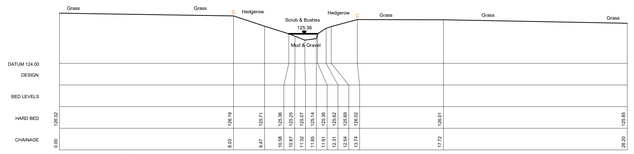

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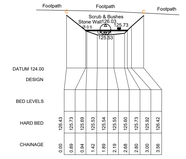

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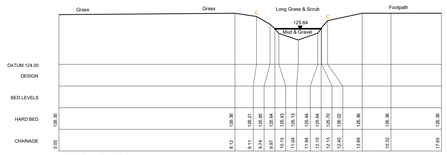

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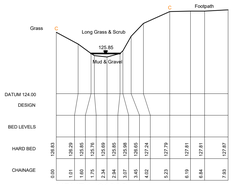

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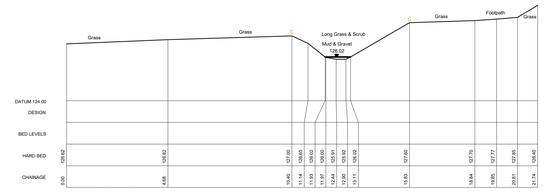

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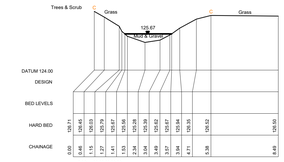

R2_00000
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303225.81N445033.51E
BEARING 326

Notes

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4. Any discrepancies noted on site are to be reported to the engineer immediately.
5. No scale factor has been applied to this survey, therefore the os coordinates are to be treated as arbitrary. Please refer to survey station information below for on site control establishment.
6. All coordinates and height data relate to OSGB36(15). Control stations are coordinated by means of GPS receiving real time corrections via OS smart net.
7. All manhole data is collected from ground level therefore discrepancies may occur. More accurate data is only achievable via confined space entry.
8. OS license number: 100022432

Key Plan

Legend

OS Buildings
Surveyed Buildings
Building
Wall
Kerb Channel Line
Top of Kerb
Edge of Surface
Top of Bank
Bottom of Bank
Canopy / Overhang
Line Marking
Centre Line
Watercourse
Centre Line
Barrier
Fence
Gate
Overhead Powerline
Overhead Utilities

Contour Lines
Inspection Chamber
0.25 — Flow direction and pipe diameter
Station and Name
BH 1 — Monitoring Borehole
Tree / Bush / Sapling
Area of Vegetation/ Extent of Tree Canopy
Hedge
Body of Water
Body of Water from OS
50.00 — Spot Level
Assumed Surface Water Drainage Line
Surface Water Drainage Line

AP	Anchor Point	FBW	Fence Barbed Wire	LB	Litter Bin
BG	Back Gully	FCB	Fence Closed Board	LP	Lamp Post
BO	Bollard	FCL	Fence Chain Link	MH	Manhole
BS	Bus Stop	FEL	Fence Electric	Mkr	Service Marker
BT	British Telecom	FMP	Fence Metal Panel	PB	Post Box
C	Crest	FMR	Fence Metal Railing	PT	Post
CL	Cover Level	FOB	Fence Open Board	RE	Rodding Eye
CMP	Cable Marker Post	FPW	Fence Post & Wire	SP	Sign Post
		FSP	Fence Steel Palisade	ST	Stop Tap
CCTV	Security Camera	FWM	Fence Wire Mesh	SV	Stop Valve
CTV	Cable TV	FFL	Finished Floor Level	TCB	Telephone Cell Box
DC	Drainage Channel	FP	Flagpole		
		Gas	Gas	THL	Threshold Level
DK	Drop Kerb	GV	Gas Valve	TL	Traffic Light
DP	Down Pipe	GY	Gully	TP	Telegraph Post
Elec	Electric	Ht	Height	TS	Traffic Signal
EP	Electricity Post	IC	Inspection Chamber	UTS	Unable to Survey
ER	Earth Rod	IFL	Internal Floor Level	WL	Water Level
FH	Fire Hydrant	IL	Invert Level (as a reduced level)	WM	Water Meter
FL	Floodlight			WO	Wash Out

Rev	Date	Details of issue / revision	Drw	Rev
P2	28.03.24	Extra Sections Added	IR	DS
P1	29.07.21	First Issue	IR	DS

Issues & Revisions

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Client
Richborough Estates Ltd

Project Title
Brascote Lane
Newbold Verdon

Drawing Title
Watercourse Survey
Reach 1 Sections 21 - 25 &
Reach 2 Sections
Sheet 2 Of 3

Drawn:	I.Riley	Reviewed:	D.Smith
BWB Ref:	BMW 3175	Date:	29.07.21
Scale@A0:	1:100		

Drawing Status
INFORMATION

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
BLN-BWB-00-ZZ-M2-G-0060	**S2**	**P2**

C:\Users\Ian.Riley\Documents\S3 FILES\JOBS\2024 JOBS\Newbold Verdon WC Extension\Watercourse Extension Data\BLN-BWB-00-ZZ-M2-G-0060_Existing_Watercourse_Survey-S2-P2.dwg

Notes

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6. All coordinates and height data relate to OSGB36(15). Control stations are coordinated by means of GPS receiving real time corrections via OS smart net.
7. All manhole data is collected from ground level therefore discrepancies may occur. More accurate data is only achievable via confined space entry.
8. OS license number: 100022432

Key Plan

Legend

OS Buildings
Surveyed Buildings
Building
Wall
Kerb Channel Line
Top of Kerb
Edge of Surface
Top of Bank
Bottom of Bank
Canopy / Overhang
Line Marking
Centre Line
Watercourse
Centre Line
Barrier
Fence
Gate
Overhead Powerline
Overhead Utilities

Contour Lines
Inspection Chamber
0.25 Flow direction and pipe diameter
Station and Name
BH.1 Monitoring Borehole
Tree / Bush / Sapling
Area of Vegetation/ Extent of Tree Canopy
Hedge
Body of Water
Body of Water from OS
50.00 Spot Level
Assumed Surface Water Drainage Line
Surface Water Drainage Line

AP	Anchor Point	FBW	Fence Barbed Wire	LB	Litter Bin
BG	Back Gully	FCB	Fence Closed Board	LP	Lamp Post
BO	Bollard	FCL	Fence Chain Link	MH	Manhole
BS	Bus Stop	FEL	Fence Electric	Mkr	Service Marker
BT	British Telecom	FMP	Fence Metal Panel	PB	Post Box
C	Crest	FMR	Fence Metal Railing	PT	Post
CL	Cover Level	FOB	Fence Open Board	RE	Rodding-Eye
CMP	Cable Marker Post	FPW	Fence Post & Wire	SP	Sign Post
		FSP	Fence Steel Palisade	ST	Stop Tap
CCTV	Security Camera	FWM	Fence Wire Mesh	SV	Stop Valve
CTV	Cable TV	FFL	Finished Floor Level	TCB	Telephone Call Box
DC	Drainage Channel	FP	Flagpole	THL	Threshold Level
DK	Drop Kerb	Gas	Gas	TL	Traffic Light
DP	Down Pipe	GV	Gas Valve	TP	Telegraph Post
Elec	Electric	GY	Gully	TS	Traffic Signal
EP	Electricity Post	Ht	Height	UTS	Unable to Survey
ER	Earth Rod	IC	Inspection Chamber	WL	Water Level
FH	Fire Hydrant	IFL	Internal Floor Level	WM	Water Meter
FL	Floodlight	IL	Invert Level (as a reduced level)	WO	Wash Out

Rev	Date	Details of issue / revision	Drw	Rev
P2	28.03.24	Extra Section Added	IR	DS
P1	29.07.21	First Issue	IR	DS

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Client
Richborough Estates Ltd

Project Title
Brascote Lane
Newbold Verdon

Drawing Title
Existing Watercourse Layout
Sheet 3 Of 3

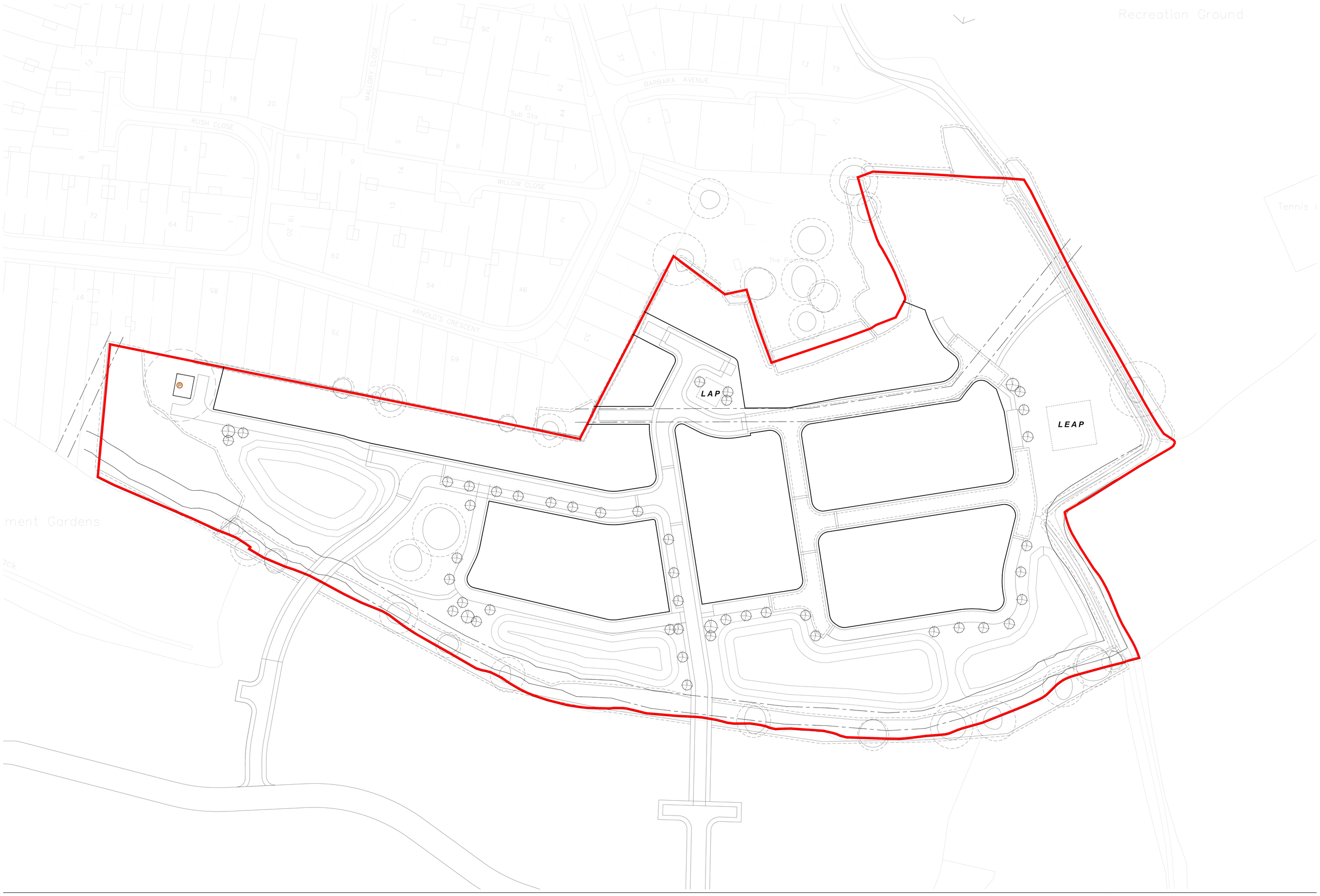
Drawn:	I.Riley		Reviewed:	D.Smith	
BWB Ref:	BMW 3175	Date:	29.07.21	Scale@A0:	1:1250

Drawing Status
INFORMATION

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
BLN-BWB-00-ZZ-M2-G-0060	**S2**	**P2**

C:\Users\Ian.Riley\Documents\LSS FILES\JOBS\2024 JOBS\Newbold Verdon WC Extension\Watercourse Extension Data\BLN-BWB-00-ZZ-M2-G-0060_Existing_Watercourse_Survey-S2-P2.dwg

