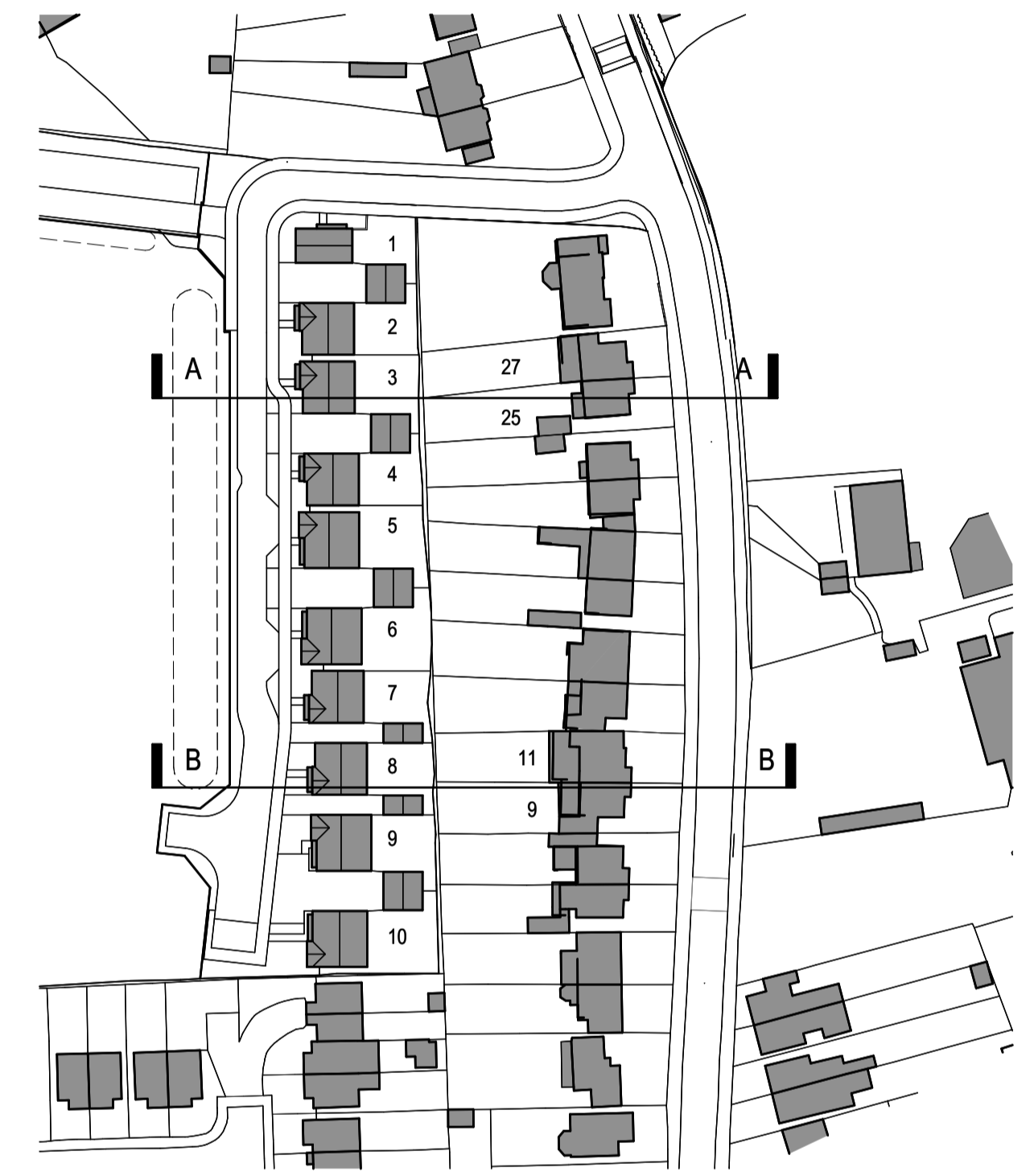
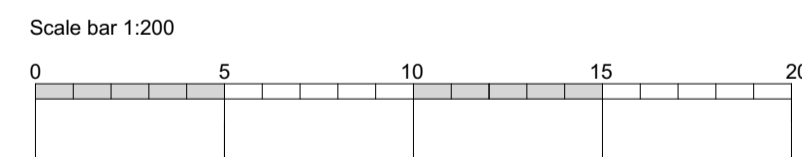
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.0000	0.900	2.0000	1.700	2.0000	2.500	2.0000
0.200	2.0000	1.000	2.0000	1.800	2.0000	2.600	2.0000
0.300	2.0000	1.100	2.0000	1.900	2.0000	2.700	2.0000
0.400	2.0000	1.200	2.0000	2.000	2.0000	2.800	2.0000
0.500	2.0000	1.300	2.0000	2.100	2.0000	2.900	2.0000
0.600	2.0000	1.400	2.0000	2.200	2.0000	3.000	2.0000
0.700	2.0000	1.500	2.0000	2.300	2.0000		
0.800	2.0000	1.600	2.0000	2.400	2.0000		



Section A-A



Section B-B



Key 1:1000 scale

coombes : everitt architects limited
 105-107 Bath Road
 Cheltenham
 Gloucestershire
 GL53 7LE

- Preliminary
- Feasibility
- Planning
- Building Regulations
- Tender
- Construction issue
- As Built

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4. Engineering information is indicative only and should be taken from structural engineers design.



Revision A
 A 05/2022 AH Key amended to suit layout revisions
 B 07/2022 AH Amended to suit drainage design

Drawing title: Typical Sections Proposed Development to Existing Paygrove Lane Housing

Client: Cotswold Oak Ltd

Drawn by: AH Checked: JE

Project No: 21.20.020

Project: Land at Paygrove Lane, Longlevens

Scale: 1:200 @ A1

Date: April 2022

Project / Drawing No: 21.20.020 PL010 B

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