

Fulbeck Avenue

Worthing, BN13 3RS

# FLOOD COMPENSATION AREA DRAINAGE VERIFICATION REPORT

For New Residential Development

On behalf of BoKlok

6706-RGP-ZZ-00-RP-C-0501 P2

May 2025

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## DOCUMENT CONTROL

| | |
|---|---|
| **Project:** | Fulbeck Avenue<br>For New Residential Development |
| **Project Location:** | Worthing, BN13 3RS |
| **Report Type:** | Flood Compensation Area<br>Drainage Verification Report |
| **Client:** | BoKlok |
| **Reference:** | 6706-RGP-ZZ-00-RP-C-0501 P2 |

**Document Checking:**

| | Name | Date | Signature |
|---|---|---|---|
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| **Checked by:** | D. Booth<br>(Technical Director) | 21/05/2025 | Debby Booth<br>Digitally signed by Debby Booth<br>DN: cn=Debby Booth, c=GB, o=RGP, email=d.booth@rgp.co.uk<br>Date: 2025.05.21 16:57:54 +01'00' |
| **Approved by:** | D. Booth<br>(Technical Director) | 21/05/2025 | Debby Booth<br>Digitally signed by Debby Booth<br>DN: cn=Debby Booth, c=GB, o=RGP, email=d.booth@rgp.co.uk<br>Date: 2025.05.21 16:58:28 +01'00' |

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| P1 | 26.11.2024 | First Issue | A. Stijne |
| P2 | 21.05.2025 | Updated following remedial grading works<br>Ch's 1.1.6, 4.0, 5.0, Appendix 4 | A. Stijne |
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# 1 Introduction

1.1.1 RGP has been commissioned by BoKlok (the 'Client') to provide a Surface Water Drainage Verification Report for the residential development at Fulbeck Avenue, Worthing, BN13 3RS to support the discharge of planning condition 26 (decision notice ref: AWDM/0166/20).

1.1.2 Planning condition 26 states:

Immediately following implementation of the approved surface water drainage system and prior to occupation of any part of the development, the developer/applicant shall provide the local planning authority with as-built drawings of the implemented scheme together with a completion report prepared by an independent engineer that confirms that the scheme was built in accordance with the approved drawing/s and is fit for purpose. The scheme shall thereafter be maintained in perpetuity.

1.1.3 This report is in relation to the flood compensation area constructed during Phase 2 of the development, refer to the phasing plan in Appendix 1.

1.1.4 The aim of this report is to review the details of the installed flood compensation area (FCA), to confirm whether the construction has been carried out in accordance with the approved design.

1.1.5 The approved drawings (refer to Appendix 2) to which RGP have referred are:

- FBA-STC-SW-BG-DR-D-SE-6650 Rev P06 - PROPOSED FLOOD COMPENSATION AT PLAY AREA
- FBA-STC-SW-BG-DR-D-SE-6653 Rev P07 - PLAY AREA LINER EXTENT AND DETAILS

1.1.6 The as-built records to which RGP have referred are:

- Topographical Survey, Encompass Surveys, Drawing ref: ENC_9RR5_FloodPlainTopo, Surveyed 31/10/2024 (see Appendix 3)
- Site Photographs, Taken August 2021 to October 2024
- Brook Bank Topographical Survey, Surveyed 12/05/2025 (see Appendix 4)
- Site Photographs, Taken by Debby Booth (RGP), 29/04/2025

# 2 VERIFICATION REPORT DETAILS

## 2.1 Report Author

2.1.1 This Surface Water Drainage Verification Report has been prepared by Anne Stijne, a Civil Engineer with over 10 years' experience in Civil Engineering, Highway Design, and Drainage Design.

2.1.2 Anne is a Principal Engineer at RGP, who were not involved in drainage matters at earlier stages of this project and who are independent of the developer and their sub-contractors.

2.1.3 The technical reviewer is Debby Booth who is a chartered civil engineer with 20 plus years experience in drainage and civil engineering.

2.1.4 RGP hold suitable professional indemnity insurance to a value of £5,000,000. A certificate can be provided on request.

# 3 Flood Compensation Area Verification November 2024

## 3.1 Design

3.1.1 The Construction Drawings show the proposed flood compensation area is be located on either side of the "Wet Ditch", and is be formed by locally lowering the ground level by up to 300mm to form a shallow basin.

3.1.2 The basin formation is to comprise of 500mm replaced fill (made ground), on 300mm "drainage layer", on a Bentomat Geosynthetic Clay Liner or similar.

3.1.3 The base of the FCA is to be graded with a ~1:200 crossfall to permit gravity discharge. The north and south areas of the FCA each have an outfall, located in the south-east corners, comprising of a perforated pipe in "drainage layer" outfalling to a new headwall which discharges into the "Wet Ditch".

## 3.2 Size

3.2.1 The size of the flood compensation area has been verified by "overlaying" the pdf of drawing FBA-STC-SW-BG-DR-D-SE-6650 over the topographical survey in AutoCAD, as illustrated in Figure 1.

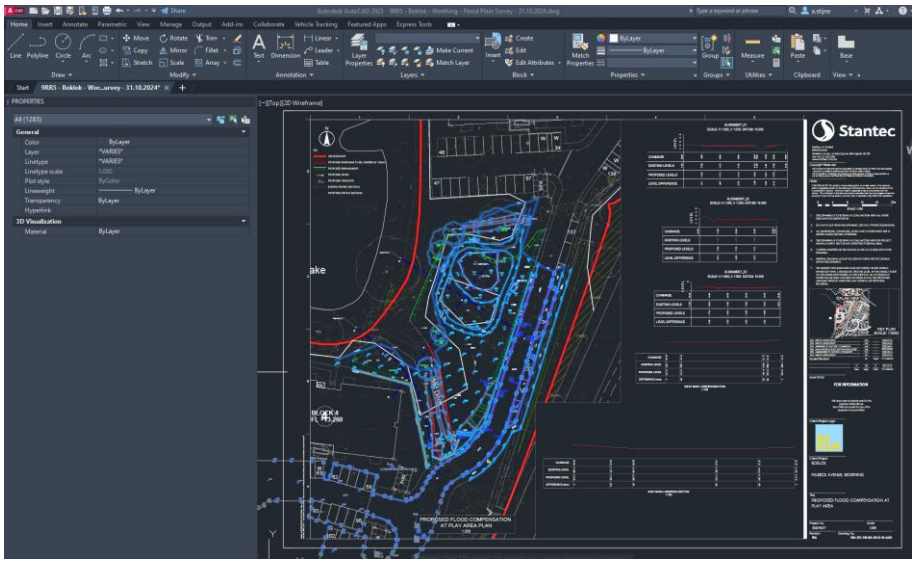


Figure 1 - Overlay of FCA design and topographical survey in AutoCAD

3.2.2 The extents of the as-built flood compensation area broadly matches the designed extents. The as-built FCA extends slightly further north, up to the bank of the north boundary ditch, and does not include the 'cut out' around the RPZ of tree T.109. The overlay in Figure 2 shows the design earthworks in green, with the constructed gravel path and play area hatched for clarity. The north boundary ditch is shown in orange.



Figure 2 – Comparison of north extent of FCA / Photo of play area taken facing west, 24.10.2024

3.2.3 The extent of the western boundary can not be fully verified, as the topographical survey extent is about 2.5m short of the design extent, due to the position of the Heras fencing, as shown in Figure 3.



Figure 3 – Photo of FCA, facing north, with Heras fencing along western boundary. Taken 24.10.2024

3.2.4 The southern and eastern boundaries of the as-built FCA extends to the retaining wall and access road respectively, as per the design.

3.2.5 The review of the CAD overlay and supporting photographs has verified that the FCA has been built to the designed size.

## 3.3 Levels

3.3.1 The levels of the as-built FCA have been verified using the same AutoCAD overlay method as described in paragraph 3.2.1.

3.3.2 The north FCA has been lowered by 200-300mm as per the design. The as-built and design levels have been compared along Alignment 01 and Alignment 02 as per the Figures below. The design levels are shown in red, and the as-built levels in yellow.