Appendix 3: Development Framework Plan



Status PLANNING

Client: Richborough

Project title: Land South of Arnold's Crescent Newbold Verdon

Drawing title: Development Framework Plan

Scale:	1:500@A0
Date:	June 2024
Drawn by:	JMP
Checked by:	LH
Drawing no.:	902832.36.03
Revision:	E

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e: info@marrons.co.uk

Appendix 4: Detailed Pooling Group Information

Table 7.1: Default Pooling Group: THB001

Station	Distance	Years of Data	QMED AM	Deurbanised L-CV	Deurbanised L-Skew	Discordancy
27073 (Brompton Beck @ Snainton Ings)	1.105	42	0.816	0.213	0.018	1.116
27051 (Crimple @ Burn Bridge)	1.331	50	4.641	0.218	0.133	0.406
76011 (Coal Burn @ Coalburn)	1.51	45	1.84	0.171	0.292	0.947
26016 (Gypsey Race @ Kirby Grindalythe)	1.658	25	0.101	0.309	0.249	0.148
25019 (Leven @ Easby)	1.71	44	5.384	0.341	0.366	0.258
45816 (Haddeo @ Upton)	2.009	29	3.248	0.29	0.431	0.648
36010 (Bumpstead Brook @ Broad Green)	2.057	55	7.59	0.354	0.108	1.519
49005 (Bolingey Stream @ Bolingey Cocks Bridge)	2.106	12	4.924	0.267	0.267	3.457
27010 (Hodge Beck @ Bransdale Weir)	2.108	41	9.42	0.224	0.293	0.345
26014 (Water Forlornes @ Driffield)	2.185	24	0.431	0.319	0.184	0.337
44008 (South Winterbourne @ Winterbourne Steepleton)	2.194	31	0.544	0.414	0.267	0.990
28033 (Dove @ Hollinsclough)	2.335	47	4.15	0.231	0.381	2.361
7011 (Black Burn @ Pluscarden Abbey)	2.341	10	4.752	0.494	0.553	0.788
41020 (Bevern Stream @ Clappers Bridge)	2.406	53	13.66	0.202	0.17	0.680
Total		508				
Weighted Means				0.283	0.252	
H2 value	3.6211					

Goodness of Fit	Generalised Logistic	General Extreme Value	Kappa 3
	1.2101	-0.3708	0.6702

Table 7.2: Pooling Group (Permeable Stations Removed): THB001

Station	Distance	Years of Data	QMED AM	Deurbanised L-CV	Deurbanised L-Skew	Discordancy
27051 (Crimple @ Burn Bridge)	1.331	50	4.641	0.218	0.133	0.710
76011 (Coal Burn @ Coalburn)	1.51	45	1.84	0.171	0.292	0.743
25019 (Leven @ Easby)	1.71	44	5.384	0.341	0.366	0.976
45816 (Haddeo @ Upton)	2.009	29	3.248	0.29	0.431	0.835
36010 (Bumpstead Brook @ Broad Green)	2.057	55	7.59	0.354	0.108	1.968
49005 (Bolingey Stream @ Bolingey Cocks Bridge)	2.106	12	4.924	0.267	0.267	2.421
27010 (Hodge Beck @ Bransdale Weir)	2.108	41	9.42	0.224	0.293	0.136
28033 (Dove @ Hollinsclough)	2.335	47	4.15	0.231	0.381	0.492
41020 (Bevern Stream @ Clappers Bridge)	2.406	53	13.66	0.202	0.17	0.718

Total		376				
Weighted Means				0.254	0.267	
H2 value	1.8915					
Goodness of Fit	Generalised Logistic	General Extreme Value		Kappa 3		
	0.1403	-0.9894		-0.2363		

Table 7.3: Final Pooling Group (Adjusted for Non-Flood Years): THB001

Station	Distance	Years of Data	QMED AM	Deurbanised L-CV	Deurbanised L-Skew	Discordancy
27073 (Brompton Beck @ Snainton Ings)	1.105	42	0.816	0.213	0.018	1.177
27051 (Crimple @ Burn Bridge)	1.331	50	4.641	0.218	0.133	0.426
76011 (Coal Burn @ Coalburn)	1.51	45	1.84	0.171	0.292	0.954
26016 (Gypsey Race @ Kirby Grindalythe)	1.658	25	0.101	0.309	0.249	0.147
25019 (Leven @ Easby)	1.71	44	5.384	0.341	0.366	0.193
45816 (Haddeo @ Upton)	2.009	29	3.248	0.29	0.431	0.521
36010 (Bumpstead Brook @ Broad Green)	2.057	55	7.59	0.354	0.108	1.764
49005 (Bolingey Stream @ Bolingey Cocks Bridge)	2.106	12	4.924	0.267	0.267	3.320
27010 (Hodge Beck @ Bransdale Weir)	2.108	41	9.42	0.224	0.293	0.279
28033 (Dove @ Hollinsclough)	2.335	47	4.15	0.231	0.381	2.299
7011 (Black Burn @ Pluscarden Abbey)	2.341	10	4.752	0.494	0.553	0.700
41020 (Bevern Stream @ Clappers Bridge)	2.406	53	13.66	0.202	0.17	0.583
39033 (Winterbourne Stream @ Bagnor)	2.446	60	0.401	0.34	0.376	0.636
Total		513				
Weighted Means				0.275	0.267	
H2 value	2.8691					
Goodness of Fit	Generalised Logistic	General Extreme Value		Kappa 3		
	-0.1469	-1.3927		-0.5623		

Table 7.4: Permeable Adjusted L-CV and L-Skew

Station	Adjusted L-CV	Adjusted L-Skew
27073 (Brompton Beck @ Snainton Ings)	0.199	0.052
27051 (Crimple @ Burn Bridge)	0.205	0.155
76011 (Coal Burn @ Coalburn)	0.171	0.292
26016 (Gypsey Race @ Kirby Grindalythe)	0.287	0.286

Station	Adjusted L-CV	Adjusted L-Skew
25019 (Leven @ Easby)	0.324	0.401
45816 (Haddeo @ Upton)	0.289	0.432
36010 (Bumpstead Brook @ Broad Green)	0.291	0.168
49005 (Bolingey Stream @ Bolingey Cocks Bridge)	0.266	0.268
27010 (Hodge Beck @ Bransdale Weir)	0.220	0.306
28033 (Dove @ Hollinsclough)	0.223	0.416
7011 (Black Burn @ Pluscarden Abbey)	0.496	0.538
41020 (Bevern Stream @ Clappers Bridge)	0.192	0.203
39033 (Winterbourne Stream @ Bagnor)	0.312	0.438

Appendix 5: Baseline Floodplain Maps

Notes

1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.

2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.

3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.

4. Any discrepancies noted on site are to be reported to the engineer immediately.

5. Cartography © OpenStreetMap contributors.

6. Model not yet peer reviewed.

Key

Model Domain

Baseline Floodplain Extents

- 1 in 30-Year
- 1 in 100-Year
- 1 in 100-Year + 28%CC
- 1 in 1000-Year

Rev	Date	Details of issues/ revision	Drw	Rev
P01	07.06.24	PRELIMINARY ISSUE	LR	MD

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Client

Richborough

Project Title

Land Situated to the East of Brascote Lane and South of Arnold's Crescent, Newbold Verdon

Drawing Title

Baseline Model Floodplain Extents

Drawn:	L. Reeves		Reviewed:	M. Day	
BWB Ref:	243693	Date:	07.06.24	Scale@A3:	1:4,000

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
243693-BWB-ZZ-XX-D-W-0001	**S2**	**P01**

Notes

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3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.

4. Any discrepancies noted on site are to be reported to the engineer immediately.

5. Cartography © OpenStreetMap contributors.

6. Model not yet peer reviewed.

Key

Model Domain

Modelled Flood Depths (m)

- <= 0.25
- 0.25 - 0.50
- 0.50 - 0.75
- 0.75 - 1.00
- 1.00 - 1.25
- > 1.25

0 30 60 90 120 150 m

Rev	Date	Details of issues/ revision	Drw	Rev
P01	19.06.24	PRELIMINARY ISSUE	LR	MD

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Project Title

Land Situated to the East of Brascote Lane and South of Arnold's Crescent, Newbold Verdon

Drawing Title

Baseline Modelled Flood Depths: 1 in 30-Year

Drawn:	L. Reeves		Reviewed:	M. Day	
BWB Ref:	243693	Date:	19.06.24	Scale@A3:	1:4,000

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
243693-BWB-ZZ-XX-D-W-0002	**S2**	**P01**

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4. Any discrepancies noted on site are to be reported to the engineer immediately.

5. Cartography © OpenStreetMap contributors.

6. Model not yet peer reviewed.

Key

Model Domain

Modelled Flood Depths (m)

- <= 0.25
- 0.25 - 0.50
- 0.50 - 0.75
- 0.75 - 1.00
- 1.00 - 1.25
- > 1.25

0 30 60 90 120 150 m

Rev	Date	Details of issues/ revision	Drw	Rev
P01	19.06.24	PRELIMINARY ISSUE	LR	MD

Issues & Revisions

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Client

Richborough

Project Title

Land Situated to the East of Brascote Lane and South of Arnold's Crescent, Newbold Verdon

Drawing Title

Baseline Modelled Flood Depths: 1 in 100-Year

Drawn:	L. Reeves	Reviewed:	M. Day	
BWB Ref:	243693	Date: 19.06.24	Scale@A3:	1:4,000

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
243693-BWB-ZZ-XX-D-W-0003	**S2**	**P01**

Notes

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3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.

4. Any discrepancies noted on site are to be reported to the engineer immediately.

5. Cartography © OpenStreetMap contributors.

6. Model not yet peer reviewed.

Key

Model Domain

Modelled Flood Depths (m)

- <= 0.25
- 0.25 - 0.50
- 0.50 - 0.75
- 0.75 - 1.00
- 1.00 - 1.25
- > 1.25

0 30 60 90 120 150 m

Rev	Date	Details of issues/ revision	Drw	Rev
P01	19.06.24	PRELIMINARY ISSUE	LR	MD

Issues & Revisions

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Client

Richborough

Project Title

Land Situated to the East of Brascote Lane and South of Arnold's Crescent, Newbold Verdon

Drawing Title

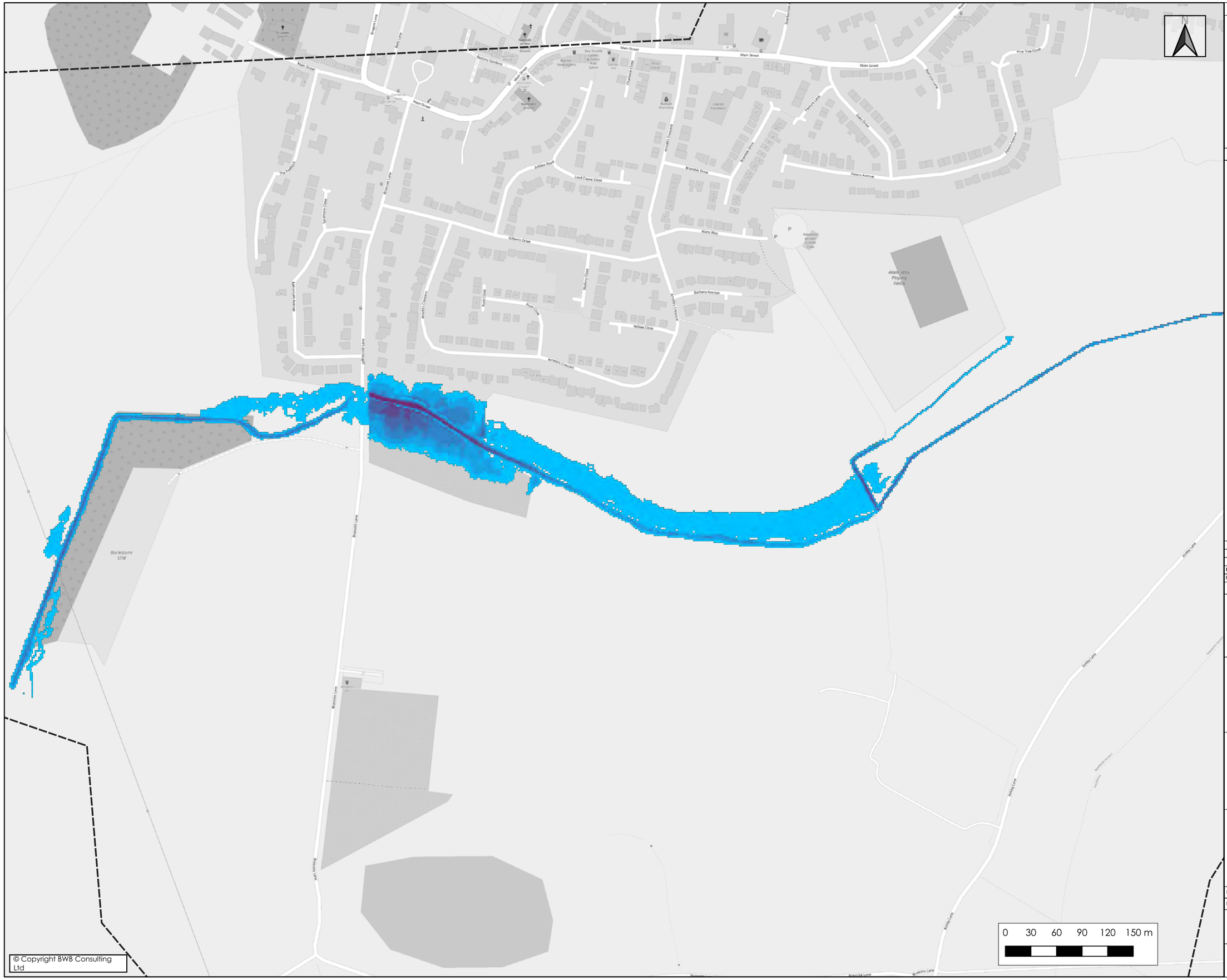
Baseline Modelled Flood Depths: 1 in 100-Year+28%CC

