



Schedule Of Accommodation

2B3P Ground Floor Apts Type 267	@ 67.0m ²	04no.
2B3P First Floor Apts Type 290	@ 90.0m ²	04no.
2B3P Bungalow Type 262	@ 63.6m ²	06no.
2B4P 2 storey House Type 278	@ 73.3m ²	22no.
2B4P 2 storey house Type 277A	@ 76.8m ²	10no.
3B5P 2 storey house Type 364	@ 85.8m ²	08no.
Total		54no.

Area 1.59ha 3.94acres
Density 33.9 dwellings/ha 13.7 dwellings/acre

Notes

Layout dependant upon, Arboricultural survey, Statutory Services Information & subject to Highway approval.

Drainage strategy subject to further detailed design, subject to Phase I & II Geo-technical Survey and Drainage Assessment.

Existing drainage and possible easements subject to further investigations.

Boundary Treatments & Finish floor levels subject to further detailed design.

Aspect distances subject to agreement with local authority approval.

Layout based upon topographical survey by H&M surveys Ltd. Drawing Number (WSM335SP_2D) & Interpolated OS base. It has been assumed that all Trees/shrubs can be removed to facilitate proposed development.

Key

Land owned by Barnsley Council in accordance with Deed Mat 1957 - SYK545105.

Land Owned by third party.

Secondary Aspect Side Elevation Feature.

1.8m High hit & miss treated timber fence boarded both sides. With concrete gravel board and concrete posts.

900mm high powder coated Galvanised steel railings. Colour to be confirmed.

450mm dwarf brick wall with piers and arstone copings with 1.35m high hit & miss treated timber fence infill panels above.

450mm dwarf brick wall with piers and arstone copings with 1.35m high powder coated galvanised steel railings. Colour to be confirmed.

1.1m high dwarf brick wall, piers and arstone copings with powder coated galvanised steel railings. Colour to be confirmed.

Brick piers with arstone copings, powder coated galvanised steel railings inbetween. colour to be confirmed.

Proposed Trees shown are indicative, exact quantity and positioning to be determined.

Proposed shrub plantings.

Highway turning head amended to form new site entrance.

Existing highway to be retained, to avoid Highway stopping up notice and drainage diversion.

Material Schedule

Grass/Turfed Areas.

600mm x 600mm Marshall Saxon or similar approved flag paving.

Tarmacadam parking space.

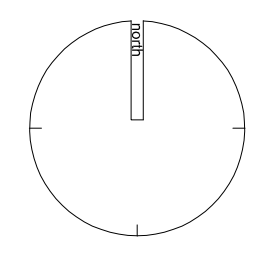
Block paved Mews Court to be adopted by LA highways department.

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The general contractor is responsible for the verification of all dimensions on site and the architect is to be informed of any discrepancy.

The status of information contained in a computer copy of this drawing shall be limited to that conveyed by the paper copy.

Revisions		
Rev A	15.12.16	HCURW
House types and layout updated. Phase 1 and 2 identified.		
Rev B	17.01.17	HCURW
Footpaths Updated at clients request. Phasing Removed		
Rev C	24.01.17	HCURW
Layout updated at clients request		
Rev D	17.03.17	HCURW
Plot 41 changes from a type 269 to a type 277. Schedule of Accommodation updated.		
Rev E	01.08.17	HCURW
Layout updated to reflect clients comments.		
Rev F	24.08.17	HCURW
Roof plans updated following design development.		
Rev G	07.09.17	HCURW
Layout updated following clients comments and design development. Boundaries updated. Roof plans amended. Areas updated to reflect CA Plans. House types updated. Bin locations indicatively indicated. Material Schedule and Key added.		
Rev H	10.09.17	HCURW
Layout updated. Mts amended following clients comments.		
Rev J	25.09.17	HCURW
Layout updated. Mts amended following clients comments. Layout overlaid on to topographical survey		
Rev K	04.10.17	HCURW
Drawing scale increased. Additional annotation added following planning officers comments.		
Rev L	05.10.17	HCURW
Boundary ownership indicated on site layout. Boundary amended to the rear of plots 41&42.		
Rev M	19.10.17	HCURW
Notes updated. Schedule of accommodation updated. Layout updated following public consultation comments. POS added. Density reduced.		
Rev N	20.10.17	HCURW
Existing site access road widened to 6100mm. Existing visitors parking bay created. New proposed 2000mm footpath amended to follow new road layout. Plot 1-4 front boundaries updated.		