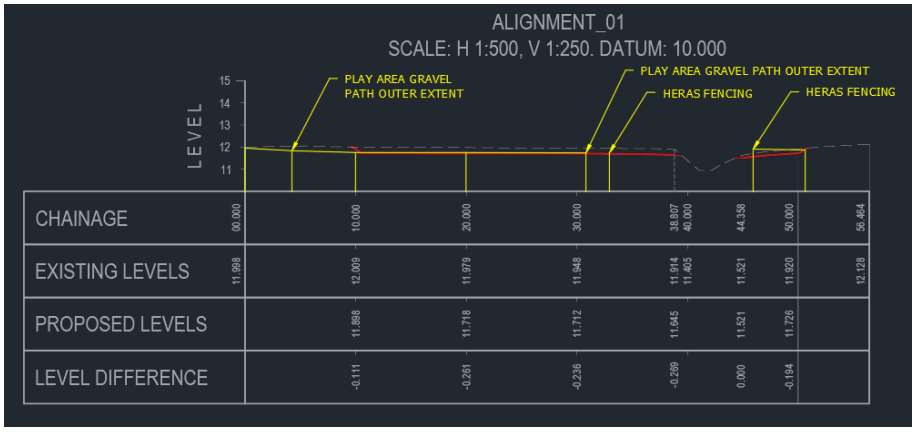


Figure 4 - Comparison Alignment 01 levels

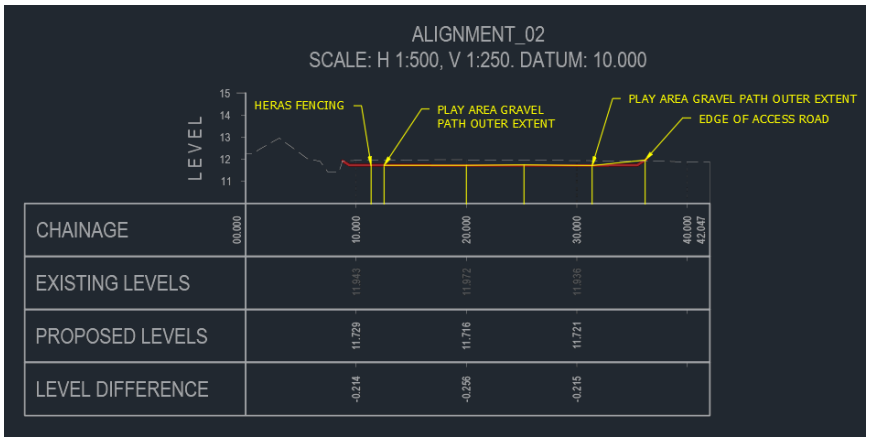


Figure 5 - Comparison Alignment 02 levels

3.3.3 Figure 4 shows the FCA has been extended to the north (Ch. 0 – 10) as also described in paragraph 3.2.2. Figure 5 shows the levels have been more gently graded (~1:19) to meet the back of the access road, compared to the design earthworks (1:3). This can also be seen in Figure 3.

3.3.4 Figure 6 shows the lowering of the levels of the east bank of the "Wet Ditch" do not appear to have been undertaken, with the exception of the downstream extent which has been regraded to tie-in to the new Access Road culvert.

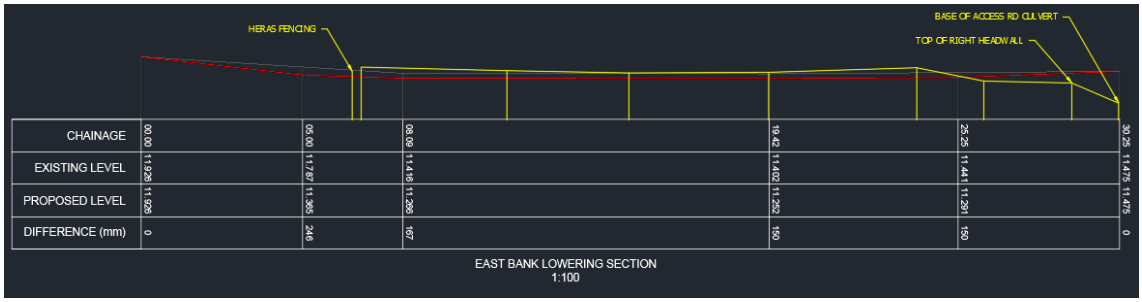


Figure 6 - Comparison of East Bank Lowering levels

3.3.5 The north FCA has been generally constructed to the design levels, with the exception of the lowering of the East Bank levels. This, in addition to the slackened earthworks grading, will result in a reduction in storage volume, however this is considered to be small in comparison to the overall capacity of the FCA.

3.3.6 Works to the south bank of the "Wet Ditch" have comprised of a temporary diversion of the watercourse (design drawing FBA-STC-SW-BG-DR-D-SE-6651 and Figure 7), followed by reconstruction of the watercourse alignment post-construction of the access road culvert, and the construction of a retaining wall (Figure 8).

3.3.7 The area to the south of the "Wet Ditch" was proposed to be regraded, to form the south FCA. Figure 9 shows the level comparison of the south FCA along Alignment 3.



Figure 7 - Temporary channel diversion, facing south-west. Taken 18.11.2022



Figure 8 - Photos of Wet Ditch south bank. Taken 24.10.2024

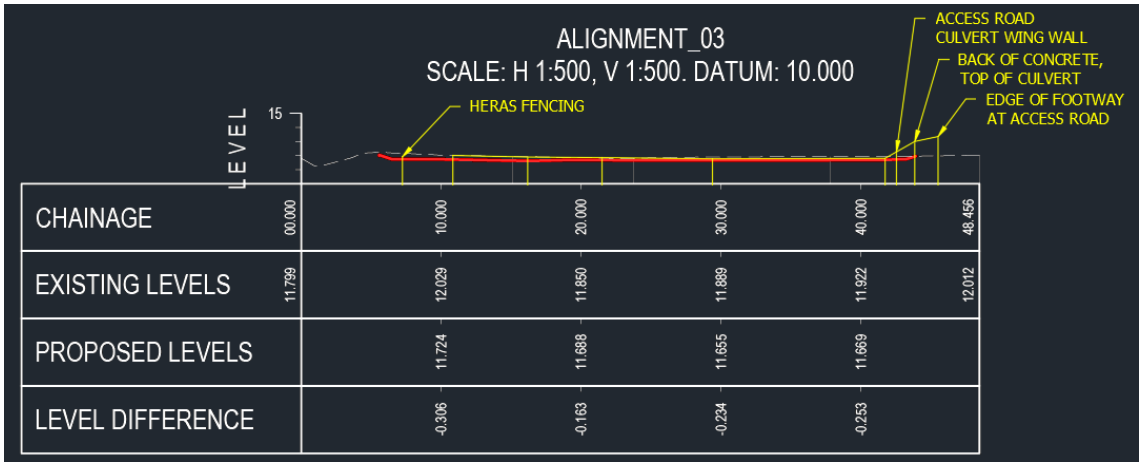


Figure 9 - Comparison Alignment 03 levels

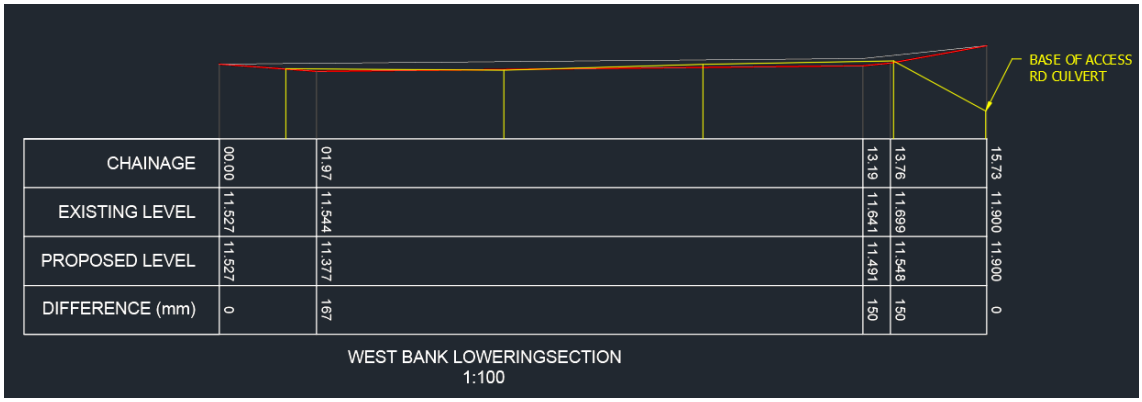


Figure 10 - Comparison of West Bank Lowering levels

3.3.8 Figure 4, Figure 7, and Figure 9 shows the as-built levels of the south FCA are similar to the existing levels, and the 200-300mm lowering has not been achieved. Figure 10 shows the levels of the west bank of the reconstructed "Wet Ditch" appear similar to the design levels. Overall, the south FCA as constructed is considered unlikely to contribute to the functional storage volume.

## 3.4 Materials

3.4.1 The Contractor has advised the FCA has been constructed from reprofiling of the surface levels only. The proposed "drainage layer" and Bentomat Clay Liner have not been installed.