Drawn:	L. Reeves	Reviewed:	M. Day	
BWB Ref:	243693	Date:	19.06.24	Scale@A3: 1:4,000

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
243693-BWB-ZZ-XX-D-W-0004	S2	P01



Notes

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2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.

3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.

4. Any discrepancies noted on site are to be reported to the engineer immediately.

5. Cartography © OpenStreetMap contributors.

6. Model not yet peer reviewed.

Key

Model Domain

Modelled Flood Depths (m)

- <= 0.25
- 0.25 - 0.50
- 0.50 - 0.75
- 0.75 - 1.00
- 1.00 - 1.25
- > 1.25

Rev	Date	Details of issues/ revision	Drw	Rev
P01	19.06.24	PRELIMINARY ISSUE	LR	MD

Issues & Revisions

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Client

Richborough

Project Title

Land Situated to the East of Brascote Lane and South of Arnold's Crescent, Newbold Verdon

Drawing Title

Baseline Modelled Flood Depths: 1 in 1000-Year

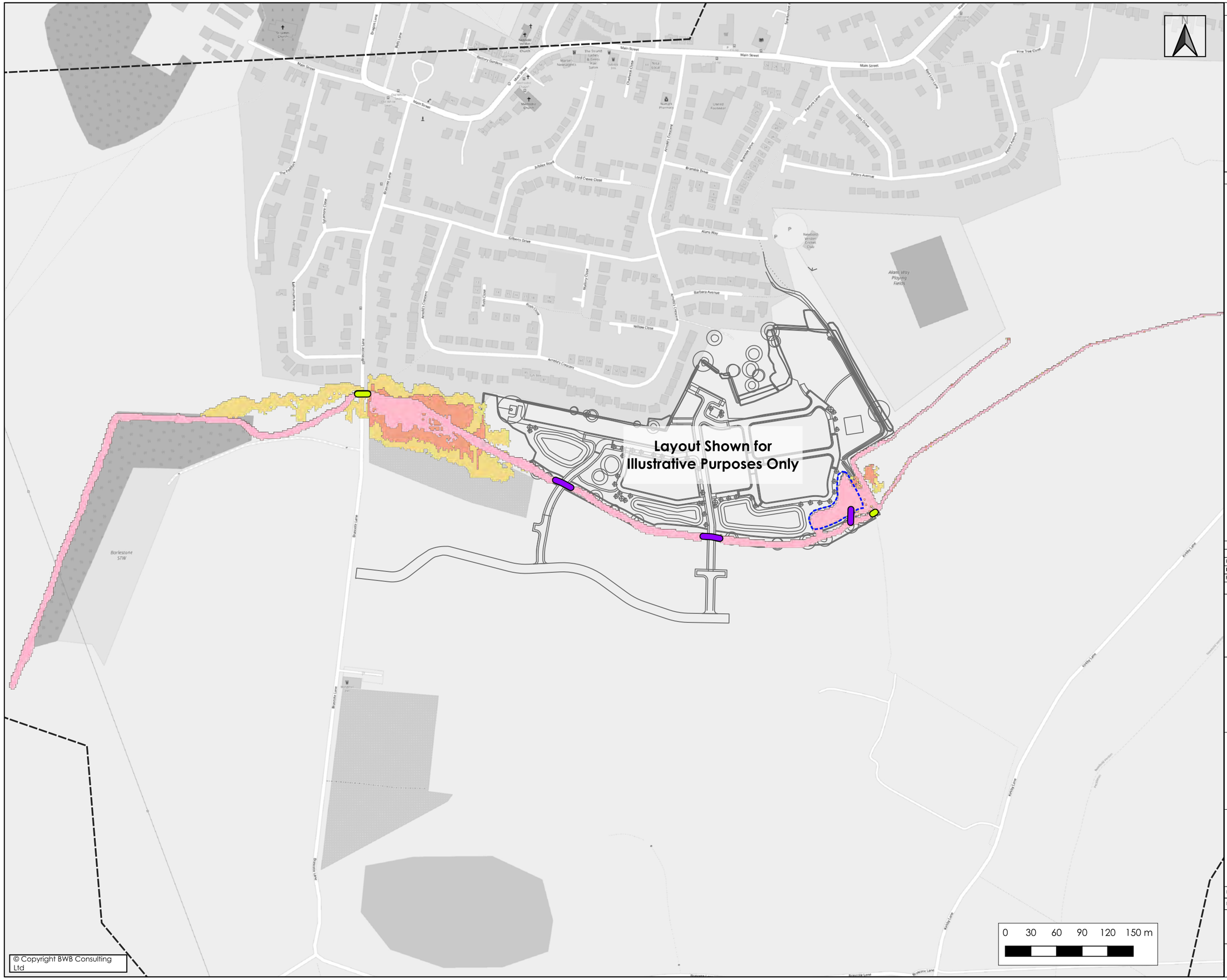
Drawn:	L. Reeves		Reviewed:	M. Day	
BWB Ref:	243693	Date:	19.06.24	Scale@A3:	1:4,000

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
243693-BWB-ZZ-XX-D-W-0005	S2	P01

Appendix 6: Post-Development Flood Maps



Notes

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4. Any discrepancies noted on site are to be reported to the engineer immediately.

5. Cartography © OpenStreetMap contributors.

6. Model not yet peer reviewed.

7. Proposed plans are for illustrative purposes only (reference: 902832.36.03). Do not construct from this drawing.

Key

- Model Domain
- Existing Structure
- Proposed Structure
- Indicative Flood Storage Area

Proposed Floodplain Extents

- 1 in 30-Year
- 1 in 100-Year
- 1 in 100-Year + 28%CC

Rev	Date	Details of issues/ revision	Drw	Rev
P02	11.07.24	Updates to proposed watercourse crossings	LR	MD
P01	14.06.24	PRELIMINARY ISSUE	LR	MD

Issues & Revisions

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www.bwbconsulting.com

Client

Richborough

Project Title

Land Situated to the East of Brascote Lane and South of Arnold's Crescent, Newbold Verdon

Drawing Title

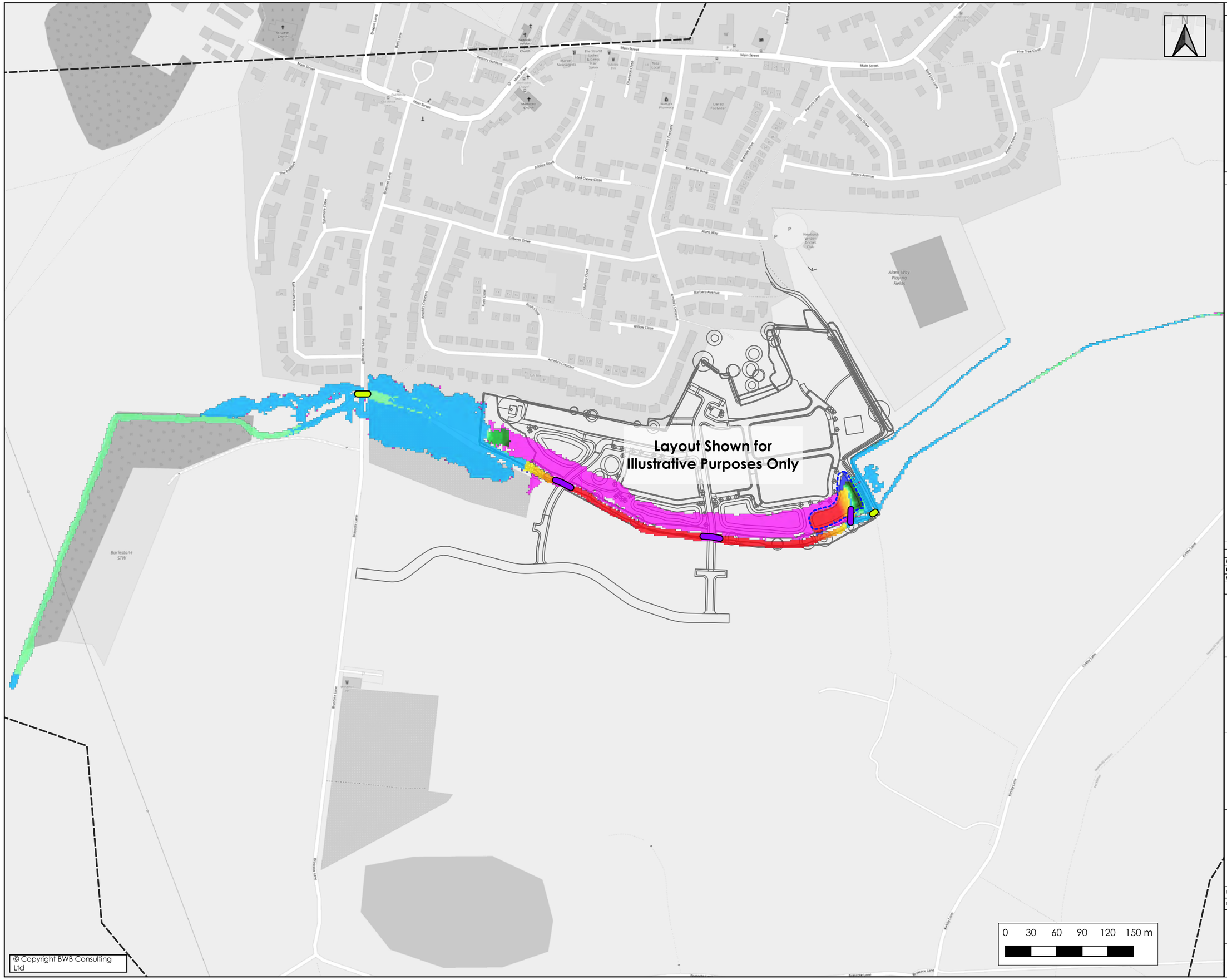
Post-Development Model Floodplain Extents

Drawn:	L. Reeves		Reviewed:	M. Day	
BWB Ref:	243693	Date:	14.06.24	Scale@A3:	1:4,000

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
243693-BWB-ZZ-XX-D-W-0006	**S2**	**P02**



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4. Any discrepancies noted on site are to be reported to the engineer immediately.