Site Layout
Catherines Walk
St Edwines Close, Barnsley
Leeds & Yorkshire Housing Association

Leeds & Yorkshire HOUSING ASSOCIATION

Drawing Status

☐ preliminary	☐ planning
☐ information	☐ tender
☐ comment	☐ construction
☒ approval	☐ record/as built

Scale 1:250 @ A0

Date October 2017

Drawn/Checked HCURW

Draw No 2791.14.002N

Acanthus WSM Architects

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A P P E N D I X H

GREENFIELD RUN-OFF RATE CALCULATIONS

ARP Associates		Page 1
Northwest House Servia Hill Leeds LS6 2QH		
Date 23/11/2017 4:00pm	Designed by PaulCarter	
File CATHERINE WALK	Checked by	
Elstree Computing Ltd	Source Control 2017.1.2	

IH 124 Mean Annual Flood

Input

Return Period (years)	1	Soil	0.300
Area (ha)	50.000	Urban	0.000
SAAR (mm)	695	Region Number	Region 3

Results 1/s

QBAR Rural	90.4
QBAR Urban	90.4

Q1 year 77.7

Q1 year	77.7
Q2 years	85.3
Q5 years	113.0
Q10 years	131.0
Q20 years	148.4
Q25 years	154.2
Q30 years	158.8
Q50 years	171.1
Q100 years	188.0
Q200 years	213.3
Q250 years	221.4
Q1000 years	274.7

It is unusual to use the IH124 method with an area < 50ha. The Interim Code Of Practice recommends that the IH124 method is applied with 50ha and the resulting discharge is linearly interpolated for the required area.

$$\therefore 1 \text{ year} = 77.7 \div 50 = 1.554 \text{ L/s/ha}$$

$$1.554 \times 0.75 = 1.2 \text{ L/s}$$

APPENDIX I

INDICATIVE SURFACE WATER DRAINAGE CALCULATIONS

ARP Associates				Page 1	
Northwest House Servia Hill Leeds LS6 2QH		Catherines Walk Barnsley			
Date 23/11/2017 4:28pm File catherine walk lin30.srcx		Designed by PSC Checked by WMW			
Elstree Computing Ltd		Source Control 2017.1.2			
<u>Summary of Results for 30 year Return Period</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	8.341	0.441	2.9	95.5	O K
30 min Summer	8.479	0.579	2.9	125.4	O K
60 min Summer	8.624	0.724	2.9	156.7	O K
120 min Summer	8.764	0.864	2.9	187.2	O K
180 min Summer	8.837	0.937	2.9	202.9	O K
240 min Summer	8.879	0.979	2.9	212.0	O K
360 min Summer	8.922	1.022	2.9	221.3	O K
480 min Summer	8.937	1.037	2.9	224.6	O K
600 min Summer	8.936	1.036	2.9	224.4	O K
720 min Summer	8.929	1.029	2.9	223.0	O K
960 min Summer	8.913	1.013	2.9	219.3	O K
1440 min Summer	8.870	0.970	2.9	210.2	O K
2160 min Summer	8.802	0.902	2.9	195.3	O K
2880 min Summer	8.732	0.832	2.9	180.2	O K
4320 min Summer	8.575	0.675	2.9	146.2	O K
5760 min Summer	8.423	0.523	2.9	113.3	O K
7200 min Summer	8.308	0.408	2.9	88.4	O K
8640 min Summer	8.222	0.322	2.9	69.7	O K
10080 min Summer	8.157	0.257	2.9	55.7	O K
15 min Winter	8.395	0.495	2.9	107.2	O K
30 min Winter	8.551	0.651	2.9	141.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
15 min Summer	69.495	0.0	96.1	19	
30 min Summer	46.054	0.0	127.5	34	
60 min Summer	29.238	0.0	163.7	64	
120 min Summer	18.026	0.0	201.9	122	
180 min Summer	13.436	0.0	225.7	182	
240 min Summer	10.855	0.0	243.2	242	
360 min Summer	8.011	0.0	269.2	362	
480 min Summer	6.455	0.0	289.1	480	
600 min Summer	5.457	0.0	305.4	594	
720 min Summer	4.755	0.0	319.2	642	
960 min Summer	3.823	0.0	342.0	762	
1440 min Summer	2.809	0.0	375.3	1026	
2160 min Summer	2.060	0.0	416.7	1448	
2880 min Summer	1.652	0.0	445.5	1872	
4320 min Summer	1.209	0.0	488.8	2680	
5760 min Summer	0.968	0.0	522.7	3392	
7200 min Summer	0.815	0.0	549.6	4040	
8640 min Summer	0.707	0.0	572.4	4752	
10080 min Summer	0.628	0.0	592.5	5440	
15 min Winter	69.495	0.0	107.7	19	
30 min Winter	46.054	0.0	142.8	33	
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Northwest House Servia Hill Leeds LS6 2QH	Catherines Walk Barnsley	
Date 23/11/2017 4:28pm File catherine walk lin30.srcx	Designed by PSC Checked by WMW	
Elstree Computing Ltd		Source Control 2017.1.2