3.4.2 The proposed east and west headwalls have been installed, as shown in Figure 11. Inspection chamber manhole covers are visible upstream of each headwall, these are assumed to connect the culvert 'back of wall' drainage to the headwall outfalls as per the design drawings.



Figure 11 - Photo of FCA east and west headwalls, facing south-east. Taken 24.10.2024

3.4.3 The proposed east and west headwalls have been installed, as shown in Figure 11. Inspection chamber manhole covers are visible upstream of each headwall, these are assumed to connect the culvert 'back of wall' drainage to the headwall outfalls as per the design drawings.

3.4.4 The Surface Water Drainage Maintenance Plan paragraph 4.3.2 indicates the purpose of the drainage layer was to act as "land drainage of this area … to prevent water logging in this location". The Contractor has been on site since April 2021, and the Construction compound has been located in the FCA area since June 2022. The Contractor has not experienced any waterlogging of the area in the past 3.5 years, which indicates that the topsoil/superficial geology and levels falling towards the Wet Ditch provide sufficient natural drainage.



Figure 12 – Photo of vegetation clearance of FCA. Taken 12.04.2021



Figure 13 – Photo of clearance of FCA (north extent). Taken 02.11.2021



Figure 14 - Photo of (dry) excavation of temporary cabin footings. Taken 10.05.2022




Figure 15 - Photo of temporary cabin footings in FCA. Taken 22.06.2022



Figure 16 - Photo of construction compound in FCA, facing north. Taken 16.12.2022




Figure 17 - Photo of construction compound in FCA, facing north-west. Taken 31.01.2024



Figure 18 - Photo of temporary cabin footings in FCA with Wet Ditch in foreground, facing north-east. Taken 16.04.2024

3.4.5 Site specific geology information is available in the Ground Investigation (Report No: 2019/SK/001/RP4_REV.0, Nov 2019) undertaken for this site. TP2 was undertaken within the FCA area.

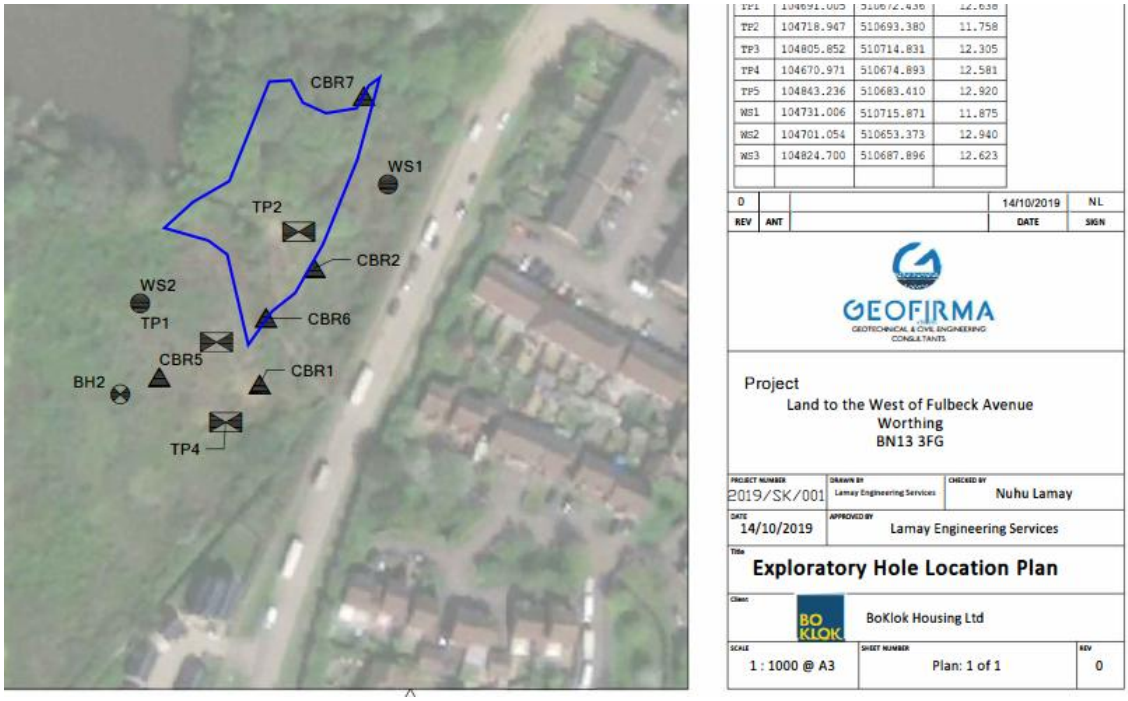


Figure 19 - Extract of Exploratory Hole Location Plan (2019), showing FCA extents

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GEOTECHNICAL & CIVIL ENGINEERING CONSULTANTS

**BoKlok Housing Ltd.** **Trial Pit Log**

**Land to the West of Fulbeck Ave, Worthing BN13 3FG** **TP2**

Page 1 of 1

Start Date: **07/10/2019** Eastings: **510693.38** Elevation (mAD): **11.758** Termination Depth (mBGL): **2.9** Logged By: **G Sinnathamby/ R Simons**

Finish Date: **07/10/2019** Northings: **104718.947** Excavation Contractor: Checked By: **E Adenmosun**

| Legend | Depth (mBGL) | Thickness (m) | Strata Description | Depth (mAD) | Sample | Test |
|---|---|---|---|---|---|---|
| | 0.00-0.20 | 0.20 | Soft dark brown clayey topsoil with occasional fine to medium fragments of brick. (MADE GROUND) | 11.76-11.56 | 0.1m:ES | 0 |
| | 0.20-0.50 | 0.30 | Firm orange brown slightly sandy, silty clay with frequent fragments of brick. Occasional fine to coarse angular to sub-rounded gravel. (MADE GROUND) | 11.56-11.26 | 0.4m:ES<br>0.5m:B | |
| | 0.50-0.80 | 0.30 | Firm brown very gravelly clay with abundant fragments of fine to coarse brick. Gravel is fine to coarse angular to sub-rounded. (MADE GROUND) | 11.26-10.96 | 0.5m:D<br>0.6m:ES | |
| | 0.80-2.90 | 2.10 | Firm orange brown blue mottled slightly sandy, silty CLAY with occasional gravel. Sand is fine. Gravel is fine to coarse angular to sub-rounded. (HEAD) | 10.96-8.86 | 1m:D | 1 |
| | | | | | 1.5m:D | |
| | | | | | 2m:D | 2 |
| | | | | | 2.5m:D | |
| | | | | | 2.9m:B | |

Figure 20 - Extract of TP2 Trial Pit Log

3.4.6 Further ground investigation was undertaken by Stantec in October 2021 (Report ref: 332510223/501), which included four additional trial pits in the FCA area to determine the vertical and lateral extent of the made ground.

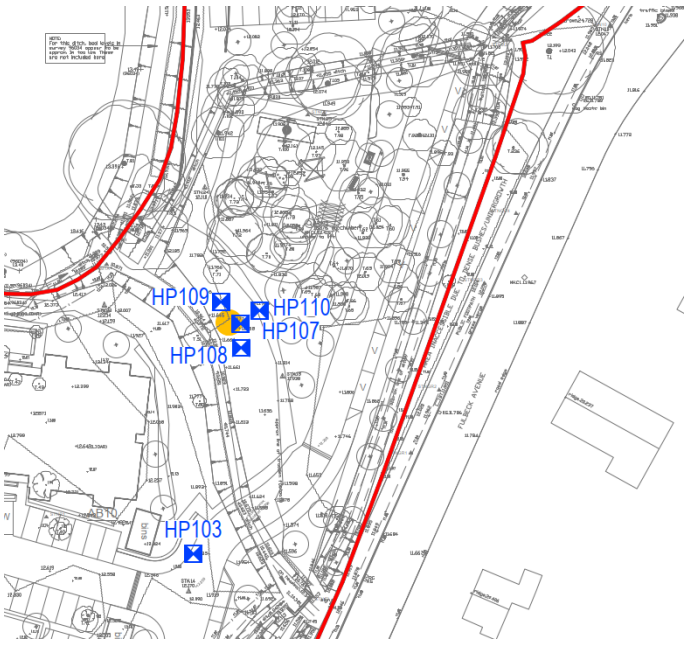



Figure 21 - Extract of Exploratory Hole Location Plan (2021)

3.4.7 The investigation found the following ground conditions:

3.4.8 "Topsoil was encountered at surface within nine of the ten exploratory hole locations with the exception of HP107. The topsoil was found to comprise firm to still dark brown or brownish grey silty CLAY, with varying proportions of flint and chalk gravels and frequent roots and rootlets. Topsoil was encountered to a maximum depth of 0.25m bgl."