5. Cartography © OpenStreetMap contributors.

6. Model not yet peer reviewed.

7. Proposed plans are for illustrative purposes only (reference: 902832.36.03). Do not construct from this drawing.

Key

- Model Domain
- Existing Structure
- Proposed Structure
- Indicative Flood Storage Area

Change in Floodplain Extent

- Former Wet Areas Now Dry
- Former Dry Areas Now Wet

Change in Peak Flood Level (m)

- <= -0.125
- -0.125 - -0.100
- -0.100 - -0.075
- -0.075 - -0.050
- -0.050 - -0.025
- -0.025 - -0.01
- -0.01 - 0.01 (No Change)
- 0.01 - 0.025
- 0.025 - 0.050
- 0.050 - 0.075
- 0.075 - 0.100
- 0.100 - 0.125
- > 0.125

Rev	Date	Details of issues/ revision	Drw	Rev
P02	11.07.24	Updates to proposed watercourse crossings	LR	MD
P01	**19.06.24**	**PRELIMINARY ISSUE**	**LR**	**MD**

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Client

Richborough

Project Title

Land Situated to the East of Brascote Lane and South of Arnold's Crescent, Newbold Verdon

Drawing Title

Baseline and Post-Development Comparative Analysis: 1 in 100-Year + 28%CC

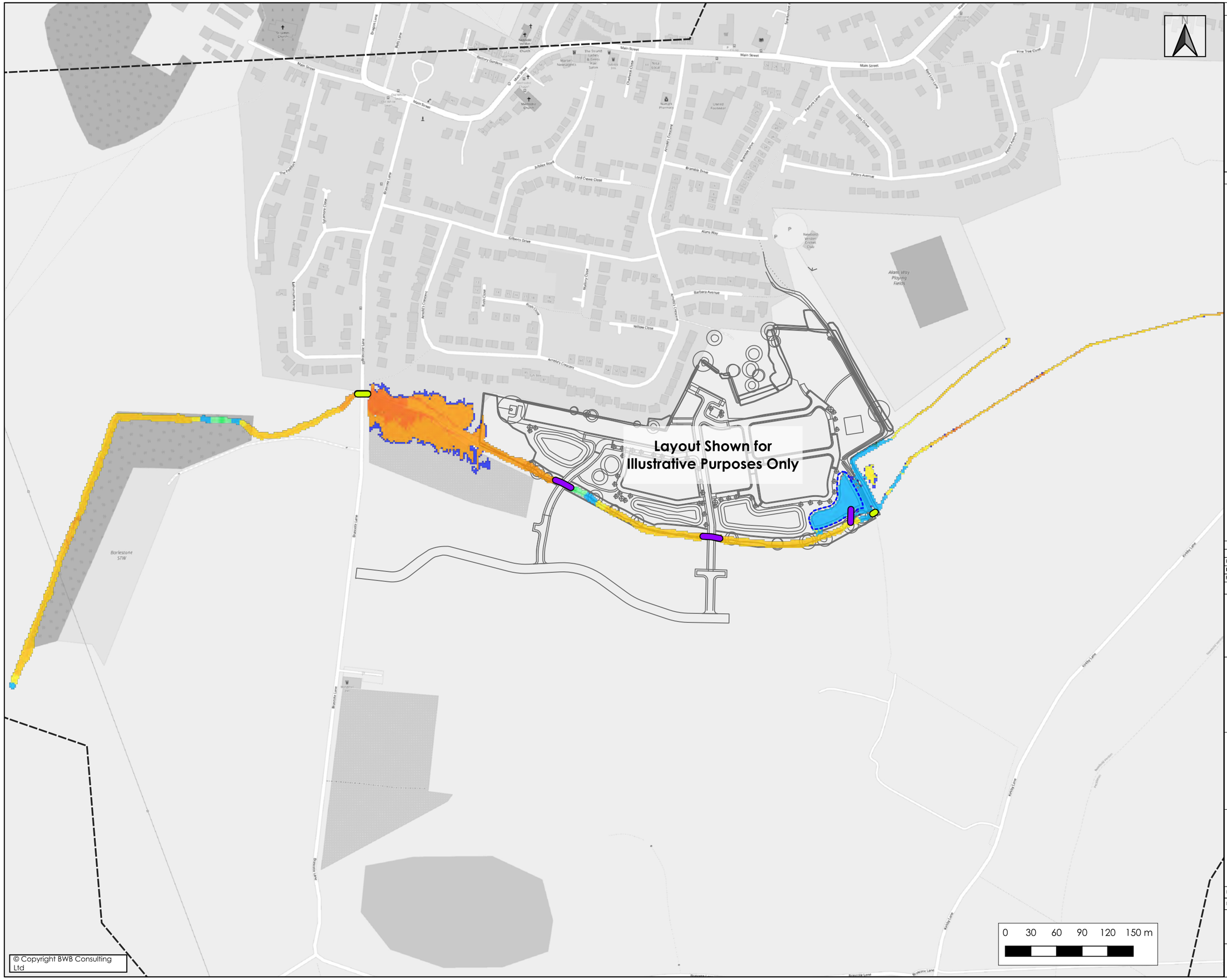
Drawn:	L. Reeves	Reviewed:	M. Day	
BWB Ref:	243693	Date:	19.06.24	Scale@A3: 1:4,000

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
243693-BWB-ZZ-XX-D-W-0007	**S2**	**P02**

Appendix 7: Sensitivity Testing



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4. Any discrepancies noted on site are to be reported to the engineer immediately.

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6. Model not yet peer reviewed.

7. Proposed plans are for illustrative purposes only (reference: 902832.36.03). Do not construct from this drawing.

Key

- Model Domain
- Existing Structure
- Proposed Structure
- Indicative Flood Storage Area

Change in Floodplain Extent

- Former Wet Areas Now Dry
- Former Dry Areas Now Wet

Change in Peak Flood Level (m)

- <= -0.125
- -0.125 - -0.100
- -0.100 - -0.075
- -0.075 - -0.050
- -0.050 - -0.025
- -0.025 - -0.01
- -0.01 - 0.01 (No Change)
- 0.01 - 0.025
- 0.025 - 0.050
- 0.050 - 0.075
- 0.075 - 0.100
- 0.100 - 0.125
- > 0.125

Rev	Date	Details of issues/ revision	Drw	Rev
P02	11.07.24	Updates to proposed watercourse crossings	LR	MD
P01	19.06.24	PRELIMINARY ISSUE	LR	MD

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Client

Richborough

Project Title

Land Situated to the East of Brascote Lane and South of Arnold's Crescent, Newbold Verdon

Drawing Title

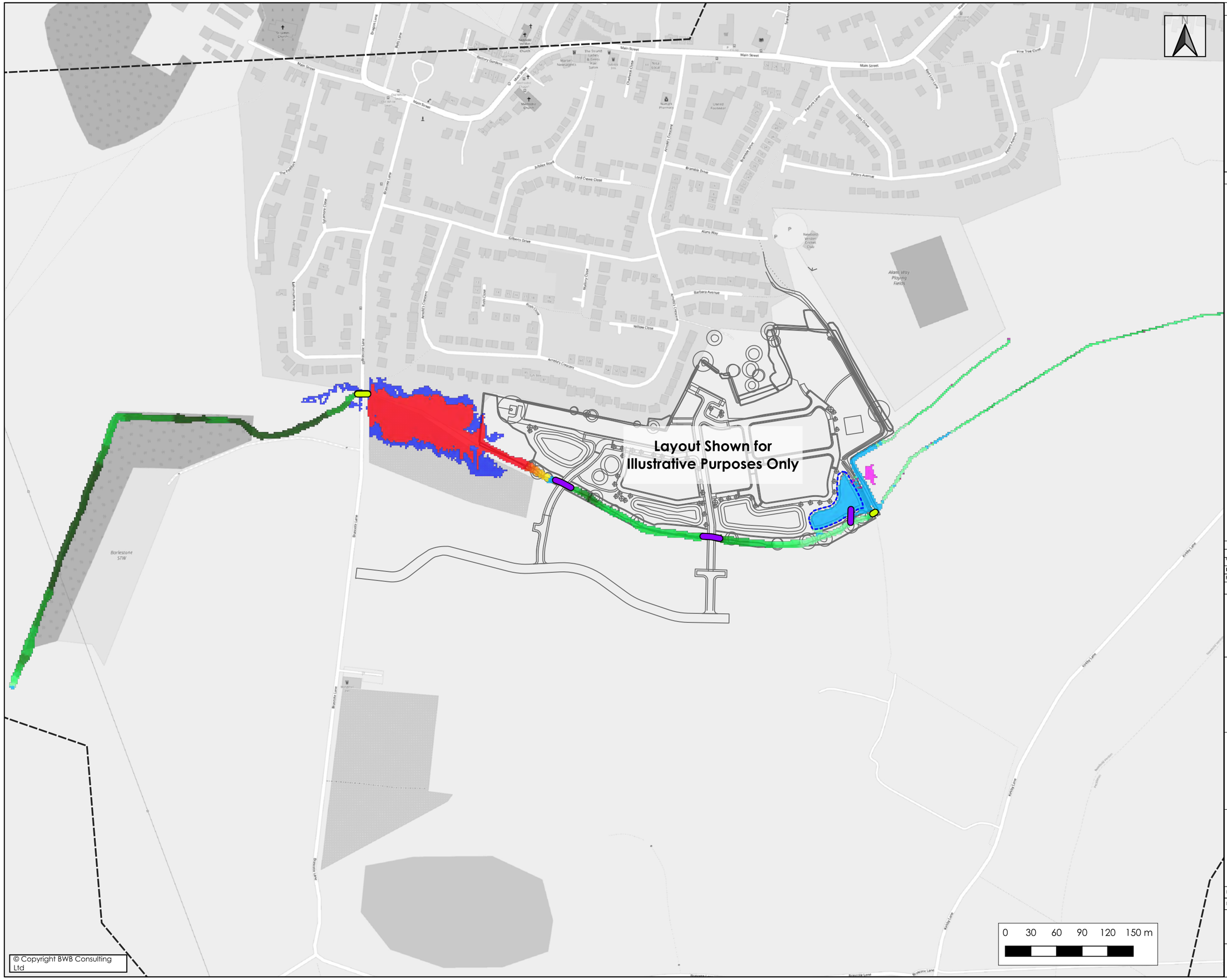
Post-Development Sensitivity: Increased Roughness (20%) 1 in 100-Year

Drawn:	L. Reeves	Reviewed:	M. Day	
BWB Ref:	243693	Date: 19.06.24	Scale@A3:	1:4,000

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
243693-BWB-ZZ-XX-D-W-0008	S2	P02



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3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.

4. Any discrepancies noted on site are to be reported to the engineer immediately.

5. Cartography © OpenStreetMap contributors.

6. Model not yet peer reviewed.

7. Proposed plans are for illustrative purposes only (reference: 902832.36.03). Do not construct from this drawing.

Key

- Model Domain
- Existing Structure
- Proposed Structure
- Indicative Flood Storage Area

Change in Floodplain Extent

- Former Wet Areas Now Dry
- Former Dry Areas Now Wet

Change in Peak Flood Level (m)

- <= -0.125
- -0.125 - -0.100
- -0.100 - -0.075
- -0.075 - -0.050
- -0.050 - -0.025
- -0.025 - -0.01
- -0.01 - 0.01 (No Change)
- 0.01 - 0.025
- 0.025 - 0.050
- 0.050 - 0.075
- 0.075 - 0.100
- 0.100 - 0.125
- > 0.125

Rev	Date	Details of issues/ revision	Drw	Rev
P02	11.07.24	Updates to proposed watercourse crossings	LR	MD
P01	**19.06.24**	**PRELIMINARY ISSUE**	**LR**	**MD**

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Nottingham | 0115 924 1100
www.bwbconsulting.com

Client

Richborough

Project Title

Land Situated to the East of Brascote Lane and South of Arnold's Crescent, Newbold Verdon