Summary of Results for 30 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	8.714	0.814	2.9	176.4	O K
120 min Winter	8.875	0.975	2.9	211.1	O K
180 min Winter	8.959	1.059	2.9	229.5	O K
240 min Winter	9.010	1.110	2.9	240.5	O K
360 min Winter	9.066	1.166	3.0	252.5	O K
480 min Winter	9.091	1.191	3.0	257.9	O K
600 min Winter	9.098	1.198	3.0	259.4	O K
720 min Winter	9.094	1.194	3.0	258.6	O K
960 min Winter	9.068	1.168	3.0	253.0	O K
1440 min Winter	9.014	1.114	2.9	241.3	O K
2160 min Winter	8.914	1.014	2.9	219.6	O K
2880 min Winter	8.808	0.908	2.9	196.7	O K
4320 min Winter	8.563	0.663	2.9	143.6	O K
5760 min Winter	8.339	0.439	2.9	95.1	O K
7200 min Winter	8.194	0.294	2.9	63.6	O K
8640 min Winter	8.104	0.204	2.8	44.1	O K
10080 min Winter	8.050	0.150	2.6	32.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	29.238	0.0	183.4	62
120 min Winter	18.026	0.0	226.1	122
180 min Winter	13.436	0.0	252.8	180
240 min Winter	10.855	0.0	272.3	238
360 min Winter	8.011	0.0	301.4	352
480 min Winter	6.455	0.0	323.7	466
600 min Winter	5.457	0.0	341.9	576
720 min Winter	4.755	0.0	357.3	684
960 min Winter	3.823	0.0	382.4	866
1440 min Winter	2.809	0.0	417.2	1096
2160 min Winter	2.060	0.0	466.7	1560
2880 min Winter	1.652	0.0	499.0	2020
4320 min Winter	1.209	0.0	547.6	2892
5760 min Winter	0.968	0.0	585.4	3520
7200 min Winter	0.815	0.0	615.6	4176
8640 min Winter	0.707	0.0	641.2	4760
10080 min Winter	0.628	0.0	663.8	5440

ARP Associates		Page 3
Northwest House Servia Hill Leeds LS6 2QH	Catherines Walk Barnsley	
Date 23/11/2017 4:28pm File catherine walk lin30.srcx	Designed by PSC Checked by WMW	
Elstree Computing Ltd		Source Control 2017.1.2

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Shortest Storm (mins)	15
Ratio R	0.360	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.750

