Appendix: C – EA Flood Map

Environment Agency

Flood map for planning

Your reference	Location (easting/northing)	Created
fmfp	**548887/209134**	**8 Mar 2019 12:08**

Your selected location is in flood zone 1, an area with a low probability of flooding.

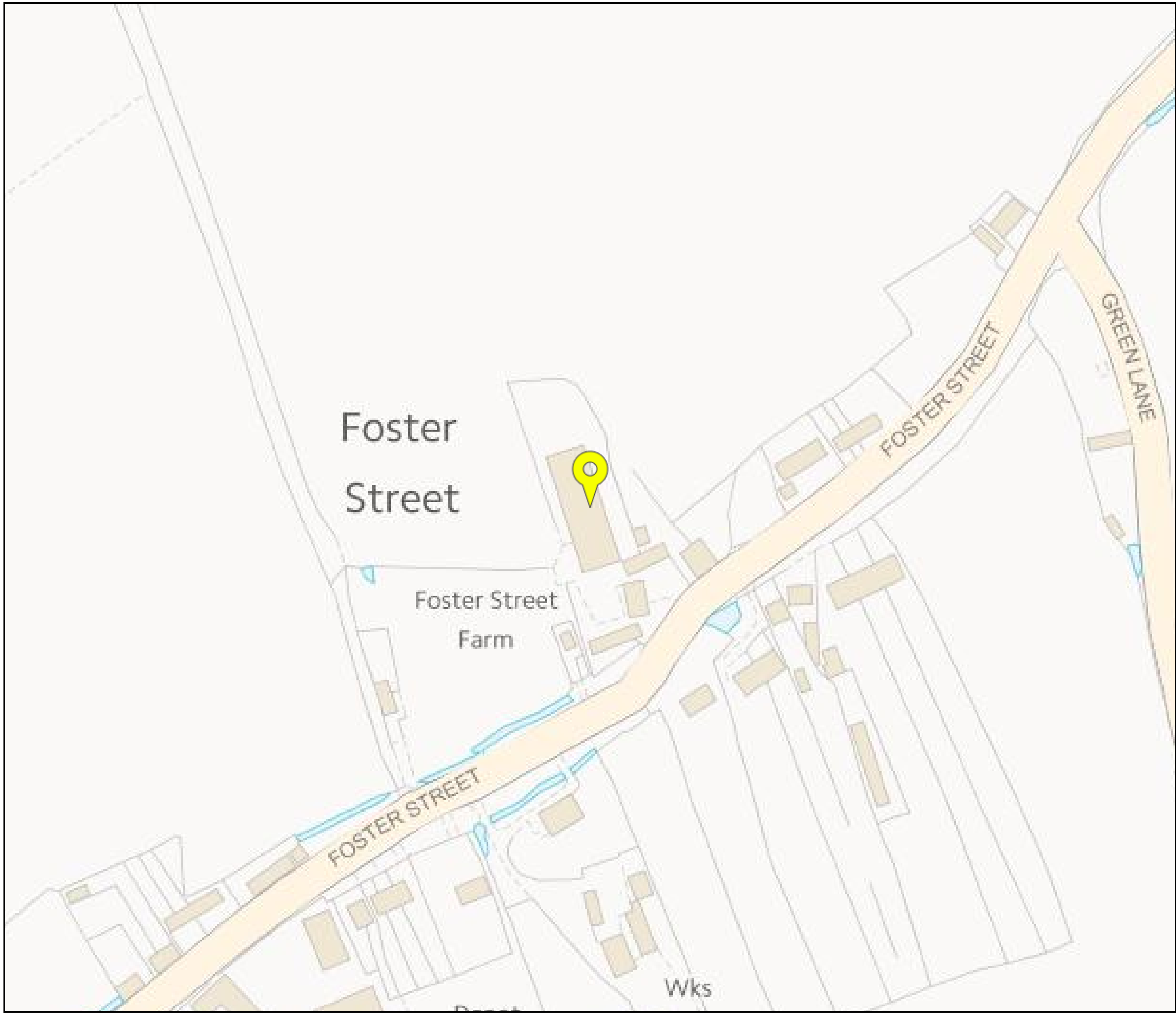
This means:

- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

Notes

The flood map for planning shows river and sea flooding data only. It doesn’t include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.