Drawing Title

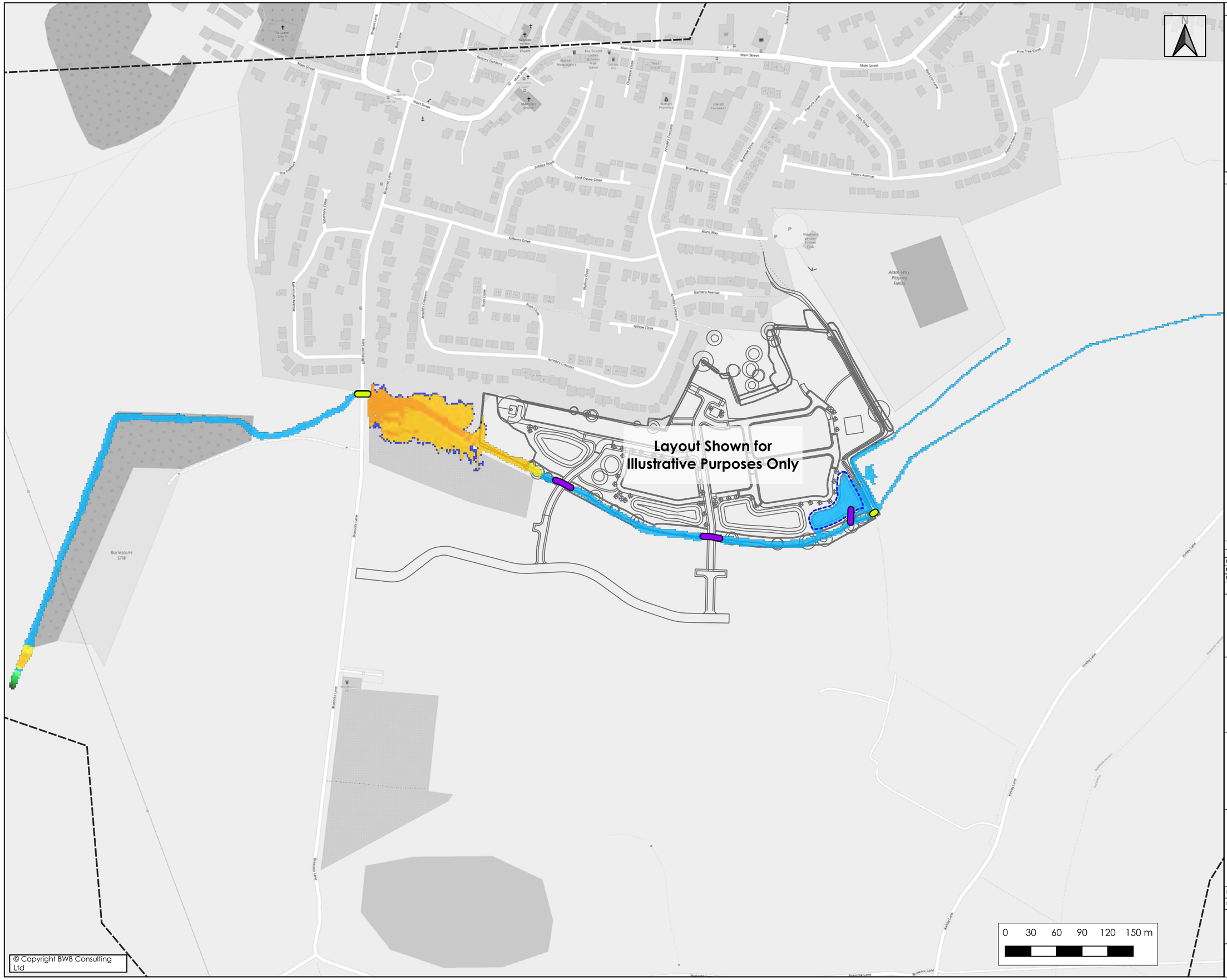
Post-Development Sensitivity: Decreased Roughness (20%) 1 in 100-Year

Drawn:	L. Reeves	Reviewed:	M. Day	
BWB Ref:	243693	Date: 19.06.24	Scale@A3:	1:4,000

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
243693-BWB-ZZ-XX-D-W-0009	**S2**	**P02**



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6. Model not yet peer reviewed.

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Key

- Model Domain
- Existing Structure
- Proposed Structure
- Indicative Flood Storage Area

Change in Floodplain Extent

- Former Wet Areas Now Dry
- Former Dry Areas Now Wet

Change in Peak Flood Level (m)

- <= -0.125
- -0.125 - -0.100
- -0.100 - -0.075
- -0.075 - -0.050
- -0.050 - -0.025
- -0.025 - -0.01
- -0.01 - 0.01 (No Change)
- 0.01 - 0.025
- 0.025 - 0.050
- 0.050 - 0.075
- 0.075 - 0.100
- 0.100 - 0.125
- > 0.125

Rev	Date	Details of issues/ revision	Drw	Rev
P02	11.07.24	Updates to proposed watercourse crossings	LR	MD
P01	19.06.24	PRELIMINARY ISSUE	LR	MD

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Client

Richborough

Project Title

Land Situated to the East of Brascote Lane and South of Arnold's Crescent, Newbold Verdon

Drawing Title

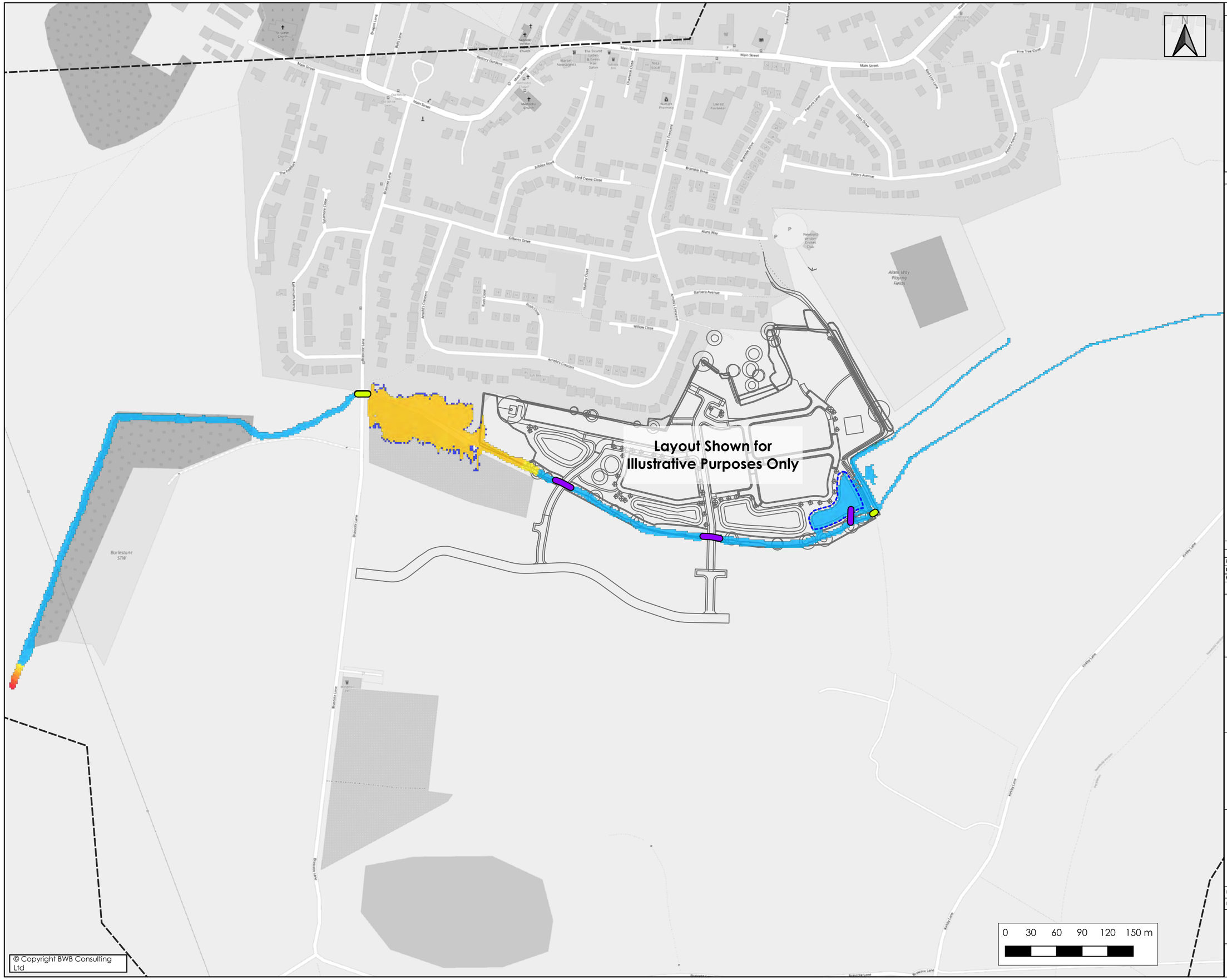
Post-Development Sensitivity: Increased Downstream Boundary (20% Increase to Slope 150mm Decrease to Water Level at Downstream Boundary) 1 in 100-Year

Drawn:	L. Reeves	Reviewed:	M. Day	
BWB Ref:	243693	Date: 19.06.24	Scale@A3:	1:4,000

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
243693-BWB-ZZ-XX-D-W-0010	S2	P02



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6. Model not yet peer reviewed.

7. Proposed plans are for illustrative purposes only (reference: 902832.36.03). Do not construct from this drawing.

Key

- Model Domain
- Existing Structure
- Proposed Structure
- Indicative Flood Storage Area

Change in Floodplain Extent

- Former Wet Areas Now Dry
- Former Dry Areas Now Wet

Change in Peak Flood Level (m)

- <= -0.125
- -0.125 - -0.100
- -0.100 - -0.075
- -0.075 - -0.050
- -0.050 - -0.025
- -0.025 - -0.01
- -0.01 - 0.01 (No Change)
- 0.01 - 0.025
- 0.025 - 0.050
- 0.050 - 0.075
- 0.075 - 0.100
- 0.100 - 0.125
- > 0.125

Rev	Date	Details of issues/ revision	Drw	Rev
P02	11.07.24	Updates to proposed watercourse crossings	LR	MD
P01	19.06.24	PRELIMINARY ISSUE	LR	MD

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Client

Richborough

Project Title

Land Situated to the East of Brascote Lane and South of Arnold's Crescent, Newbold Verdon

Drawing Title

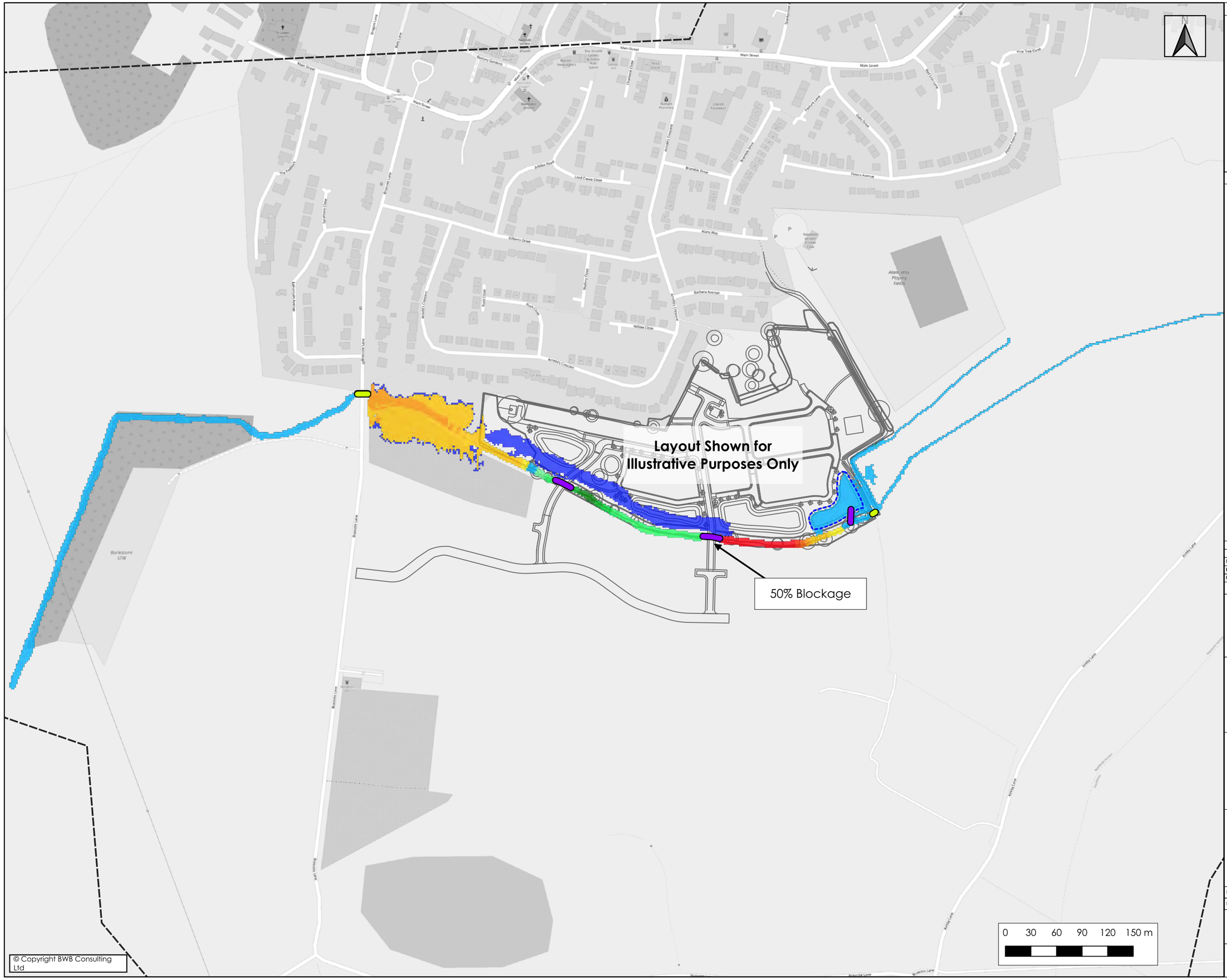
Post-Development Sensitivity: Decreased Downstream Boundary (20% Decrease to Slope 150mm Increase to Water Level at Downstream Boundary) 1 in 100-Year