3.4.9 "Made ground was only encountered in HP107 to a maximum depth of 0.25m b.g.l. and was found to comprise dark brown stiff, slightly gravelly very silty CLAY … Locations undertaken surrounding HP107 did not identify any made ground material, indicating the made ground is in an isolated location and is not vertically or laterally extensive."

3.4.10 The results of HP108 to HP110 which recorded the 'typical' surface ground conditions in the FCA are presented below.

| Project Name | Project No: | | TRIAL PIT |
|---|---|---|---|
| **Fulbeck Avenue** | **332510223** | Stantec | **HP108** |
| Client: **BoKlok Housing Limited** | Start Date: **21/09/2021** End Date: **21/09/2021** | | |
| Contractor | Ground Level | Logged By: **ZM & FBI** | Sheet 1 of 1 |
| Method/Plant | Coordinates: **510695 E 104715 N** | Checked By: **NC** | Scale 1:10 |

| (m) | Samples and Insitu Tests: Depth | Type | Results | Water | Legend | Depth (Thickness) | Level (m OD) | Stratum Description | Instrumentation /Backfill |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | (0.25) | | Stiff dark brown slightly gravely silty CLAY. Gravels are fine to coarse, subangular to subrounded with occasional cobbles of flint and rootlets. | |
| | | | | | | 0.25 (0.05) 0.30 | | Firm yellowish brown silty CLAY. Rare subrounded gravels of flint. End of Trial Pit at 0.30m | |

| Project Name | Project No: | | TRIAL PIT |
|---|---|---|---|
| **Fulbeck Avenue** | **332510223** | Stantec | **HP109** |
| Client: **BoKlok Housing Limited** | Start Date: **21/09/2021** End Date: **21/09/2021** | | |
| Contractor | Ground Level | Logged By: **ZM & FBI** | Sheet 1 of 1 |
| Method/Plant | Coordinates: **510692 E 104722 N** | Checked By: **NC** | Scale 1:10 |

| (m) | Samples and Insitu Tests: Depth | Type | Results | Water | Legend | Depth (Thickness) | Level (m OD) | Stratum Description | Instrumentation /Backfill |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | (0.25) | | Stiff dark brown slightly gravely silty CLAY. Gravels are fine to coarse subangular to subrounded of flint, with occasional rootlets | |
| | | | | | | 0.25 (0.05) 0.30 | | Stiff yellowish brown slightly sandy silty CLAY. End of Trial Pit at 0.30m | |

| Project Name | Project No: | | TRIAL PIT |
|---|---|---|---|
| **Fulbeck Avenue** | **332510223** | Stantec | **HP110** |
| Client: **BoKlok Housing Limited** | Start Date: **21/09/2021** End Date: **21/09/2021** | | |
| Contractor | Ground Level | Logged By: **ZM & FBI** | Sheet 1 of 1 |
| Method/Plant | Coordinates: **510698 E 104721 N** | Checked By: **NC** | Scale 1:10 |

| (m) | Samples and Insitu Tests: Depth | Type | Results | Water | Legend | Depth (Thickness) | Level (m OD) | Stratum Description | Instrumentation /Backfill |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | (0.30) | | Stiff light brown slightly gravely silty CLAY. Gravels are fine to coarse subangular to subrounded of flint, , with occasional rootlets | |
| | | | | | | 0.30 (0.05) 0.35 | | Firm yellowish brown slightly sandy silty CLAY with occasional medium to coarse flint gravel and fine chalk gravel End of Trial Pit at 0.35m | |

Figure 22 - Extract of Trial Pit HP108 to HP110 records

3.4.11 The works to lower and regrade the FCA have comprised of removing 200-300mm of clay topsoil. The subsequent geology within the FCA comprises of superficial deposits of Head (clay) to a depth of 2.9m below the pre-construction ground level.

3.4.12 Note 7 on Drawing FBA-STC-SW-BG-DR-D-SE-6650 states "the highest groundwater level recorded on-site during winter 2019 was 1.05m below ground level."

3.4.13 Due the reduced 300mm depth of excavation compared to the 1100mm (300+800mm) 'typical liner detail' design, the lack of a 'drainage layer', and the natural clay geology, the artificial clay liner is considered to be not required to prevent groundwater from entering the FCA as constructed.

# 4 Flood Compensation Area Verification May 2025

## 4.1 Levels

4.1.1 P1 of this report included the following recommendation to the Contractor:

**It is recommended that the south FCA is reprofiled to the design levels in order to provide the design storage volume adjacent to the watercourse. It is recommended that the East Bank of the Wet Ditch is also lowered to the design levels.**

4.1.2 A drawing overlay of the as-built levels and design levels was provided to the Contractor to assist with the remedial snagging works to the FCA south area and Wet Ditch East Bank. The works were undertaken by BoKlok in April 2025.

4.1.3 An updated topographical survey of the new as-built levels has been provided to RGP for verification, see APPENDIX 4.

4.1.4 A site inspection was carried out by Debby Booth on 29th April 2025. Figure 23 shows the recently completed regrading works to the south FCA and Wet Ditch east bank.



Figure 23 - Photo of FCA completed regrading works, facing south. Taken 29.04.2025

4.1.5 The topographical survey shows that the revised as-built levels are within the expected construction tolerances of the proposed design levels. Following the remediation works, the Flood Compensation Area now provides the designed storage volume.

# 5 Conclusion

5.1.1 The size, levels and materials of the Flood Compensation Area have been reviewed to verify the construction has been undertaken in accordance with approved drawings FBA-STC-SW-BG-DR-D-SE-6650 Rev P06 and FBA-STC-SW-BG-DR-D-SE-6653 Rev P07.

5.1.2 The FCA has broadly been constructed to the correct size.

5.1.3 The majority of the north FCA has been lowered to the design levels, however, the earthworks grading to the Access Road is more gentle at ~1:19 compared to the 1:3 shown on the design drawings. The ground has been graded to fall towards the Wet Ditch.

5.1.4 The east and west outfall headwalls have been installed, however the proposed "drainage layer" and Bentomat Clay Liner were not constructed. The Contractor has provided evidence the FCA has not been 'waterlogged' in the past 3.5 years of construction, and that therefore additional land drainage is not required. In combination with a reduced depth of construction which is significantly above the highest recorded groundwater level, the artificial clay liner is considered not to be required. A review of the ground investigations has also established the existing geology of the FCA is also clay.

5.1.5 The lack of drainage layer and clay liner is not considered to have a detrimental impact on the ability of FCA to store exceedance flood flows, and it recommended the Council accept this variation to the approved design.

5.1.6 Following the first issue of the report in November 2024, the Contractor has undertaken the recommended remedial grading works in April 2025. As a result, the East Bank has been lowered to design levels, and thus the North FCA is verified to achieve the design storage volume.

5.1.7 The levels of the south FCA have also been revised to the design levels. The south FCA is now verified to achieve the design storage volume.

# APPENDIX 1 FULBECK OCCUPATION PHASING PLAN

Legend

Existing
Attenuation Basin

GA-5009

GA-5010

Oaksheath Gardens

Malth House Way

Cornfield Way

Varey Road

Fulbeck Avenue

Moore Close

Callon Close

Wet Ditch

Drain

Lake

Path

Pond

Northbrook
Farm Caravan
& Motorhome
Club Site

Northbrook Barn
Community Centre

Squadron Drive

El Sub Sta

BLOCK 1
FFL +13.190

BLOCK 2
FFL +13.100

BLOCK 3
FFL +13.050

BLOCK 4
FFL +13.260

BLOCK 5
FFL +13.150

Turning
Head

Community Hub
For details refer to
FBA-NTA-XX-XX-DR-L-PL-5011

Play Glade
For details refer to
FBA-NTA-XX-XX-DR-L-PL-5012

EXISTING LUMINAIRE
RELOCATED AS PART
OF HIGHWAY WORKS
(BY OTHERS)

EXISTING LUMINAIRE
INSTALLED AS PART OF
HIGHWAY WORKS
(BY OTHERS)

**Phase 1B** - March 2023
- Blocks 1 and 2
- 1 Bin & 2 Cycle Stores
- 27 Parking Spaces

**Phase 1A** - December 2022
- Block 3
- Highway access and turning heads.
- 2 Bin & 1 Cycle Stores
- Electrical Substation
- 45 Parking Spaces

**Phase 2** - April 2023
- Blocks 4 and 5
- 2 Bin & 2 Cycle Stores
- 87 Parking Spaces
- Play Area

## KEY TO PHASES:

PHASE 1A - Block 3

PHASE 1B - Blocks 1 & 2

PHASE 2 - Blocks 4 & 5

**NOTE:**

The following general items will be completed and installed (within the extents of that highlighted phase) prior to the occupation date of that phase:
- All landscaping and biodiversity works.
- All means of enclosure - fences/railings etc.
- All footpaths (including bridges) and roads.
- All Electric Vehicle Charging Points.
- All Streetlighting.
- Any Highways landscaping reinstatement works.