Environment Agency

Flood map for planning

Your reference
fmfp

Location (easting/northing)
548887/209134

Scale
1:2500

Created
8 Mar 2019 12:08

Selected point

Flood zone 3

Flood zone 3: areas benefitting from flood defences

Flood zone 2

Flood zone 1

Flood defence

Main river

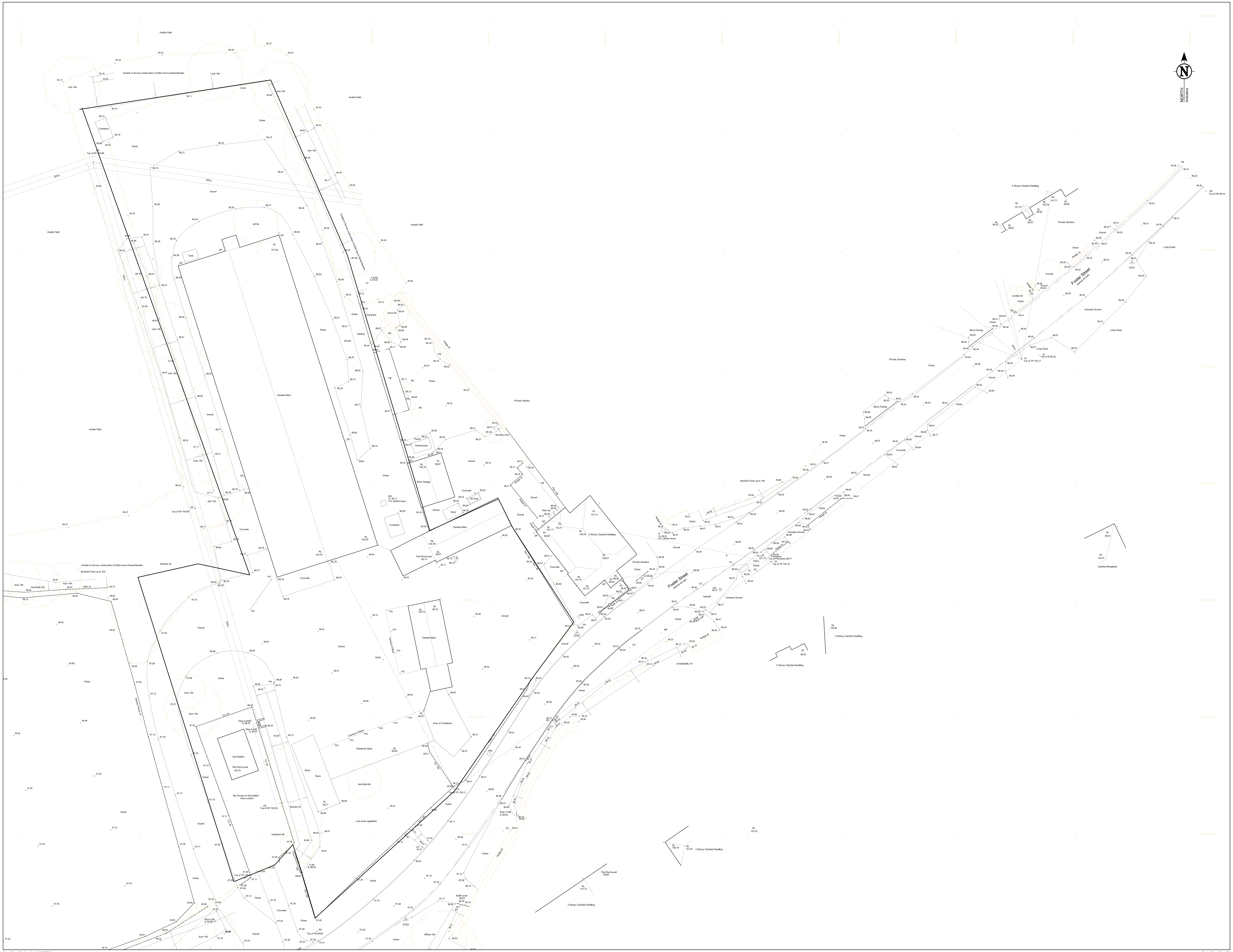
Flood storage area

0 20 40 60m

EAS

Appendix: D – Topographical Survey

TRANSPORT PLANNING ■ HIGHWAYS AND DRAINAGE ■ FLOOD RISK ■ TOPOGRAPHICAL SURVEYS
Unit 23 The Maltings Stanstead Abbotts Hertfordshire SG12 8HG Tel 01920 871 777 e: contact@eastp.co.uk www.eastp.co.uk



