

Laura Gibbons
 Facilities & Technical Services,
 Worthing Town Hall,
 Chapel Road,
 Worthing,
 West Sussex,
 BN11 1HA

By Email Only

17/06/2020
 Our Ref: 5216-LTR-02
 Your Ref: -
 Planning Ref: -

Land at Chatsmore Farm; Hydraulic Modelling

Dear Laura,

Further to your email dated 5 June 2020, we are writing to provide you with an update to the points you have raised. Please find below a table responding to each of your points for clarity.

AWC Comment	AEA Response
I note you have used EA 1 and 2m LiDAR within the model, please could you confirm the date this LiDAR was flown	The LiDAR was obtained as part of a bulk LiDAR issue from the Environment Agency December 2019, which included all the LiDAR available at the time from the Environment Agency. Our understanding that this area was captured in 2017.
Did you try any storm durations beyond the 720minute event?	The critical storm is 9 hours (540mins) as defined by the FEH catchment statistics. Therefore the 12 hour (720min), was run as a sensitivity test. Longer duration storms have not been run.
Could you please provide the results from the 50% blockage sensitivity testing.	Attached in the *.zip folder.
Was any sensitivity testing of manning's values undertaken?	Attached in the *.zip folder. The sensitivity results indicate that the difference in level between the +20% and -20% surface roughness value results in a change in water level of less than 50mm, and is therefore not considered to be a significant impact. The flood extents do not visibly change.
Did you compare surveyed cross section data to LiDAR data at banks/floodplains.	As part of the model build process we have compared 1D cross section data with 2D floodplain level/bank data. The variations were considered negligible and within normal flood modelling tolerances.
Was channel survey completed in accordance with Environment Agency Standard Specification for Surveying Services v4.01	A copy of the survey report is attached.

We trust this is sufficient for your current requirements, however should you have any questions or require any further information please feel free to contact me.

Yours sincerely,



Steven Brown BEng (Hons), MSc, MCIWEM CWEM, AMICE
Associate
Tel: 02038578540
AMBIENTAL Environmental Assessment.

AMBIENTAL
ENVIRONMENTAL ASSESSMENT



1
1:100 Depth: 0.363 m
+20% N: 0.374 m
-20% N: 0.359 m

2
1:100 Depth: 0.242 m
+20% N: 0.256 m
-20% N: 0.239 m

4
1:100 Depth: 0.295 m
+20% N: 0.303 m
-20% N: 0.288 m

3
1:100 Depth: 0.2 m
+20% N: 0.189 m
-20% N: 0.174 m

5
1:100 Depth: 0.186 m
+20% N: 0.215 m
-20% N: 0.195 m

6
1:100 Depth: 0.301 m
+20% N: 0.322 m
-20% N: 0.303 m

7
1:100 Depth: 0.826 m
+20% N: 0.855 m
-20% N: 0.836 m

8
1:100 Depth: 0.252 m
+20% N: 0.246 m
-20% N: 0.228 m

fid	n-20	n+20	Q0100_720
1	0.359	0.374	0.363
2	0.239	0.256	0.242
3	0.174	0.189	0.2
4	0.288	0.303	0.295
5	0.195	0.215	0.186
6	0.303	0.322	0.301
7	0.836	0.855	0.826

LEGEND

⊕ INSPECTION POINT

1:100, 720 MINUTE, FLOOD DEPTH (M)

- 0
- 0.3
- 0.5
- 1
- 2
- 3

Note:
Contains data; © Google.
Data has been relied upon in the
format provided and has not been
independently validated.

D1586 Land at Chatsmore Farm, Goring BN12 6NT, Survey Report
Maltby Land Surveys Ltd.
February 2020

D1586 Land at Chatsmore Farm, Goring BN12 6NT, Survey Report

February 2020

1) WRITTEN REPORT

- A) Objectives**
- B) Survey Control**
- C) Topography**
- D) Digital Data**
- E) General Comments**

2) STATION DESCRIPTIONS

3) EQUIPMENT LIST

4) DELIVERABLES

D1586 Land at Chatsmore Farm, Goring BN12 6NT, Survey Report

Maltby Land Surveys Ltd.

February 2020

1. WRITTEN REPORT

To: Stuart Burnett, Bright Plan Civils, 2 West Barn, Norton Lane, Chichester, PO20 3AF.

From: Maltby Land Surveys Limited

Our Reference: 20_037

Watercourses: Ferring Rife Reach 1, 2 & 3

Date of Survey: February 2020

A) Objectives

Further to your instruction, a river channel was carried out on the above watercourse in accordance with your survey specification.

Survey Extents

Ferring Rife Reach 1 – TQ 0916 0309 (Open Channel) to TQ 1073 0376 (Open Channel).

Ferring Rife Reach 2 – TQ 1036 0349 (Open Channel) to TQ 1079 0377 (Open Channel).

Ferring Rife Reach 3 – TQ 1073 0371 (Culvert Exit).

B) Survey Control

Control for the survey was derived using Global Navigation Satellite Systems (GNSS). One new E6 grade Environment Agency Control Stations (EACS) (E6-510359-103517) has been installed in accordance with the Environment Agency specification. As a check on the control method used, a three-minute check was undertaken on previously installed control station E60740759, with results shown in table B.2. Checks were also taken on an Ordnance Survey Benchmark located on site, with results shown in table B.3. All observations were undertaken utilising Leica SmartNet, a Network Real Time Kinematic (RTK) survey method.