All other phase specific items listed on drawing.

# BoKlok

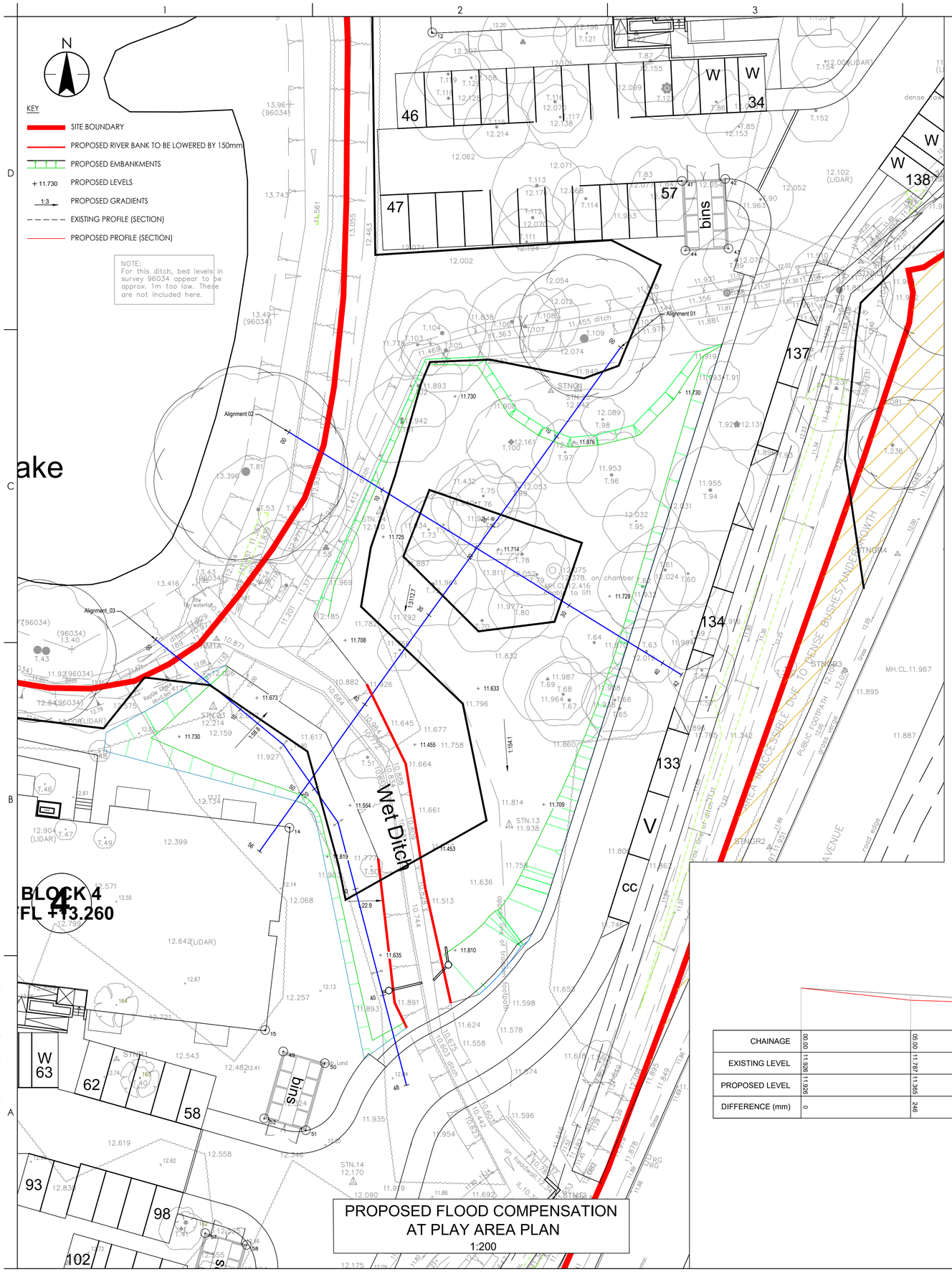
## Fulbeck Avenue, Worthing

# Occupation Phasing Plan

Scale: 1:500@A1
Date: 18th August 2022
Status: For Planning Condition Discharge

0 5 10 15 25 50

# APPENDIX 2 APPROVED DRAWINGS




## ALIGNMENT_01
SCALE: H 1:500, V 1:250. DATUM: 10.000



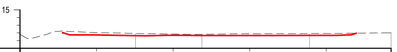

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CHAINAGE | 00.000 | 10.000 | 20.000 | 30.000 | 38.807 40.000 | 44.358 | 50.000 | 56.464 |
| EXISTING LEVELS | 11.998 | 12.009 | 11.979 | 11.948 | 11.914 11.456 | 11.521 | 11.920 | 12.128 |
| PROPOSED LEVELS | | 11.898 | 11.718 | 11.712 | 11.645 | 11.521 | 11.726 | |
| LEVEL DIFFERENCE | | -0.111 | -0.261 | -0.236 | -0.269 | 0.000 | -0.194 | |

## ALIGNMENT_02
SCALE: H 1:500, V 1:250. DATUM: 10.000




| | | | | | |
|---|---|---|---|---|---|
| CHAINAGE | 00.000 | 10.000 | 20.000 | 30.000 | 40.000 42.047 |
| EXISTING LEVELS | | 11.943 | 11.972 | 11.938 | |
| PROPOSED LEVELS | | 11.729 | 11.716 | 11.721 | |
| LEVEL DIFFERENCE | | -0.214 | -0.256 | -0.215 | |

## ALIGNMENT_03
SCALE: H 1:500, V 1:500. DATUM: 10.000

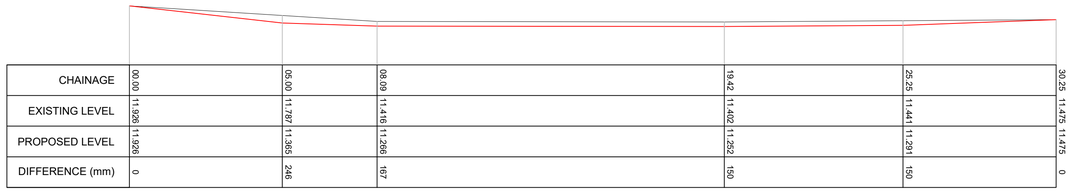



| | | | | | | |
|---|---|---|---|---|---|---|
| CHAINAGE | 00.000 | 10.000 | 20.000 | 30.000 | 40.000 | 48.455 |
| EXISTING LEVELS | 11.799 | 12.029 | 11.850 | 11.889 | 11.922 | 12.012 |
| PROPOSED LEVELS | | 11.724 | 11.688 | 11.635 | 11.669 | 11.759 |
| LEVEL DIFFERENCE | | -0.306 | -0.163 | -0.254 | -0.253 | |



| | | | | | |
|---|---|---|---|---|---|
| CHAINAGE | 00.00 | 01.97 | 13.19 | 13.76 | 15.73 11.900 11.900 0 |
| EXISTING LEVEL | 11.527 | 11.544 11.377 | 11.641 | 11.659 11.548 | |
| PROPOSED LEVEL | 11.527 | | 11.491 | 150 | |
| DIFFERENCE (mm) | 0 | 167 | | 150 | |

WEST BANK LOWERINGSECTION
1:100



| | | | | | | |
|---|---|---|---|---|---|---|
| CHAINAGE | 00.00 | 05.00 | 08.09 | 19.42 | 25.25 | 30.25 11.475 11.475 0 |
| EXISTING LEVEL | 11.926 | 11.787 | 11.416 | 11.402 | 11.441 | 11.291 |
| PROPOSED LEVEL | 11.926 | 11.385 | 11.266 | 11.252 | 11.291 | 150 |
| DIFFERENCE (mm) | 0 | 246 | 167 | 150 | 150 | |

EAST BANK LOWERING SECTION
1:100

Stantec

Stantec UK Limited
BIRMINGHAM
Waterloo House, Victoria Square, Birmingham B2 5TB
Tel: +44 121 633 2900
www.stantec.com/uk