TOPOGRAPHICAL & MEASURED BUILDING SURVEYS

ABBREVIATIONS & SYMBOLS

AH	Arch Head Height	FH	Fire Hydrant	RSJ	Rolled Steel Joist
AR	Assumed Route	FBD	Floor Board Direction	SI	Sign Post
AV	Air Valve	FH	Fire Hydrant	SP	Arch Spring Point Height
BB	Belisha Beacon	FL	Floor Level	SV	Stop Valve
BH	Bore Hole	FP	Flag Pole	SW	Surface Water
BL	Bed Level	FW	Foul Water	SY	Stay
BO	Bollard	GG	Gully Grate	Tac	Tactile Paving
BrP	Brace Post	GV	Gas Valve	TC	Telecom Cover
BS	Bus Stop	HH	Head Height	TH	Trial Pit
BU	Bush	IC	Inspection Cover	THL	Threshold Level
B/W	Barbed Wire Fence	IL	Invert Level	TL	Traffic Light
BX	Box (Utilities)	I/R	Iron Railings	ToW	Top of Wall
C/B	Close Board Fence	KO	Kerb Outlet	TP	Telegraph Pole
CH	Cill Height	LP	Lamp Post	TV	Cable TV Cover
CL	Cover Level	MH	Manhole	UB	Universal Beam
C/L	Chain Link Fence	MP	Marker Post	UC	Unknown Cover
C-Lev	Ceiling Level	NB	Name Board	UK	Unknown Tree
Col	Column	OHL	Overhead Line (approx)	USB	Under Side Beam
C/P	Chestnut Paling Fence	Pan	Panel Fence	UTL	Unable To Lift
CR	Cable Riser	PB	Post Box	VP	Vent Pipe
DC	Drainage Channel	PM	Parking Meter	WB	Waste Bin
DH	Door Head Height	PO	Post	WH	Weep Hole
DP	Down Pipe	P/R	Post & Rail Fence	WL	Water Level
DR	Drain	P/W	Post & Wire Fence	WM	Water Meter
EL	Eaves Level	P/Wall	Partition Wall	WO	Wash Out
EP	Electric Pole	RE	Rodding Eye	X.XX	Floor to Ceiling Height
ER	Earth Rod	RL	Ridge Level		
ET	EP+Transformer	RP	Reflector Post	X.XX F/C	Floor to False Ceiling Ht
FB	Flower Bed	RS	Road Sign		
FBD	Floor Board Direction	RSD	Roller Shutter Door	△	Survey Control Station

DRAWING NOTE

Topographical Surveys

Trees are drawn to scale showing the average canopy spread. Descriptions and heights should be used as a guide only.

All building names, descriptions, number of storeys, construction type including roof line details are indicative only and taken externally from ground level.

All below ground details including drainage, voids and services have been identified from above ground and therefore all details relating to these features including; sizes, depth, description etc will be approximate only. All critical dimensions and connections should be checked and verified prior to starting work.

Detail, services and features may not have been surveyed if obstructed or not reasonably visible at the time of the survey.

Measured Building Surveys

Measurements to internal walls are taken to the wall finishes at approx 1m above the floor level and the wall assumed to be vertical.

Cill heights are measured as floor to the cill and head heights are measured from cill to the top of window.

General

The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work. Any errors or discrepancies must be notified to Survey Solutions immediately.

The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated.

The survey control listed is only to be used for topographical surveys at the stated scale. All control must be checked and verified prior to use.

Do not scale from this drawing.