Time (mins)	Area
From:	To: (ha)
0	4 0.750

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Northwest House Servia Hill Leeds LS6 2QH	Catherines Walk Barnsley	
Date 23/11/2017 4:28pm File catherine walk lin30.srcx	Designed by PSC Checked by WMW	
Elstree Computing Ltd		Source Control 2017.1.2

Model Details

Storage is Online Cover Level (m) 10.000

Tank or Pond Structure

Invert Level (m) 7.900

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	216.6	0.700	216.6	1.400	216.6	2.100	216.6
0.100	216.6	0.800	216.6	1.500	216.6	2.200	216.6
0.200	216.6	0.900	216.6	1.600	216.6	2.300	216.6
0.300	216.6	1.000	216.6	1.700	216.6	2.400	216.6
0.400	216.6	1.100	216.6	1.800	216.6	2.500	216.6
0.500	216.6	1.200	216.6	1.900	216.6		
0.600	216.6	1.300	216.6	2.000	216.6		

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0079-3000-1200-3000
Design Head (m)	1.200
Design Flow (l/s)	3.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	79
Invert Level (m)	7.900
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	3.0
Flush-Flo™	0.348	2.9
Kick-Flo®	0.707	2.4
Mean Flow over Head Range	-	2.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.3	1.200	3.0	3.000	4.6	7.000	6.8
0.200	2.8	1.400	3.2	3.500	4.9	7.500	7.0
0.300	2.9	1.600	3.4	4.000	5.2	8.000	7.3
0.400	2.9	1.800	3.6	4.500	5.5	8.500	7.5
0.500	2.8	2.000	3.8	5.000	5.8	9.000	7.7
0.600	2.7	2.200	4.0	5.500	6.1	9.500	7.9
0.800	2.5	2.400	4.1	6.000	6.3		
1.000	2.8	2.600	4.3	6.500	6.6		