Drawn:	L. Reeves	Reviewed:	M. Day	
BWB Ref:	243693	Date: 19.06.24	Scale@A3:	1:4,000

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
243693-BWB-ZZ-XX-D-W-0011	S2	P02



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Key

- Model Domain
- Existing Structure
- Proposed Structure
- Indicative Flood Storage Area

Change in Floodplain Extent

- Former Wet Areas Now Dry
- Former Dry Areas Now Wet

Change in Peak Flood Level (m)

- <= -0.125
- -0.125 - -0.100
- -0.100 - -0.075
- -0.075 - -0.050
- -0.050 - -0.025
- -0.025 - -0.01
- -0.01 - 0.01 (No Change)
- 0.01 - 0.025
- 0.025 - 0.050
- 0.050 - 0.075
- 0.075 - 0.100
- 0.100 - 0.125
- > 0.125

Rev	Date	Details of issues/ revision	Drw	Rev
P02	11.07.24	Updates to proposed watercourse crossings	LR	MD
P01	19.06.24	PRELIMINARY ISSUE	LR	MD

Issues & Revisions

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Client

Richborough

Project Title

Land Situated to the East of Brascote Lane and South of Arnold's Crescent, Newbold Verdon

Drawing Title

Post-Development Sensitivity: 50% Blockage of 1.5m Height x 1.5m Width Eastern Watercourse Crossing 1 in 100-Year

Drawn:	L. Reeves	Reviewed:	M. Day	
BWB Ref:	243693	Date:	19.06.24	Scale@A3: 1:4,000

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
243693-BWB-ZZ-XX-D-W-0012	S2	P02

Layout Shown for Illustrative Purposes Only

50% Blockage

0 30 60 90 120 150 m

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6. Model not yet peer reviewed.

7. Proposed plans are for illustrative purposes only (reference: 902832.36.03). Do not construct from this drawing.

Key

- Model Domain
- Existing Structure
- Proposed Structure
- Indicative Flood Storage Area

Change in Floodplain Extent

- Former Wet Areas Now Dry
- Former Dry Areas Now Wet

Change in Peak Flood Level (m)

- <= -0.125
- -0.125 - -0.100
- -0.100 - -0.075
- -0.075 - -0.050
- -0.050 - -0.025
- -0.025 - -0.01
- -0.01 - 0.01 (No Change)
- 0.01 - 0.025
- 0.025 - 0.050
- 0.050 - 0.075
- 0.075 - 0.100
- 0.100 - 0.125
- > 0.125

Rev	Date	Details of issues/ revision	Drw	Rev
P02	11.07.24	Updates to proposed watercourse crossings	LR	MD
P01	19.06.24	PRELIMINARY ISSUE	LR	MD

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Client

Richborough

Project Title

Land Situated to the East of Brascote Lane and South of Arnold's Crescent, Newbold Verdon

Drawing Title

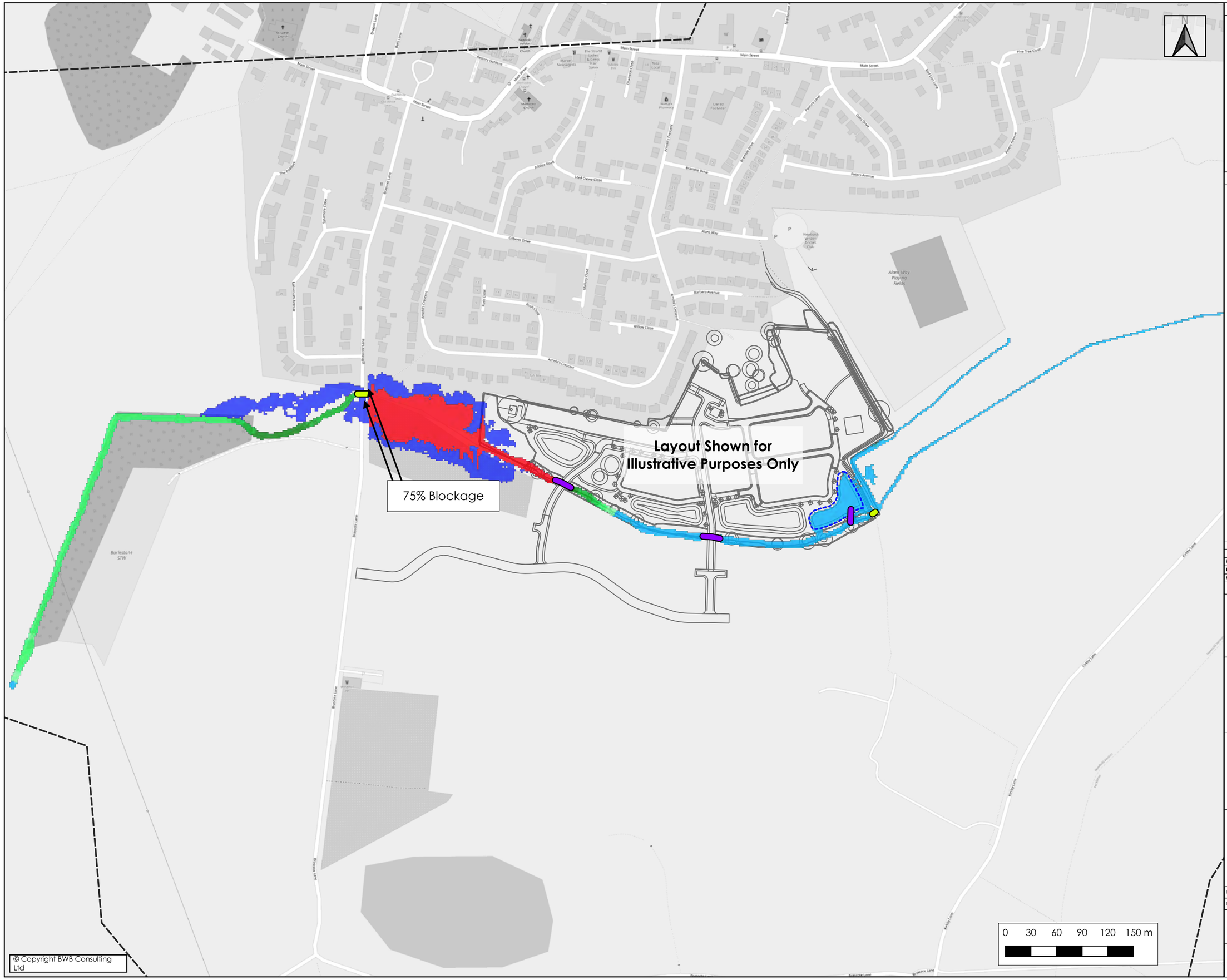
Post-Development Sensitivity: 50% Blockage of 1.5m Height x 1.5m Width Western Watercourse Crossing 1 in 100-Year

Drawn:	L. Reeves	Reviewed:	M. Day
BWB Ref:	243693	Date: 19.06.24	Scale@A3: 1:4,000

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
243693-BWB-ZZ-XX-D-W-0013	S2	P02



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5. Cartography © OpenStreetMap contributors.

6. Model not yet peer reviewed.

7. Proposed plans are for illustrative purposes only (reference: 902832.36.03). Do not construct from this drawing.

Key

- Model Domain
- Existing Structure
- Proposed Structure
- Indicative Flood Storage Area

Change in Floodplain Extent

- Former Wet Areas Now Dry
- Former Dry Areas Now Wet

Change in Peak Flood Level (m)

- <= -0.125
- -0.125 - -0.100
- -0.100 - -0.075
- -0.075 - -0.050
- -0.050 - -0.025
- -0.025 - -0.01
- -0.01 - 0.01 (No Change)
- 0.01 - 0.025
- 0.025 - 0.050
- 0.050 - 0.075
- 0.075 - 0.100
- 0.100 - 0.125
- > 0.125

Rev	Date	Details of issues/ revision	Drw	Rev
P02	11.07.24	Updates to proposed watercourse crossings	LR	MD
P01	**19.06.24**	**PRELIMINARY ISSUE**	**LR**	**MD**

Issues & Revisions

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Client

Richborough

Project Title

Land Situated to the East of Brascote Lane and South of Arnold's Crescent, Newbold Verdon

Drawing Title

Post-Development Sensitivity: 75% Blockage of Twin 600mm Diameter Culverts Beneath Brascote Lane 1 in 100-Year

Drawn:	L. Reeves	Reviewed:	M. Day	
BWB Ref:	243693	Date:	19.06.24	Scale@A3: 1:4,000

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
243693-BWB-ZZ-XX-D-W-0014	**S2**	**P02**

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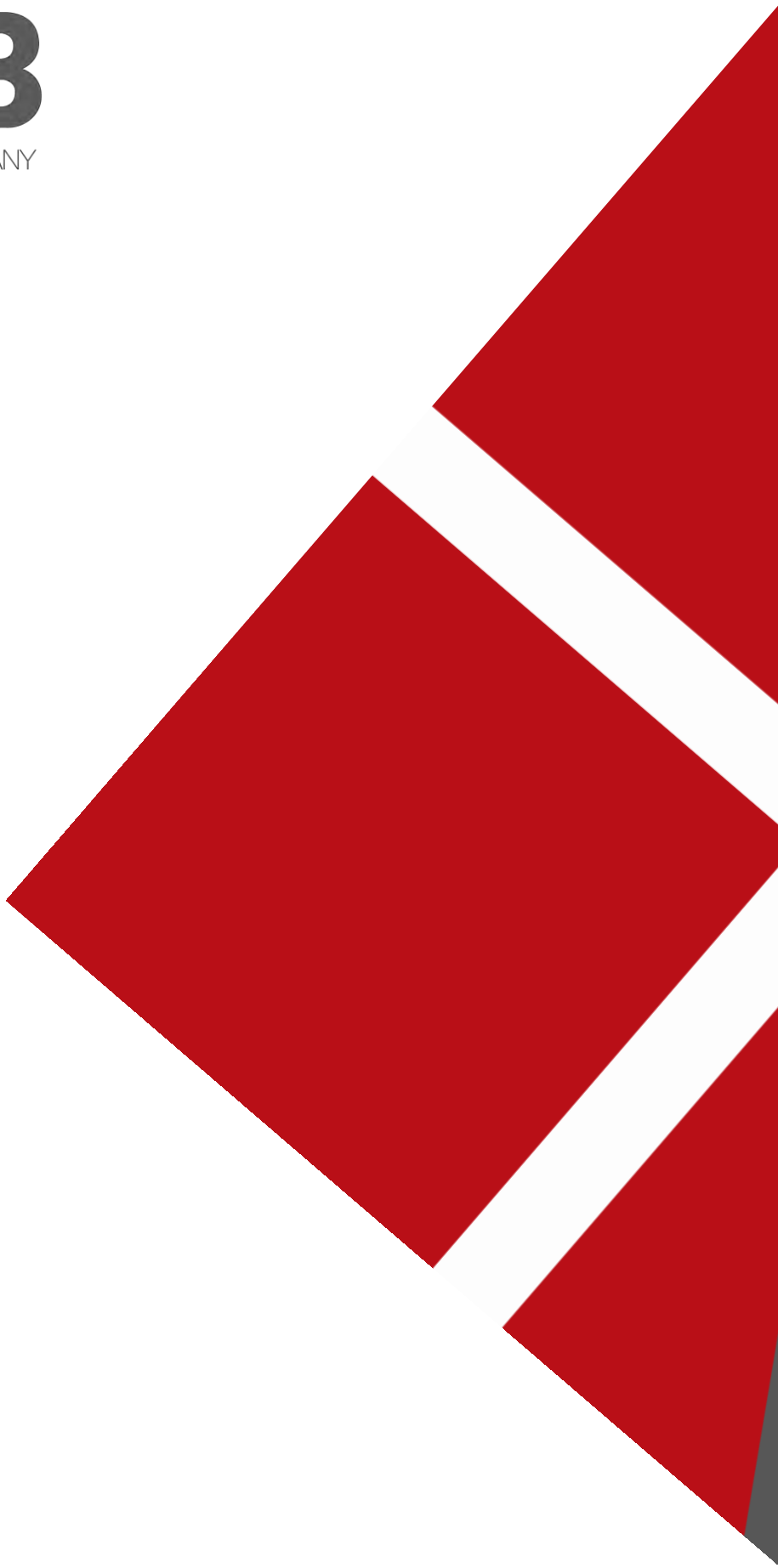