CONTROL CO-ORDINATES

STATIONS	EASTINGS	NORTHINGS	LEVEL	DESCRIPTION
ST01	549029.707	209158.246	96.369	Road Nail
ST02	548934.717	209094.892	96.455	Road Nail
ST03	548905.414	209045.814	97.332	Hilti Nail
ST04	548865.273	209021.401	97.626	Peg & Nail
ST05	548824.261	209001.617	97.370	Hilti Nail
ST06	548770.780	208976.630	97.885	Hilti Nail
ST07	548697.120	208918.198	97.889	Hilti Nail
ST08	548621.182	208848.973	98.849	Hilti Nail
ST09	548578.092	208815.509	98.926	Peg & Nail
PR02	548690.119	208729.536	98.734	Peg & Nail
PR03	548719.259	208748.272	98.757	Peg & Nail
PR04	548834.600	208753.043	97.371	Peg & Nail
PR05	548879.016	208753.371	97.468	Peg & Nail
PR06	548944.759	208785.631	97.559	Peg & Nail
PR07	548957.830	208776.461	97.644	Peg & Nail
PR08	548973.781	208732.788	97.320	Peg & Nail
PR09	548999.172	208710.769	96.787	Peg & Nail

SURVEY GRID AND LEVEL DATUM

Ordnance Survey (OS) national grid coordinates have been established for survey control point ST05 using GPS and related to OSTN02(GB) and OSGM02(GB). The survey grid is orientated to Grid North with a scale factor of 1.000.

All levels relate to the Ordnance Survey (OS) level datum at survey control point ST05 established by GPS using OSGM02(GB).

REV	DESCRIPTION	DRAWN	APPR	DATE
B	Exposed pipes and horse paddock surveyed	TJF	BTC	21/10/13
A	Extra Ditches Surveyed, MHs lifted & extension to Farm Garden.	PJR	TJF	15/10/13

SURVEY SOLUTIONS

Ipswich Coventry Yeovil Norwich Perth Nottingham Brentwood

Tel No: 0845 0405 969 Fax No: 0845 0405 970
www.survey-solutions.co.uk enquiries@survey-solutions.co.uk

LAND SURVEYING BUILDING SURVEYING UNDERGROUND SURVEYING

PROJECT TITLE
HARLOW GATEWAY SITES A & B, FOSTER STREET, HARLOW COMMON, ESSEX, CM17 9HY.

DRAWING DETAIL
TOPOGRAPHICAL SURVEY

CLIENT				SCALE
ANDERSON GROUP				1:200
SURVEYOR	SURVEY DATE	CHECKED BY	APPROVED BY	DWG STATUS
PJR	12/09/2013	TJF	TJF	FINAL
DRAWING NUMBER			REVISION	ISSUE DATE
13143se-01			B	23/09/2013

Original Sheet Size A0H

Appendix: E – Greenfield Calculations

TRANSPORT PLANNING ■ HIGHWAYS AND DRAINAGE ■ FLOOD RISK ■ TOPOGRAPHICAL SURVEYS
Unit 23 The Maltings Stanstead Abbotts Hertfordshire SG12 8HG **Tel 01920 871 777** **e: contact@eastp.co.uk** **www.eastp.co.uk**

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.400
Area (ha)	1.000	Urban	0.000
SAAR (mm)	600	Region Number	Region 6

Results	**l/s**
QBAR Rural	2.8
QBAR Urban	2.8
Q100 years	9.1
Q1 year	2.4
Q30 years	6.4
Q100 years	9.1

Appendix: F – SuDS Layout

TRANSPORT PLANNING ■ HIGHWAYS AND DRAINAGE ■ FLOOD RISK ■ TOPOGRAPHICAL SURVEYS

Unit 23 The Maltings Stanstead Abbotts Hertfordshire SG12 8HG Tel 01920 871 777 e: contact@eastp.co.uk www.eastp.co.uk

KEY

PERMEABLE PAVING AREA 1
- LINED PERMEABLE PAVING AREA 1 (642.93m²)
- HARDSTANDING (FOOTPATHS AND REAR PATIO) (24m²)
- ROOF AREA (INCLUSIVE OF 10% URBAN CREEP) (133.4m²)
- TOTAL IMPERMEABLE AREA FOR PP1 (0.08 HECTARES)

PERMEABLE PAVING AREA 2
- LINED PERMEABLE PAVING AREA 2 (256.16m²)
- HARDSTANDING (FOOTPATHS AND REAR PATIO) (24m²)
- ROOF AREA (INCLUSIVE OF 10% URBAN CREEP) (133.6m²)
- TOTAL IMPERMEABLE AREA FOR PP2 (0.041 HECTARES)