SmartNet was used to install control throughout the survey catchment, installing a minimum of two reference pegs for each set up. All supplied data is to the OSTN15.

Table B.1 – Showing newly installed EACS.

EACS	Easting (m)	Northing (m)	Height (mAOD)
E6-510359-103517	510359.763	103517.602	6.288

Table B.2 – Showing checks on previously installed EACS.

EACS	Published Co-ordinates NGm	MLS Check Co-ordinates NGm	Difference (m)
E60740759	510791.514 E	510791.500 E	-0.014
	104643.077 N	104643.051 N	-0.026
	11.262 Hgt	11.297 Hgt	0.035

Table B.3 – Showing checks on Ordnance Survey Benchmark

OSBM	Published Level NGm	MLS Check Level NGm	Difference (m)
TQ 1040 0350	7.574 Hgt	7.567 Hgt	-0.007

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Maltby Land Surveys Ltd.

February 2020

C) Topography

The topography has been surveyed using a Leica TS06 Plus Total Station in accordance with the specification.

D) Digital Data

For list of data provided please see section 4. Deliverables

All data supplied has been run through the latest edition of AVG Anti – Virus software and is, to the best of our knowledge, virus – free.

E) General Comments

Ferring Rife Reach 1 (FER1)

Due to dense vegetation, only long section information was surveyed on the downstream face of Langbury Lane Road Bridge. The culvert opening is believed to be the same dimensions as the upstream face FER1_0032 which has been surveyed in full and shown in the cross-section drawings.

At the following locations, weir structures were located with moveable wooden gates along the crest of the weir. Cross sections have been taken upstream and downstream of the structure as well as directly behind the boards (Crest).

- FER1_0056
- FER1_0402
- FER1_0648
- FER1_0931

Ferring Rife Reach 2 (FER2)

Two large pipes enter the channel under the Littlehampton Road, we were unable to survey due to access constraints but photo FER2_0649_USF3.JPG shows their location.

Ferring Rife Reach 3 (FER3)

Culvert Exit FER3_0002 was surveyed as best possible, however due to dense vegetation in the area, a level of approximation has been used when surveying the pipe opening.

3. EQUIPMENT LIST

- Leica GS08+ Series Dual Frequency Geodetic, serial number: 1854135/2884265
- Leica TS06 Plus Total Station, serial number: 139215

D1586 Land at Chatsmore Farm, Goring BN12 6NT, Survey Report

Maltby Land Surveys Ltd.

February 2020

4. DELIVERABLES

		Format	File	Contents
1. FER1	1. Cross Sections 2. Long Section & Location Plan 3. Flood Modeller 4. XYZ 5. Photos & MapInfo 6. Gauge Boards	AutoCAD PDF AutoCAD PDF .dat Excel Various .doc	X-20_037-01-03.dwg X-20_037-01-03.pdf L-20_037-01-02.dwg L-20_037-01-02.pdf 20-037-FER1_FMod_HardBed.dat 20-037-FER1_FMod_SoftBed.dat 20-037-FER1_XYZ_HardBed.csv 20-037-FER1_XYZ_SoftBed.csv 20-037-FER1_Banks_XYZ.csv Various GB-509184-103116.doc GB-509725-103484.doc GB-510793-103732.doc	Cross Section Drawings Long Section & Location Plan Drawings Flood Modeller Data XYZ Data Photos & Geo-referenced MapInfo Gauge Board Description
2. FER2	1. Cross Sections 2. Long Section & Location Plan 3. Flood Modeller 4. XYZ 5. Photos & MapInfo 6. Gauge Boards	AutoCAD PDF AutoCAD PDF .dat Excel Various .doc	X-20_037-04-05.dwg X-20_037-04-05.pdf L-20_037-03.dwg L-20_037-03.pdf 20-037-FER2_FMod_HardBed.dat 20-037-FER2_FMod_SoftBed.dat 20-037-FER2_XYZ_HardBed.csv 20-037-FER2_XYZ_SoftBed.csv 20-037-FER2_Banks_XYZ.csv Various GB-510731-103765.doc	Cross Section Drawings Long Section & Location Plan Drawings Flood Modeller Data XYZ Data Photos & Geo-referenced MapInfo Gauge Board Description
3. FER3	1. Cross Sections 2. Flood Modeller 3. XYZ 4. Photos & MapInfo	AutoCAD PDF .dat Excel Various	X-20-037-06.dwg X-20-037-06.pdf 20-037-FER3_FMod_HardBed.dat 20-037-FER3_FMod_HardBed 20-037-FER3_XYZ_HardBed.csv 20-037-FER3_XYZ_SoftBed.csv Various	Cross Section & Location Plan Drawings Flood Modeller Data XYZ Data Photos & Geo-referenced MapInfo
4. Survey Control	1. Level Runs & Adjustments 2. Description Sheets 3. Temporary E6 Photos 4. GNSS Report	Excel Word .JPG Word	20_037 - E6 Adjustments.xls 20_037 - Level Run.xls 20_037 - Permanent EACS.xls 20_037 - Temporary EACS.xls E6-510359-103517.doc E6-510359-103517_Temp.jpg 20_037 - Report on Mean Coordinates and Difference.doc	Survey Control Data
5. Survey Report		Word	D1586 Land at Chatsmore Farm, Goring BN12 6NT, Survey Report.doc	Written Survey Report