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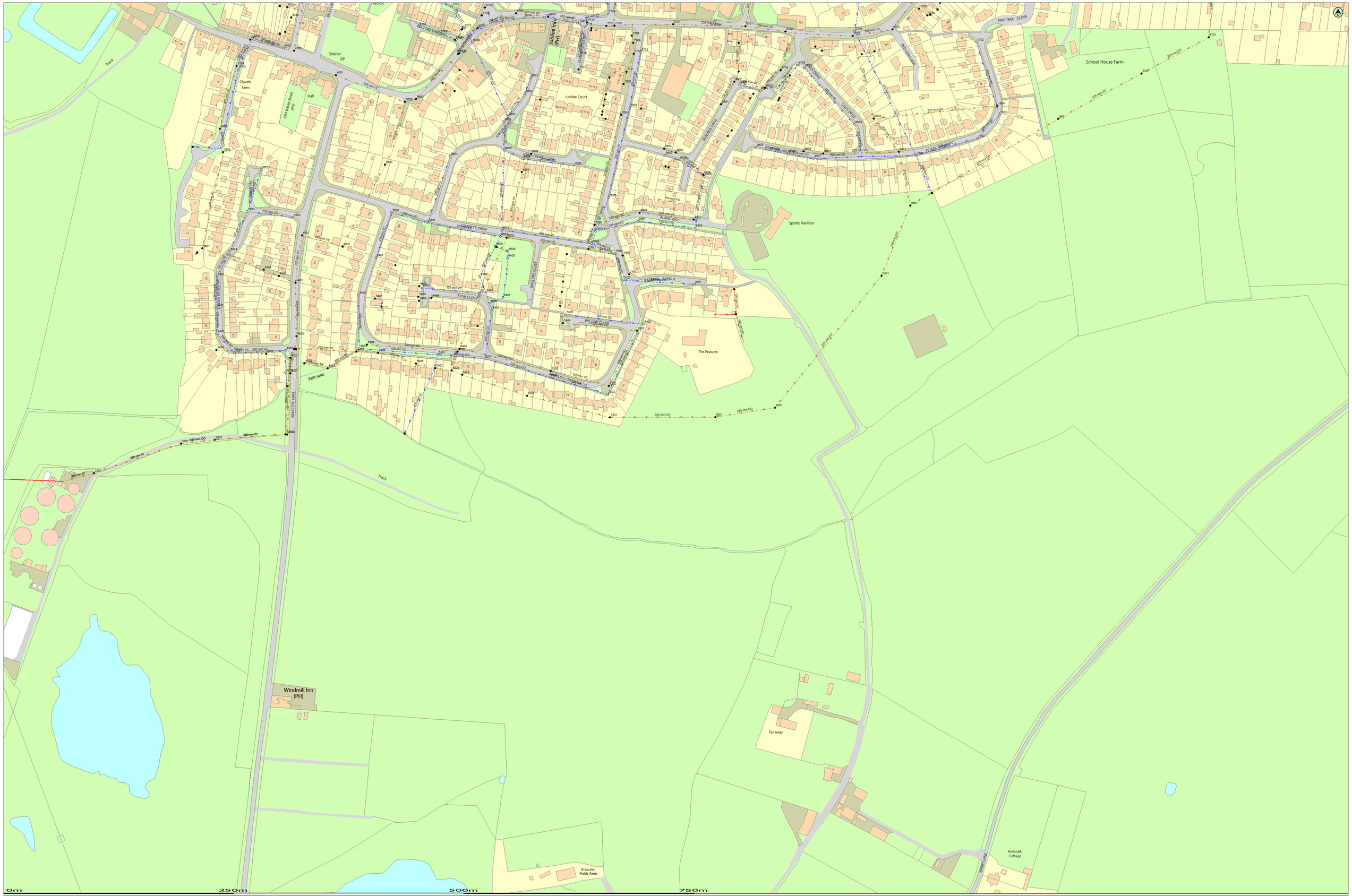
Appendix 6: Severn Trent Water Sewer Records



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Date: 13/02/24

Scale: 1:1250

Map Centre: 444840,303293

Data updated: 14/01/24

Our Ref: 1394154 - 1

Wastewater Plan A0

Public Foul Gravity/Lateral Drain
Public Combined Gravity/Lateral Drain
Public Surface Water Gravity/Lateral Drain
Pressure Foul
Pressure Combined
Pressure Surface Water
Highway Drain
Overflow Pipe
Disposal Pipe
Culverted Water Course
Pumping Station
Fitting
Manhole Foul
Manhole Surface
Abandoned Pipe
Chamber
Section 104 sewers are shown in green
Private sewers are shown in magenta

monika.ivanova@bwbconsulting.com

243693

SEVERN TRENT

GENERAL CONDITIONS AND PRECAUTIONS TO BE TAKEN WHEN CARRYING OUT WORK ADJACENT TO SEVERN TRENT WATER'S APPARATUS

Please ensure that a copy of these conditions is passed to your representative and/or your contractor on site. If any damage is caused to Severn Trent Water Limited (STW) apparatus (defined below), the person, contractor or subcontractor responsible must inform STW immediately on:
0800 783 4444 (24 hours)

a) These general conditions and precautions apply to the public sewerage, water distribution and cables in ducts including (but not limited to) sewers which are the subject of an Agreement under Section 104 of the Water Industry Act 1991(a legal agreement between a developer and STW, where a developer agrees to build sewers to an agreed standard, which STW will then adopt); mains installed in accordance with an agreement for the self-construction of water mains entered into with STW and the assets described at condition b) of these general conditions and precautions. Such apparatus is referred to as "STW Apparatus" in these general conditions and precautions.

b) Please be aware that due to The Private Sewers Transfer Regulations June 2011, the number of public sewers has increased, but many of these are not shown on the public sewer record. However, some idea of their positions may be obtained from the position of inspection covers and their existence must be anticipated.

c) On request, STW will issue a copy of the plan showing the approximate locations of STW Apparatus although in certain instances a charge will be made. The position of private drains, private sewers and water service pipes to properties are not normally shown but their presence must be anticipated. This plan and the information supplied with it is furnished as a general guide only and STW does not guarantee its accuracy.

d) STW does not update these plans on a regular basis. Therefore the position and depth of STW Apparatus may change and this plan is issued subject to any such change. Before any works are carried out, you should confirm whether any changes to the plan have been made since it was issued.

e) The plan must not be relied upon in the event of excavations or other works in the vicinity of STW Apparatus. It is your responsibility to ascertain the precise location of any STW Apparatus prior to undertaking any development or other works (including but not limited to excavations).

f) No person or company shall be relieved from liability for loss and/or damage caused to STW Apparatus by reason of the actual position and/or depths of STW Apparatus being different from those shown on the plan.

In order to achieve safe working conditions adjacent to any STW Apparatus the following should be observed:

1. All STW Apparatus should be located by hand digging prior to the use of mechanical excavators.

2. All information set out in any plans received from us, or given by our staff at the site of the works, about the position and depth of the mains, is approximate. Every possible precaution should be taken to avoid damage to STW Apparatus. You or your contractor must ensure the safety of STW Apparatus and will be responsible for the cost of repairing any loss and/or damage caused (including without limitation replacement parts).

3. Water mains are normally laid at a depth of 900mm. No records are kept of customer service pipes which are normally laid at a depth of 750mm; but some idea of their positions may be obtained from the position of stop tap covers and their existence must be anticipated.

4. During construction work, where heavy plant will cross the line of STW Apparatus, specific crossing points must be agreed with STW and suitably reinforced where required. These crossing points should be clearly marked and crossing of the line of STW Apparatus at other locations must be prevented.

5. Where it is proposed to carry out piling or boring within 20 metres of any STW Apparatus, STW should be consulted to enable any affected STW Apparatus to be surveyed prior to the works commencing.

6. Where excavation of trenches adjacent to any STW Apparatus affects its support, the STW Apparatus must be supported to the satisfaction of STW. Water mains and some sewers are pressurised and can fail if excavation removes support to thrust blocks to bends and other fittings.

7. Where a trench is excavated crossing or parallel to the line of any STW Apparatus, the backfill should be adequately compacted to prevent any settlement which could subsequently cause damage to the STW Apparatus. In special cases, it may be necessary to provide permanent support to STW Apparatus which has been exposed over a length of the excavation before backfilling and reinstatement is carried out. There should be no concrete backfill in contact with the STW Apparatus.

8. No other apparatus should be laid along the line of STW Apparatus irrespective of clearance. Above ground apparatus must not be located within a minimum of 3 metres either side of the centre line of STW Apparatus for smaller sized pipes and 6 metres either side for larger sized pipes without prior approval. No manhole or chamber shall be built over or around any STW Apparatus.

9. A minimum radial clearance of 300 millimetres should be allowed between any plant or equipment being installed and existing STW Apparatus. We reserve the right to increase this distance where strategic assets are affected.

10. Where any STW Apparatus coated with a special wrapping is damaged, even to a minor extent, STW must be notified and the trench left open until the damage has been inspected and the necessary repairs have been carried out. In the case of any material damage to any STW Apparatus causing leakage, weakening of the mechanical strength of the pipe or corrosion-protection damage, the necessary remedial work will be recharged to you.

11. It may be necessary to adjust the finished level of any surface boxes which may fall within your proposed construction. Please ensure that these are not damaged, buried or otherwise rendered inaccessible as a result of the works and that all stop taps, valves, hydrants, etc. remain accessible and operable. Minor reduction in existing levels may result in conflict with STW Apparatus such as valve spindles or tops of hydrants housed under the surface boxes. Checks should be made during site investigations to ascertain the level of such STW Apparatus in order to determine any necessary alterations in advance of the works.

12. With regard to any proposed resurfacing works, you are required to contact STW on the number given above to arrange a site inspection to establish the condition of any STW Apparatus in the nature of surface boxes or manhole covers and frames affected by the works. STW will then advise on any measures to be taken, in the event of this a proportionate charge will be made.

13. You are advised that STW will not agree to either the erection of posts, directly over or within 1.0 metre of valves and hydrants,

14. No explosives are to be used in the vicinity of any STW Apparatus without prior consultation with STW.

TREE PLANTING RESTRICTIONS

There are many problems with the location of trees adjacent to sewers, water mains and other STW Apparatus and these can lead to the loss of trees and hence amenity to the area which many people may have become used to. It is best if the problem is not created in the first place. Set out below are the recommendations for tree planting in close proximity to public sewers, water mains and other STW Apparatus.

15. Please ensure that, in relation to STW Apparatus, the mature root systems and canopies of any tree planted do not and will not encroach within the recommended distances specified in the notes below.