PERMEABLE PAVING AREA 3
- LINED PERMEABLE PAVING AREA 3 (522.14m²)
- HARDSTANDING (FOOTPATHS AND REAR PATIO) (24m²)
- ROOF AREA (INCLUSIVE OF 10% URBAN CREEP) (152.8m²)
- TOTAL IMPERMEABLE AREA FOR PP3 (0.069 HECTARES)

PERMEABLE PAVING AREA 4
- LINED PERMEABLE PAVING AREA 4 (253.67m²)
- HARDSTANDING (FOOTPATHS AND REAR PATIO) (24m²)
- ROOF AREA (INCLUSIVE OF 10% URBAN CREEP) (133.6m²)
- TOTAL IMPERMEABLE AREA FOR PP3 (0.041 HECTARES)

PERMEABLE PAVING AREA 5
- LINED PERMEABLE PAVING AREA 5 (409.00m²)
- HARDSTANDING (FOOTPATHS AND REAR PATIO) (24m²)
- ROOF AREA (INCLUSIVE OF 10% URBAN CREEP) (152.9m²)
- TOTAL IMPERMEABLE AREA FOR PP3 (0.058 HECTARES)

TOTAL SITE IMPERMEABLE AREA (0.289 HECTARES)

- ORIFICE PLATE IN A SUITABLE CHAMBER WITH FILTER
- SURFACE WATER DISTRIBUTION BOX

REV	DATE	BY	DESCRIPTION	CHK	APD

DRAWING STATUS:

EAS
Unit 23, The Maltings, Stanstead Abbotts, Hertfordshire, SG12 8HG
Tel: 01920 871777
www.eastp.co.uk

CLIENT:

ARCHITECT:

PROJECT:
FOSTER STREET FARM
FOSTER STREET, HARLOW

TITLE:
PROPOSED SUDS LAYOUT

SCALE @ A1:	DESIGN/DRAWN:	DATE:
1:200	RC	12/07/2019
PROJECT No:	DRAWING No:	
1956	SK04 REV B	

Appendix: G – WINDES Calculations

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)
1.000	23.660	0.130	182.0	0.000	2.00	0.0	0.600	o	225
2.000	5.000	0.040	125.0	0.000	5.00	0.0	0.600	o	225
2.001	1.720	0.010	172.0	0.080	0.00	0.0	0.600	o	225
1.001	4.450	0.030	148.3	0.000	0.00	0.0	0.600	o	225
3.000	5.000	0.050	100.0	0.000	5.00	0.0	0.600	o	225
3.001	4.080	0.024	170.0	0.041	0.00	0.0	0.600	o	225
1.002	10.330	0.056	184.5	0.000	0.00	0.0	0.600	o	225
1.003	11.280	0.070	161.1	0.000	0.00	0.0	0.600	o	225
4.000	5.000	0.050	100.0	0.000	5.00	0.0	0.600	o	225
4.001	1.330	0.008	170.0	0.069	0.00	0.0	0.600	o	225
1.004	27.770	0.152	182.7	0.000	0.00	0.0	0.600	o	225
5.000	5.000	0.050	100.0	0.000	5.00	0.0	0.600	o	225
5.001	1.750	0.010	175.0	0.041	0.00	0.0	0.600	o	225
1.005	30.070	0.180	167.1	0.000	0.00	0.0	0.600	o	225

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
1.000	95.440	0.000	0.0	0.97	38.4
2.000	95.360	0.000	0.0	1.17	46.4
2.001	95.320	0.080	0.0	0.99	39.5
1.001	95.310	0.080	0.0	1.07	42.6
3.000	95.350	0.000	0.0	1.31	52.0
3.001	95.300	0.041	0.0	1.00	39.8
1.002	95.276	0.121	0.0	0.96	38.1
1.003	95.220	0.121	0.0	1.03	40.8
4.000	95.200	0.000	0.0	1.31	52.0
4.001	95.150	0.069	0.0	1.00	39.8
1.004	95.142	0.190	0.0	0.96	38.3
5.000	95.050	0.000	0.0	1.31	52.0
5.001	95.000	0.041	0.0	0.99	39.2
1.005	94.990	0.231	0.0	1.01	40.1