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Notes

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0 4 8 12 16 20m
SCALE 1:200

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3. ALL DIMENSIONS, CHAINAGES, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.
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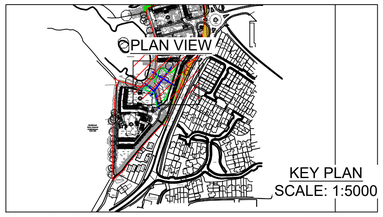
5. CURRENT MASTERPLAN FBA-ECE-SW-XX-DR-A-SL IS USED WITHIN THIS DRAWING
6. INTERNAL BUILDING LAYOUT INCLUDING POINTS ARE NOT SHOWN WITHIN THIS DRAWING
7. THE HIGHEST GROUNDWATER LEVEL RECORDED ON-SITE DURING WINTER 2019 WAS 1.05M BELOW GROUND LEVEL. IN THE UNLIKELY EVENT OF GROUNDWATER INGRESS ON THE SURFACE, ALL EXCEEDANCE WATER WILL BE SHED TOWARDS THE RIVER ALONG THE PROPOSED GRADIENT WITHOUT AFFECTING ANY EXISTING OR PROPOSED BUILDINGS.




| | | | |
|---|---|---|---|
| P06 | MINOR AMENDMENT | AW | - 2022.07.04 |
| P05 | MINOR AMENDMENT | AW | - 2022.06.22 |
| P04 | AMENDED TO SUIT WBC COMMENTS | AW | - 2022.06.01 |
| P03 | BANK PROFILE CROSS SECTIONS INCLUDED | AW | - 2022/05/03 |
| P02 | AMMENDED TO SUIT WBC COMMENTS | NS | - 2022.02.14 |
| P04 | MINOR AMENDMENT | NS | - 2022.01.27 |
| Issued/Revision | | By | Appd YYYY.MM.DD |
| | | LT | NB LT 2021.10.13 |
| | | Dwn. | Dsgn. Chkd. YYYY.MM.DD |

Issue Status

**FOR INFORMATION**

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Client/Project Logo

BO KLOK

Client/Project
BOKLOK

FULBECK AVENUE, WORTHING

Title
PROPOSED FLOOD COMPENSATION AT PLAY AREA

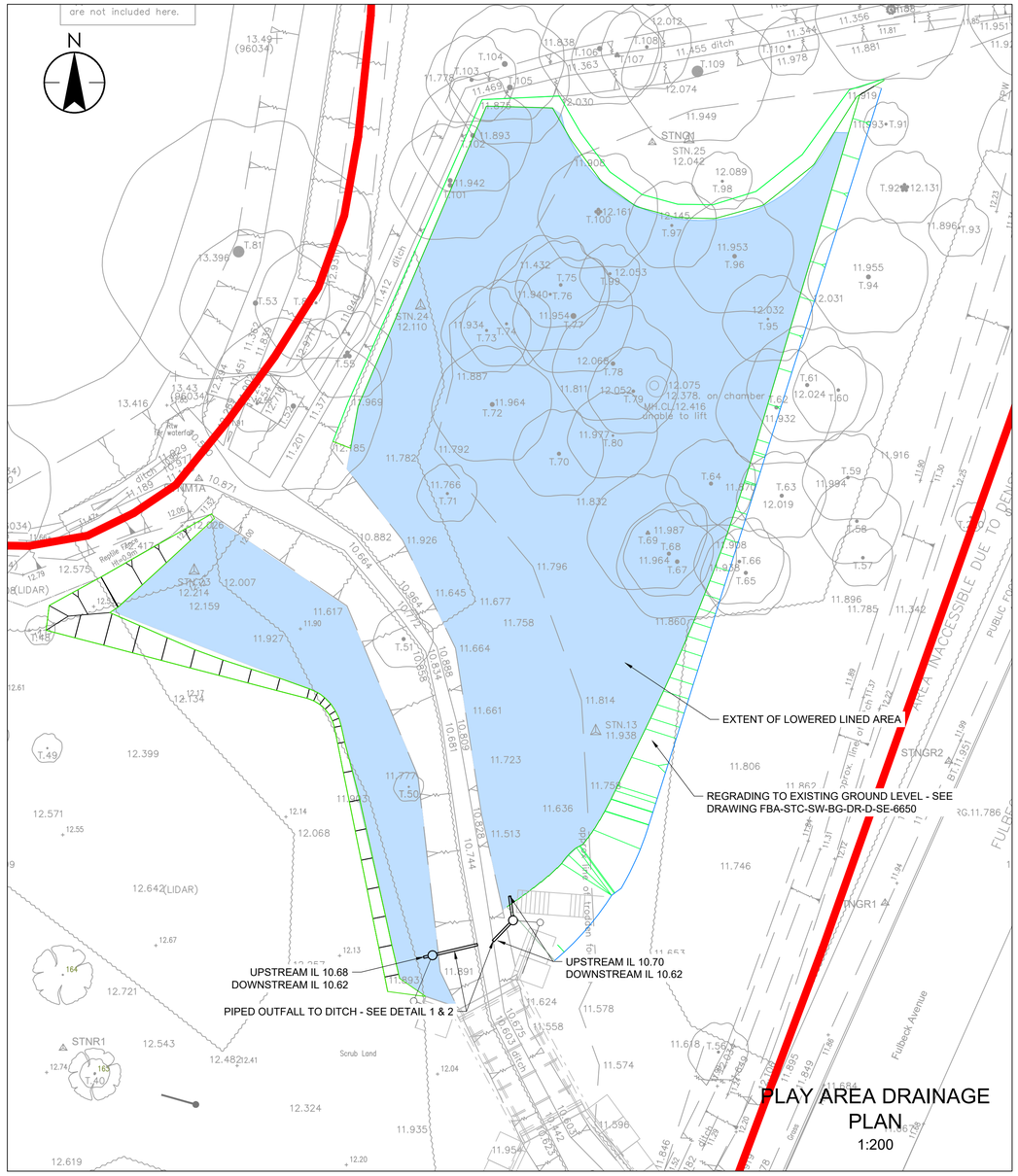
Project No.
332210677

Scale
1:200

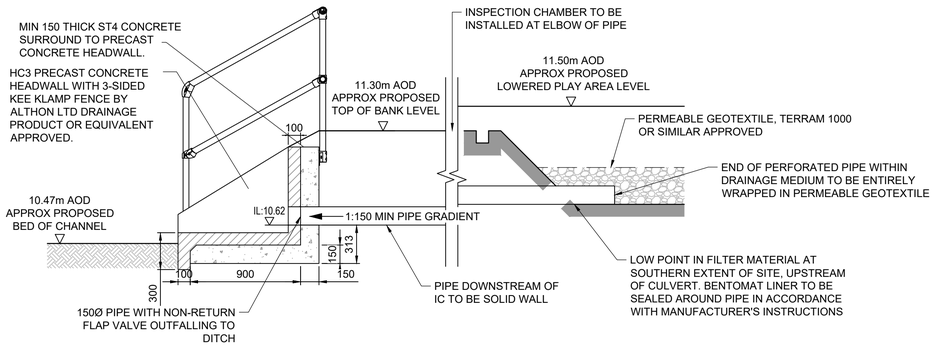
Revision
**P06**

Drawing No.
**FBA-STC-SW-BG-DR-D-SE-6650**

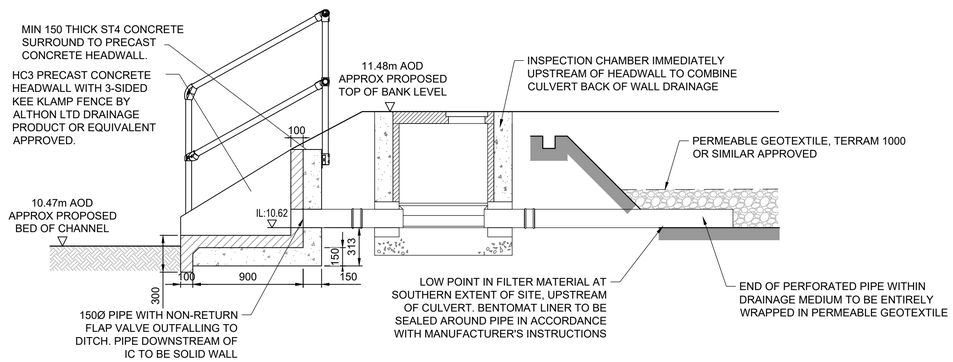
Plotted: 04.07.2022 20:22:27 | M: 4.53.5 | File By: Wray, Alex
Plotted By: WRAY, ALEX | \\Stn-fsg\p0\projects\40721 - fulbeck avenue, worthing\technical\drawings\drawings\temp\fba-ece-sw-bg-dr-d-se-6650