16. Both Poplar and Willow trees have extensive root systems and should not be planted within 12 metres of a sewer, water main or other STW Apparatus.

17. The following trees and those of similar size, be they deciduous or evergreen, should not be planted within 6 metres of a sewer, water main or other STW Apparatus. E.g. Ash, Beech, Birch, most Conifers, Elm, Horse Chestnut, Lime, Oak, Sycamore, Apple and Pear. Asset Protection Statements Updated May 2014

18. STW personnel require a clear path to conduct surveys etc. No shrubs or bushes should be planted within 2 metre of the centre line of a sewer, water main or other STW Apparatus.

19. In certain circumstances, both STW and landowners may wish to plant shrubs/bushes in close proximity to a sewer, water main of other STW Apparatus for screening purposes. The following are shallow rooting and are suitable for this purpose: Blackthorn, Broom, Cotoneaster, Elder, Hazel, Laurel, Privet, Quickthorn, Snowberry, and most ornamental flowering shrubs.

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
	C		0	0
	C		0	0
	C		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
	F		0	0
0401	F	129.12	127.1	2.02
0501	F	129.61	127.51	2.1
0601	F	130.09	127.92	2.17
0603	F	130.58	128.26	2.32
0604	F	130.5	0	0
0701	F	130.15	128.43	1.72
0702	F	130.36	128.57	1.79
1604	F	130.6	129.67	0.93
1700	F		0	0
1703	F		0	0
1750	F		0	0
2201	F	121.94	120.94	1
2601	F	130.27	128.29	1.98
3201	F	122.23	121.37	0.86
3302	F	123.33	0	0
3303	F	122.52	121.51	1.01
3404	F		0	0
3405	F	123.45	122.66	0.79
3501	F	125.97	124.88	1.09
3601	F	129.92	126.91	3.01
3602	F	129.15	126.44	2.71
3701	F	130.79	128.53	2.26
3701	F	130.63	127.69	2.94
3704	F	0	0	0
4300	F	124.36	122.65	1.71
4301	F	123.28	121.92	1.36
4302	F	122.83	122.09	0.74
4303	F	123.05	121.96	1.09
4307	F	122.95	121.93	1.02
4309	F	122.87	121.76	1.11
4310	F	122.85	121.76	1.09
4400	F		0	0
4401	F	126.01	124.19	1.82
4402	F	123.88	122.23	1.65
4501	F	127.97	125.94	2.03
4502	F	128.1	126.01	2.09
4601	F	130.75	128.9	1.85
4700	F		0	0
4701	F		0	0
4701	F		0	0
4702	F	130.81	128.21	2.6
5302	F		0	0
5303	F	124.36	123.26	1.1
5305	F	123.96	123.12	0.84
5306	F	124.28	122.92	1.36
5400	F		0	0
5403	F		0	0
5404	F		0	0
5405	F		0	0
5406	F	125.1	122.76	2.34
5407	F		0	0
5601	F		0	0
5602	F	130.3	128	2.3
5603	F	130.19	128.15	2.04
5705	F	130.03	128.52	1.51
6300	F	124.53	123.06	1.47
6302	F		0	0
6303	F		0	0
6404	F	124.77	123.56	1.21
6503	F	127.74	125.52	2.22
6504	F	128.23	126.6	1.63
6607	F	129.08	127.13	1.95
6700	F		37.36	0
6702	F	130.06	128.5	1.56
6703	F	130.52	128.83	1.69
6705	F	130.22	128.64	1.58
6708	F	129.63	128.3	1.33
6714	F	129.75	0	0
7301	F		0	0
7302	F	127.19	125.6	1.59
7305	F	126.8	124.84	1.96
7401	F	129.57	128.31	1.26
7403	F	128.78	126.39	2.39
7404	F	128.51	127.26	1.25
7501	F	129.55	127.8	1.75
7505	F	129.97	128.16	1.81
7507	F	129.74	128.27	1.47
7602	F		0	0
7604	F	131.45	129.73	1.72
7701	F	131.04	129.72	1.32
7702	F	131.06	129.67	1.39
7706	F	130.74	129.2	1.54
7708	F	131.28	130.15	1.13
7709	F	131.5	130.3	1.2
7710	F	131.73	130.43	1.3
7711	F	131.89	130.72	1.17
7713	F	99.28	97.79	1.49
7717	F	99.88	98.37	1.51
8301	F	128.72	125.94	2.78
8501	F	130.51	129.27	1.24
8503	F	130.4	128.7	1.7
8506	F		0	0
8601	F	131.73	129.9	1.83
8604	F	131.26	129.96	1.3
8605	F	131.17	129.87	1.3
8701	F	131.16	129.37	1.79
9301	F	129.77	126.64	3.13
9602	F	131.42	129.62	1.8
9606	F	130.61	128.97	1.64
9609	F	131.45	129.42	2.03
9701	F	130.63	129.12	1.51
9702	F	130.58	128.95	1.63
9704	F	131	129.23	1.77
0602	S	130.67	129.15	1.52
0703	S	130.2	129.12	1.08
1601	S	129.98	128.59	1.39
1602	S	130.27	129.17	1.1
1603	S	130.53	129.41	1.12
1702	S	131.06	129.87	1.19
3301	S	123.13	121.93	1.2
3401	S	125.78	123.98	1.8
3402	S	124.76	122.86	1.9

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
3403	S	123.85	122.26	1.59
3502	S	129.24	127.87	1.37
3503	S	128.21	126.35	1.86
3504	S	126.64	124.87	1.77
3702	S	130.63	128.88	1.75
3703	S	130.57	0	0
4304	S	123.49	121.59	1.9
4305	S		0	0
4403	S	124.48	123.89	0.59
4405	S	127.29	126.01	1.28
4503	S	129.01	127.57	1.44
4703	S	130.48	129.42	1.06
5301	S	124.46	122.58	1.88
5401	S	128.83	127.87	0.96
5402	S	126.81	125.08	1.73
5501	S	128.91	127.33	1.58
5502	S	129.43	127.54	1.89
5604	S	129.73	128.15	1.58
5702	S	130.65	129	1.65
5703	S	130.98	129.34	1.64
5704	S	130.49	128.85	1.64
6301	S	125.32	123.31	2.01
6401	S	126.28	123.65	2.63
6402	S		0	0
6403	S	126.03	123.54	2.49
6405	S	127.38	0	0
6406	S	127.58	0	0
6407	S	127.54	124.28	3.26
6500	S	127.29	0	0
6501	S	127.64	0	0
6502	S	127.76	125.33	2.43
6505	S	127.54	125.85	1.69
6601	S	130.32	129.07	1.25
6602	S	129.78	128.47	1.31
6603	S	129.24	127.83	1.41
6604	S	129.16	127.57	1.59
6605	S	128.59	127.19	1.4
6606	S	128.94	127.57	1.37
6704	S	130.53	129.09	1.44
6706	S	130.08	128.75	1.33
6709	S	129.77	128.15	1.62
6710	S	129.97	128.7	1.28
6711	S	130.15	128.61	1.54
6712	S	130.15	0	0
7303	S	127.09	125.58	1.51
7304	S	126.83	124.59	2.24
7402	S	129.6	127.91	1.69
7405	S	128.49	127.06	1.43
7502	S	129.63	127.47	2.16
7503	S	129.86	127.68	2.18
7504	S	129.85	127.81	2.04
7506	S	130.4	128.31	2.09
7508	S	130.2	128.84	1.36
7603	S	131.53	129.48	2.05
7703	S	131.36	130.04	1.32
7705	S	130.87	129.62	1.25
7707	S	130.69	129.4	1.29
7712	S	130.82	129.83	0.99
7716	S	99.27	98.02	1.25
7718	S	99.79	98.41	1.38
8401	S	130.03	128.44	1.59
8402	S	128.93	126.34	2.59
8502	S	130.49	128.89	1.6
8504	S	130.36	128.43	1.93
8505	S	130.79	129.19	1.6
8602	S	131.11	129.57	1.54
8603	S	131.23	129.66	1.57
8702	S	131.71	130.31	1.4
9601	S	131.47	130.51	0.96
9603	S	131.43	130.36	1.07
9604	S	130.92	129.68	1.24
9605	S	130.69	129.42	1.27
9607	S	130.57	129.29	1.28
9610	S	131.2	130.26	0.94
9703	S	130.76	129.79	0.97
9705	S	130.77	129.88	0.89

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

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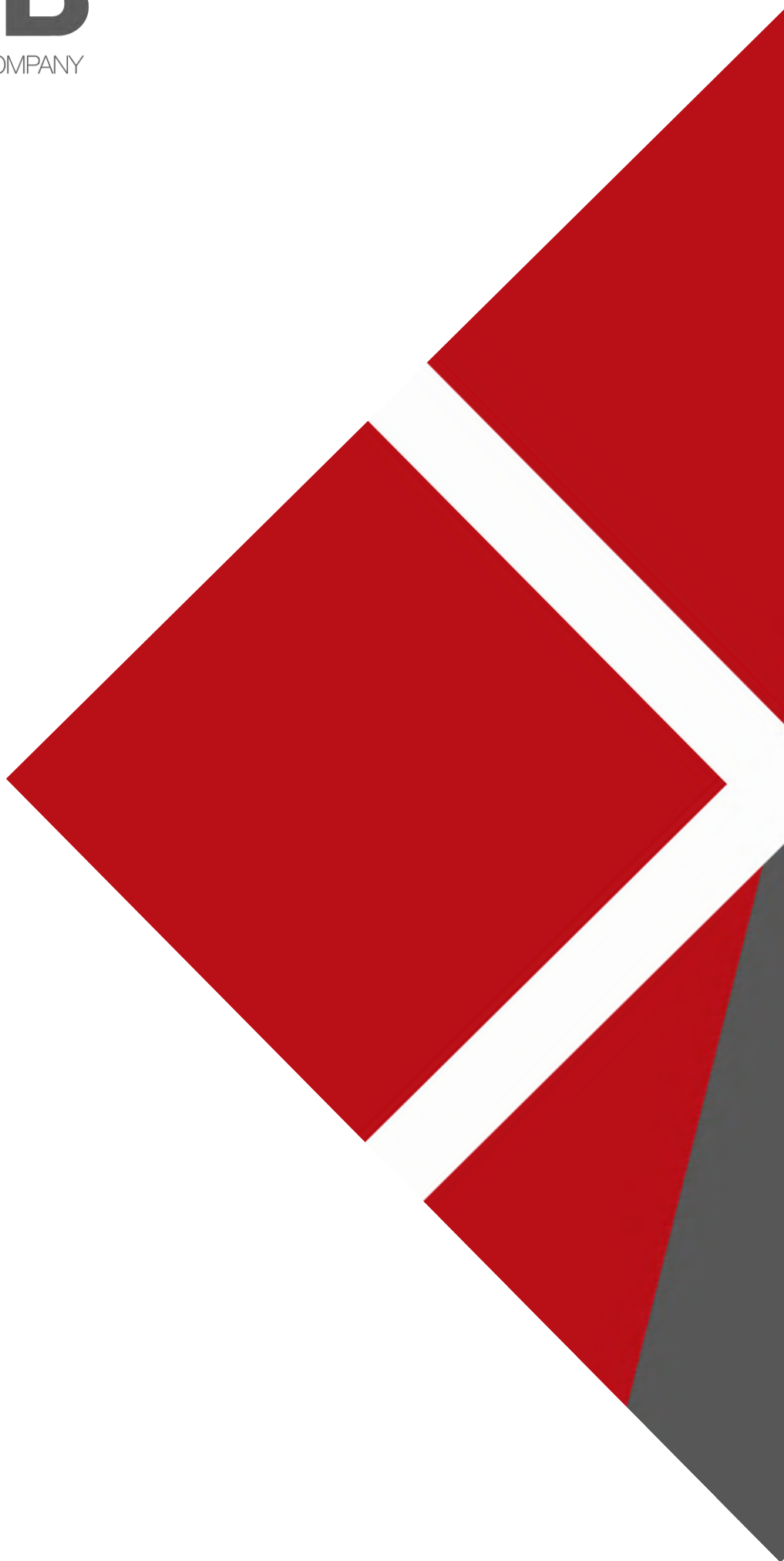

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