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)
6.000	5.000	0.050	100.0	0.000	5.00	0.0	0.600	o	225
6.001	2.350	0.014	170.0	0.058	0.00	0.0	0.600	o	225
1.006	8.740	0.051	170.0	0.000	0.00	0.0	0.600	o	225
1.007	22.960	0.125	183.7	0.000	0.00	0.0	0.600	o	225

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
6.000	94.870	0.000	0.0	1.31	52.0
6.001	94.820	0.058	0.0	1.00	39.8
1.006	94.806	0.289	0.0	1.00	39.8
1.007	94.755	0.289	0.0	0.96	38.2

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
MH1	96.800	1.360	Open Manhole	1200	1.000	95.440	225				
DR1	96.800	1.440	Open Manhole	1200	2.000	95.360	225				
PP1	96.800	1.480	Open Manhole	1200	2.001	95.320	225	2.000	95.320	225	
MH02	96.800	1.490	Open Manhole	1200	1.001	95.310	225	1.000	95.310	225	
								2.001	95.310	225	
DR2	96.400	1.050	Open Manhole	1200	3.000	95.350	225				
PP2	96.400	1.100	Open Manhole	1200	3.001	95.300	225	3.000	95.300	225	
MH03	96.800	1.524	Open Manhole	1200	1.002	95.276	225	1.001	95.280	225	4
								3.001	95.276	225	
MH04	96.800	1.580	Open Manhole	1200	1.003	95.220	225	1.002	95.220	225	
DR3	96.800	1.600	Open Manhole	1200	4.000	95.200	225				
PP3	96.800	1.650	Open Manhole	1200	4.001	95.150	225	4.000	95.150	225	
MH05	96.800	1.658	Open Manhole	1200	1.004	95.142	225	1.003	95.150	225	8
								4.001	95.142	225	
DR4	96.700	1.650	Open Manhole	1200	5.000	95.050	225				
PP4	96.700	1.700	Open Manhole	1200	5.001	95.000	225	5.000	95.000	225	
MH06	96.700	1.710	Open Manhole	1200	1.005	94.990	225	1.004	94.990	225	
								5.001	94.990	225	
DR5	96.200	1.330	Open Manhole	1200	6.000	94.870	225				
PP5	96.200	1.380	Open Manhole	1200	6.001	94.820	225	6.000	94.820	225	
MH07	96.200	1.394	Open Manhole	1200	1.006	94.806	225	1.005	94.810	225	4
								6.001	94.806	225	
MH08	96.200	1.445	Open Manhole	1200	1.007	94.755	225	1.006	94.755	225	
	96.100	1.470	Open Manhole	0		OUTFALL		1.007	94.630	225	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	225	MH1	96.800	95.440	1.135	Open Manhole	1200
2.000	o	225	DR1	96.800	95.360	1.215	Open Manhole	1200
2.001	o	225	PP1	96.800	95.320	1.255	Open Manhole	1200
1.001	o	225	MH02	96.800	95.310	1.265	Open Manhole	1200
3.000	o	225	DR2	96.400	95.350	0.825	Open Manhole	1200
3.001	o	225	PP2	96.400	95.300	0.875	Open Manhole	1200
1.002	o	225	MH03	96.800	95.276	1.299	Open Manhole	1200
1.003	o	225	MH04	96.800	95.220	1.355	Open Manhole	1200
4.000	o	225	DR3	96.800	95.200	1.375	Open Manhole	1200
4.001	o	225	PP3	96.800	95.150	1.425	Open Manhole	1200
1.004	o	225	MH05	96.800	95.142	1.433	Open Manhole	1200
5.000	o	225	DR4	96.700	95.050	1.425	Open Manhole	1200
5.001	o	225	PP4	96.700	95.000	1.475	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	23.660	182.0	MH02	96.800	95.310	1.265	Open Manhole	1200
2.000	5.000	125.0	PP1	96.800	95.320	1.255	Open Manhole	1200
2.001	1.720	172.0	MH02	96.800	95.310	1.265	Open Manhole	1200
1.001	4.450	148.3	MH03	96.800	95.280	1.295	Open Manhole	1200
3.000	5.000	100.0	PP2	96.400	95.300	0.875	Open Manhole	1200
3.001	4.080	170.0	MH03	96.800	95.276	1.299	Open Manhole	1200
1.002	10.330	184.5	MH04	96.800	95.220	1.355	Open Manhole	1200
1.003	11.280	161.1	MH05	96.800	95.150	1.425	Open Manhole	1200
4.000	5.000	100.0	PP3	96.800	95.150	1.425	Open Manhole	1200
4.001	1.330	170.0	MH05	96.800	95.142	1.433	Open Manhole	1200
1.004	27.770	182.7	MH06	96.700	94.990	1.485	Open Manhole	1200
5.000	5.000	100.0	PP4	96.700	95.000	1.475	Open Manhole	1200
5.001	1.750	175.0	MH06	96.700	94.990	1.485	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.005	o	225	MH06	96.700	94.990	1.485	Open Manhole	1200
6.000	o	225	DR5	96.200	94.870	1.105	Open Manhole	1200
6.001	o	225	PP5	96.200	94.820	1.155	Open Manhole	1200
1.006	o	225	MH07	96.200	94.806	1.169	Open Manhole	1200
1.007	o	225	MH08	96.200	94.755	1.220	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.005	30.070	167.1	MH07	96.200	94.810	1.165	Open Manhole	1200
6.000	5.000	100.0	PP5	96.200	94.820	1.155	Open Manhole	1200
6.001	2.350	170.0	MH07	96.200	94.806	1.169	Open Manhole	1200
1.006	8.740	170.0	MH08	96.200	94.755	1.220	Open Manhole	1200
1.007	22.960	183.7		96.100	94.630	1.245	Open Manhole	0