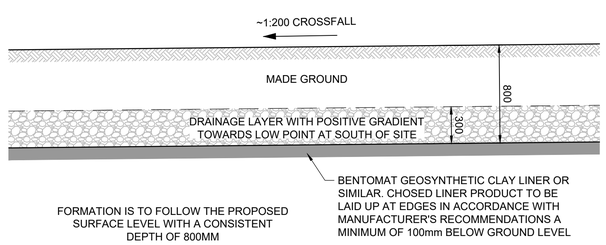

PLAY AREA DRAINAGE PLAN
1:200




DETAIL 1 - PIPED OUTFALL TO DITCH (EAST)
NTS




DETAIL 2 - PIPED OUTFALL TO DITCH (WEST)
NTS




TYPICAL LINER DETAIL
1:25

Stantec

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0 4 8 12 16 20m
SCALE 1:200

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5. CURRENT MASTERPLAN FBA-ECE-SW-XX-DR-A-SL IS USED WITHIN THIS DRAWING
6. INTERNAL BUILDING LAYOUT INCLUDING POINTS ARE NOT SHOWN WITHIN THIS DRAWING
7. EXISTING DITCHES TO BE CLEANED OUT TO THE SATISFACTION OF WBC ENGINEER.
8. HEADWALL MUST BE APPROPRIATELY POSITIONED AND MUST NOT PROTRUDE INTO WATERCOURSE.
9. INSPECTION CHAMBERS TO BY TYPE D CHAMBER DETAILED ON DRAWING FBA-STC-SW-BG-DR-D-XX-5622.




KEY PLAN
SCALE: 1:5000

| | | | | |
|---|---|---|---|---|
| P07 | PIPE NOTE AMENDED | AW | - | 2023.01.18 |
| P06 | MINOR AMENDMENTS | AW | 2022.07.15 | - |
| P05 | AMMENDED TO SUIT WBC COMMENTS | AW | - | 2022.07.04 |
| P04 | AMMENDED TO SUIT WBC COMMENTS | AW | - | 2022.06.20 |
| P03 | AMMENDED TO SUIT WBC COMMENTS | AW | - | 2022.06.01 |
| P02 | PIPE DETAILS AMENDED AND HEADWALL ADDED | HY | JH | 2022.03.28 |
| P01 | AMMENDED TO SUIT WBC COMMENTS | NS | | 2022.02.15 |
| Issued/Revision | | By | Appd | YYYY.MM.DD |
| | | JS | AW | AW | 2022.01.31 |
| | | Dwn. | Dsgn. | Chkd. | YYYY.MM.DD |

Issue Status

**CONSTRUCTION ISSUE**

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Client/Project Logo

Client/Project
BOKLOK

FULBECK AVENUE, WORTHING

Title
PLAY AREA LINER EXTENT AND DETAILS

Project No.
332510223

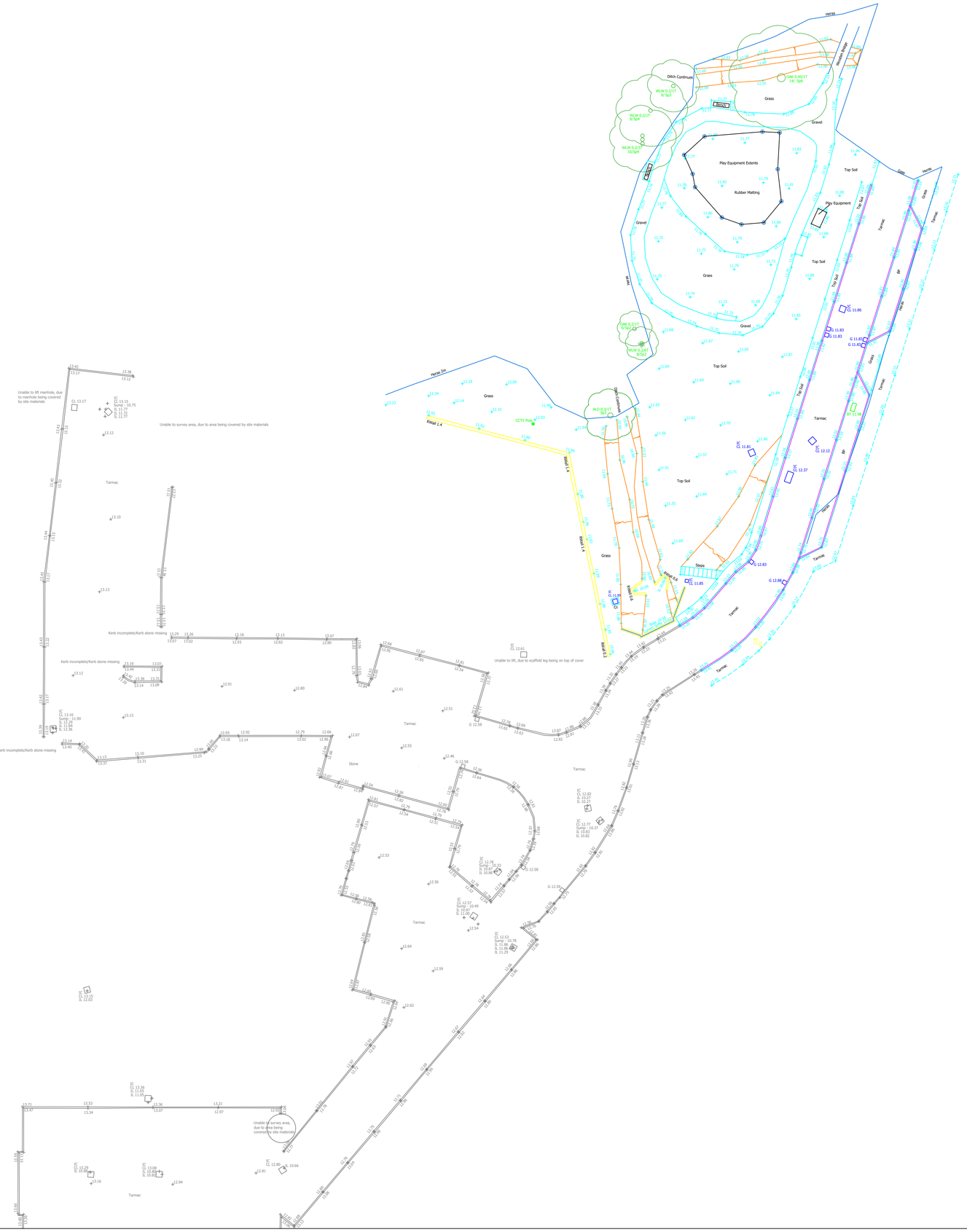
Scale
AS SHOWN

Revision
**P07**

Drawing No.
**FBA-STC-SW-BG-DR-D-SE-6653**

Plotted: 19.01.2023 10:03:13 AM By: Wesley Allen
C:\Users\wallen\Documents\WORK\21 - Fulbeck avenue, worthing\Technical\Drawings\Drainage\Temp\19.01.23 - Fulbeck avenue, worthing_wallen_WORK21 - Fulbeck avenue, worthing_332510223_temp.rvt

## APPENDIX 3 FLOOD COMPENSATION AREA AS-BUILT TOPOGRAPHICAL SURVEY – OCTOBER 2024




NOTES:

Drainage:
Inspection Covers are lifted where possible and all drainage invert information has been obtained through visual inspection only, with no entry into manholes. Therefore the complete accuracy cannot be guaranteed. Where drainage is of critical importance we suggest the services of a specialist drainage expert be used.

Trees:
Every effort has been made to identify and detail all trees on site but where trees are of critical importance we suggest the use of a specialist such as an arborist. Tree spread and heights are indicative.

GPS:
GPS detail is relative to the time and date of survey. GPS levels and grid are obtained using industry standard guidelines and can vary according to the quality of the GPS network at the time of survey. Unless stated otherwise, surveys are Scale factor 1 and Horizontal and Vertical Datums are established from a central site fix and baseline orientation station utilising GNSS correction data.

Survey notes:
Survey specification is linked to the original purpose of the survey commissioned at source and is to be used for this purpose only. Survey is accurate within limitations of site conditions at the time of survey. In areas difficult to survey due to restricted access, lines of sight or dense vegetation, critical dimensions and positions should be verified following suitable clearance.
Survey detail obtained and shown is relative to the plotting scale.

Copyright:
This survey information is Copyright Encompass Surveys Ltd (2009). All rights reserved.