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.007		96.100	94.630	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	1.000	Additional Flow - % of Total Flow	40.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	5
Number of Online Controls	6	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Region	England and Wales
Return Period (years)	100	M5-60 (mm)	20.000

Synthetic Rainfall Details

Ratio R	0.435	Cv (Winter)	0.840
Profile Type	Summer	Storm Duration (mins)	30
Cv (Summer)	1.000		

Online Controls for Storm

Orifice Manhole: PP1, DS/PN: 2.001, Volume (m^3): 1.8

Diameter (m) 0.022 Discharge Coefficient 0.600 Invert Level (m) 95.320

Orifice Manhole: PP2, DS/PN: 3.001, Volume (m^3): 1.4

Diameter (m) 0.022 Discharge Coefficient 0.600 Invert Level (m) 95.300

Orifice Manhole: PP3, DS/PN: 4.001, Volume (m^3): 2.0

Diameter (m) 0.022 Discharge Coefficient 0.600 Invert Level (m) 95.150

Orifice Manhole: PP4, DS/PN: 5.001, Volume (m^3): 2.1

Diameter (m) 0.022 Discharge Coefficient 0.600 Invert Level (m) 95.000

Orifice Manhole: PP5, DS/PN: 6.001, Volume (m^3): 1.7

Diameter (m) 0.022 Discharge Coefficient 0.600 Invert Level (m) 94.820

Hydro-Brake® Manhole: MH08, DS/PN: 1.007, Volume (m^3): 1.9

Design Head (m) 0.600 Hydro-Brake® Type Md5 SW Only Invert Level (m) 94.755
Design Flow (l/s) 5.0 Diameter (mm) 103

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.0	1.200	7.0	3.000	11.1	7.000	16.9
0.200	4.3	1.400	7.6	3.500	11.9	7.500	17.5
0.300	4.2	1.600	8.1	4.000	12.8	8.000	18.1
0.400	4.3	1.800	8.6	4.500	13.5	8.500	18.6
0.500	4.6	2.000	9.0	5.000	14.3	9.000	19.2
0.600	5.0	2.200	9.5	5.500	15.0	9.500	19.7
0.800	5.7	2.400	9.9	6.000	15.6		
1.000	6.4	2.600	10.3	6.500	16.3		

Storage Structures for Storm

Porous Car Park Manhole: PP1, DS/PN: 2.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	25.4
Membrane Percolation (mm/hr)	1000	Length (m)	25.4
Max Percolation (l/s)	179.2	Slope (1:X)	1000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	96.300	Cap Volume Depth (m)	0.000

Porous Car Park Manhole: PP2, DS/PN: 3.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	16.0
Membrane Percolation (mm/hr)	1000	Length (m)	16.0
Max Percolation (l/s)	71.1	Slope (1:X)	1000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	95.900	Cap Volume Depth (m)	0.000

Porous Car Park Manhole: PP3, DS/PN: 4.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	22.9
Membrane Percolation (mm/hr)	1000	Length (m)	22.9
Max Percolation (l/s)	145.7	Slope (1:X)	1000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	96.300	Cap Volume Depth (m)	0.000

Porous Car Park Manhole: PP4, DS/PN: 5.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	15.9
Membrane Percolation (mm/hr)	1000	Length (m)	15.9
Max Percolation (l/s)	70.2	Slope (1:X)	1000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	96.200	Cap Volume Depth (m)	0.000

Porous Car Park Manhole: PP5, DS/PN: 6.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	20.2
Membrane Percolation (mm/hr)	1000	Length (m)	20.2
Max Percolation (l/s)	113.3	Slope (1:X)	1000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	95.700	Cap Volume Depth (m)	0.000

100 year Return Period Summary of Critical Results by Maximum Velocity (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	40.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	5
Number of Online Controls	6	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.435
Region	England and Wales	Cv (Summer)	1.000
M5-60 (mm)	20.000	Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	100
Climate Change (%)	40

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
1.000	60 Winter	100	+40%					
2.000	1440 Winter	100	+40%	100/15 Summer				
2.001	240 Summer	100	+40%	100/15 Summer				
1.001	240 Summer	100	+40%					
3.000	1440 Summer	100	+40%	100/15 Summer				
3.001	240 Winter	100	+40%	100/15 Summer				
1.002	120 Winter	100	+40%					
1.003	120 Winter	100	+40%					
4.000	15 Summer	100	+40%	100/15 Summer				
4.001	15 Summer	100	+40%	100/15 Summer				
1.004	120 Summer	100	+40%	100/240 Summer				
5.000	15 Winter	100	+40%	100/15 Summer				
5.001	15 Winter	100	+40%	100/15 Summer				
1.005	60 Summer	100	+40%	100/60 Summer				
6.000	960 Winter	100	+40%	100/15 Summer				
6.001	15 Summer	100	+40%	100/15 Summer				
1.006	15 Winter	100	+40%	100/15 Summer				
1.007	240 Winter	100	+40%	100/15 Summer				

100 year Return Period Summary of Critical Results by Maximum Velocity (Rank 1) for Storm

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	MH1	95.440	-0.225	0.000	0.00	0.0	0.0	OK
2.000	DR1	96.592	1.007	0.000	0.01	0.0	0.3	FLOOD RISK
2.001	PP1	96.656	1.111	0.000	0.04	0.0	1.1	FLOOD RISK
1.001	MH02	95.390	-0.145	0.000	0.04	0.0	1.1	OK
3.000	DR2	96.182	0.607	0.000	0.01	0.0	0.2	FLOOD RISK
3.001	PP2	96.304	0.779	0.000	0.03	0.0	0.9	FLOOD RISK
1.002	MH03	95.366	-0.135	0.000	0.06	0.0	2.0	OK
1.003	MH04	95.364	-0.081	0.000	0.06	0.0	2.0	OK
4.000	DR3	96.476	1.051	0.000	0.00	0.0	0.0	SURCHARGED
4.001	PP3	96.476	1.101	0.000	0.04	0.0	1.1	SURCHARGED
1.004	MH05	95.361	-0.006	0.000	0.09	0.0	3.1	OK
5.000	DR4	96.395	1.120	0.000	0.00	0.0	0.0	SURCHARGED
5.001	PP4	96.396	1.171	0.000	0.04	0.0	1.1	SURCHARGED
1.005	MH06	95.289	0.074	0.000	0.11	0.0	4.1	SURCHARGED
6.000	DR5	96.036	0.941	0.000	0.01	0.0	0.3	FLOOD RISK
6.001	PP5	95.889	0.844	0.000	0.03	0.0	0.9	SURCHARGED
1.006	MH07	95.119	0.088	0.000	0.14	0.0	4.6	SURCHARGED
1.007	MH08	95.360	0.380	0.000	0.14	0.0	5.0	SURCHARGED