# LEGEND

## OVERALL TREE SPECIES INFORMATION

| | | | |
|---|---|---|---|
| ALDER | ALD | LONDON PLANE | LPN |
| ASH | ASH | MAGNOLIA | MAG |
| ASPEN | ASP | MAPLE | MPL |
| BEECH | BCH | OAK | OAK |
| CHERRY | CHY | PINE | PNE |
| ELM | ELM | POPLAR | POP |
| FIR | FIR | RHODODENDRONS | RDN |
| FRUIT | FRT | ROWAN | RWN |
| HAWTHORN | HAW | SILVER BIRCH | SIB |
| HAZEL | HAZ | SWEET CHESTNUT | SCH |
| HOLLY | HLY | WALNUT | WNT |
| HORSE CHESTNUT | HCH | WILLOW | WLW |
| LIME | LIM | YEW | YEW |
| LOCUST | LOC | SPECIES UNKNOWN | SPU |
| | | COPPICED | COP |

TREE ANNOTATIONS: Tree Species / Tree Bole Size / No of Boles
Tree Height / Tree Canopy Spread

## FENCE INFORMATION

| | | | |
|---|---|---|---|
| BARBED WIRE FENCE | BWF | BED LEVEL | BL |
| CHAIN LINK FENCE | CLF | COVER LEVEL | CL |
| CHESTNUT PALING FENCE | CPF | FLOOR LEVEL | FL |
| CLOSE BOARD FENCE | CBF | INVERT LEVEL | IL |
| CONCRETE SLAT FENCE | CCF | OUTFALL LEVEL | OL |
| CORRUGATED IRON FENCE | CIF | THRESHOLD LEVEL | THL |
| CRASH BARRIER | CBR | FOUL WATER | FW |
| HANDRAIL | HDL | SURFACE WATER | SW |
| IRON RAILINGS | IRF | UNABLE TO LIFT | UTL |
| LARCH LAP FENCE | LLF | WATER LEVEL | WL |
| MISCELLANEOUS FENCE | MSF | | |
| PALISADE FENCE | PSF | | |
| PICKET FENCE | PKF | | |
| POST AND CHAIN FENCE | PCF | | |
| POST AND RAIL FENCE | PRF | | |
| POST AND WIRE FENCE | PWF | | |
| SECURITY FENCE | SCF | | |
| STOCK WIRE FENCE | SWF | | |
| TRELLIS FENCING | TLF | | |
| WIRE MESH FENCE | WMF | | |

## SURFACE INFORMATION

| | | | |
|---|---|---|---|
| CONCRETE | Cc | | |
| BRICK PAVING | BP | | |
| FLOWERBED | FB | | |
| PAVING SLABS | PS | | |
| RETAINING WALL | RWall | | |
| SCALPINGS | Scalp | | |
| TACTILE PAVING | Tac | | |

## FEATURE INFORMATION

| | | | |
|---|---|---|---|
| BOLLARD | BO | NAME PLATE | NP |
| TELECOMS IC | BTIC | NOTICE BOARD | NB |
| BUS STOP | BS | POST | P |
| CABLE TELEVISION IC | CATV | RAIN WATER PIPE | RWP |
| EARTHING ROD | ER | ROAD SIGN | RS |
| ELECTRICITY CABLE PIT | ELCP | RODDING EYE | RE |
| ELECTRICITY POLE | EP | SERVICE MARKER POST | SMP |
| FIRE HYDRANT | FH | SOIL VENT PIPE | SVP |
| FLAG POLE | FP | STOP VALVE | SV |
| GUIDE POST | GP | TELEGRAPH POLE | TP |
| INSPECTION COVER | IC | TRAFFIC SIGNAL | TS |
| LAMP POST | LP | TRAFFIC SIGNALS IC | TSIC |
| LETTER BOX | LB | WASH OUT | WO |
| KERB OUTLET | KO | WATER METER | WM |

REVISIONS

Level Datum:
Levels are related to Control Network 9RR5

Grid:
Grid is related to Control Network 9RR5

Northpoint:
The Northpoint position shown on this drawing has been located as accurately as possible, but is only indicative of true North

ENCOMPASS SURVEYS

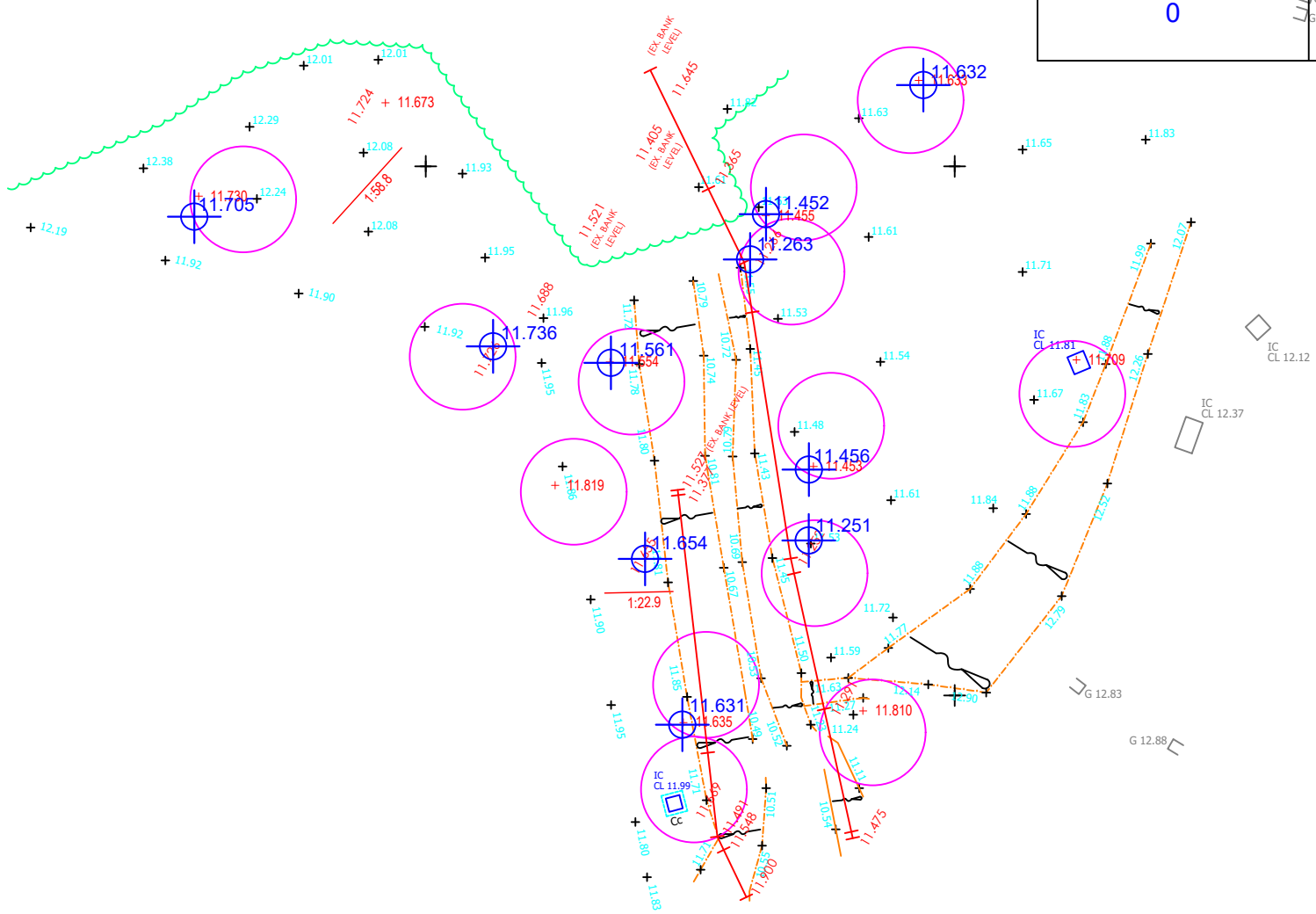
Encompass Surveys Ltd
Yarmouth House
1300 Parkway
Solent Business Park
Whiteley, Fareham
Hampshire, PO15 7AX

Tel: (+44)2380 692002 Email: info@encompass-surveys.co.uk
Website: encompass-surveys.co.uk

| | | | |
|---|---|---|---|
| Client: | Boklok | | |
| Survey Location: | Fulbeck Avenue<br>Worthing<br>BN13 3RS | | |
| Survey type: | Topographical | Scale: | 1:250@A1 |
| Drawing ref: | ENC_9RR5_FloodPlainTopo | Date: | 31.10.2024 |
| Drawn/QA: | JM/JN | Plot No. | - |

# APPENDIX 4 FLOOD COMPENSATION AREA AS-BUILT TOPOGRAPHICAL SURVEY – MAY 2025

| Legend | |
|---|---|
| 0.0000 | Encompass surveyed points |
| 0.0000 | Design Heights |
| 0 | Recorded Heights |



RGP

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