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Northwest House Servia Hill Leeds LS6 2QH		Catherines Walk Barnsley			
Date 23/11/2017 4:32pm File catherine walk lin100 p...		Designed by PSC Checked by WMW			
Elstree Computing Ltd		Source Control 2017.1.2			
<u>Summary of Results for 100 year Return Period (+30%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	8.285	0.385	2.9	162.2	O K
30 min Summer	8.413	0.513	2.9	215.9	O K
60 min Summer	8.548	0.648	2.9	273.0	O K
120 min Summer	8.687	0.787	2.9	331.4	O K
180 min Summer	8.762	0.862	2.9	363.2	O K
240 min Summer	8.810	0.910	2.9	383.2	O K
360 min Summer	8.868	0.968	2.9	407.9	O K
480 min Summer	8.904	1.004	2.9	422.8	O K
600 min Summer	8.925	1.025	2.9	431.6	O K
720 min Summer	8.936	1.036	2.9	436.5	O K
960 min Summer	8.942	1.042	2.9	438.7	O K
1440 min Summer	8.919	1.019	2.9	429.4	O K
2160 min Summer	8.878	0.978	2.9	411.8	O K
2880 min Summer	8.834	0.934	2.9	393.5	O K
4320 min Summer	8.748	0.848	2.9	357.4	O K
5760 min Summer	8.663	0.763	2.9	321.5	O K
7200 min Summer	8.566	0.666	2.9	280.4	O K
8640 min Summer	8.475	0.575	2.9	242.3	O K
10080 min Summer	8.400	0.500	2.9	210.5	O K
15 min Winter	8.332	0.432	2.9	181.9	O K
30 min Winter	8.475	0.575	2.9	242.2	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
15 min Summer	116.878	0.0	156.1	19	
30 min Summer	78.200	0.0	205.6	34	
60 min Summer	49.937	0.0	276.8	64	
120 min Summer	30.810	0.0	340.6	124	
180 min Summer	22.897	0.0	378.2	184	
240 min Summer	18.424	0.0	403.7	242	
360 min Summer	13.506	0.0	436.3	362	
480 min Summer	10.835	0.0	449.9	482	
600 min Summer	9.126	0.0	450.6	602	
720 min Summer	7.927	0.0	448.2	722	
960 min Summer	6.342	0.0	440.4	960	
1440 min Summer	4.622	0.0	422.4	1254	
2160 min Summer	3.362	0.0	676.7	1640	
2880 min Summer	2.679	0.0	717.3	2044	
4320 min Summer	1.942	0.0	757.8	2856	
5760 min Summer	1.544	0.0	832.6	3696	
7200 min Summer	1.291	0.0	870.3	4472	
8640 min Summer	1.116	0.0	901.8	5192	
10080 min Summer	0.987	0.0	929.2	5944	
15 min Winter	116.878	0.0	174.3	19	
30 min Winter	78.200	0.0	225.2	33	
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Northwest House Servia Hill Leeds LS6 2QH		Catherines Walk Barnsley			
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Elstree Computing Ltd		Source Control 2017.1.2			
<u>Summary of Results for 100 year Return Period (+30%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	8.628	0.728	2.9	306.8	O K
120 min Winter	8.785	0.885	2.9	372.6	O K
180 min Winter	8.871	0.971	2.9	408.9	O K
240 min Winter	8.926	1.026	2.9	432.0	O K
360 min Winter	8.995	1.095	2.9	461.2	O K
480 min Winter	9.038	1.138	2.9	479.5	O K
600 min Winter	9.066	1.166	3.0	491.0	O K
720 min Winter	9.083	1.183	3.0	498.2	O K
960 min Winter	9.097	1.197	3.0	504.1	O K
1440 min Winter	9.082	1.182	3.0	497.9	O K
2160 min Winter	9.027	1.127	2.9	474.6	O K
2880 min Winter	8.971	1.071	2.9	451.0	O K
4320 min Winter	8.849	0.949	2.9	399.7	O K
5760 min Winter	8.724	0.824	2.9	347.1	O K
7200 min Winter	8.579	0.679	2.9	286.1	O K
8640 min Winter	8.437	0.537	2.9	226.3	O K
10080 min Winter	8.329	0.429	2.9	180.7	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
60 min Winter	49.937	0.0	309.7	64	
120 min Winter	30.810	0.0	380.0	122	
180 min Winter	22.897	0.0	419.7	180	
240 min Winter	18.424	0.0	443.4	240	
360 min Winter	13.506	0.0	458.3	356	
480 min Winter	10.835	0.0	458.3	474	
600 min Winter	9.126	0.0	455.7	590	
720 min Winter	7.927	0.0	452.5	702	
960 min Winter	6.342	0.0	446.0	930	
1440 min Winter	4.622	0.0	434.4	1358	
2160 min Winter	3.362	0.0	756.9	1712	
2880 min Winter	2.679	0.0	800.3	2164	
4320 min Winter	1.942	0.0	797.8	3112	
5760 min Winter	1.544	0.0	932.5	4032	
7200 min Winter	1.291	0.0	974.8	4896	
8640 min Winter	1.116	0.0	1010.2	5536	
10080 min Winter	0.987	0.0	1041.3	6248	
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Northwest House Servia Hill Leeds LS6 2QH	Catherines Walk Barnsley	
Date 23/11/2017 4:32pm File catherine walk lin100 p...	Designed by PSC Checked by WMW	
Elstree Computing Ltd		Source Control 2017.1.2

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Shortest Storm (mins)	15
Ratio R	0.360	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time Area Diagram

Total Area (ha) 0.750

Time (mins)		Area
From:	To:	(ha)
0	4	0.750

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Northwest House Servia Hill Leeds LS6 2QH	Catherines Walk Barnsley	
Date 23/11/2017 4:32pm File catherine walk lin100 p...	Designed by PSC Checked by WMW	
Elstree Computing Ltd		
Source Control 2017.1.2		

Model Details

Storage is Online Cover Level (m) 10.000

Tank or Pond Structure

Invert Level (m) 7.900

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	421.2	0.700	421.2	1.400	421.2	2.100	421.2
0.100	421.2	0.800	421.2	1.500	421.2	2.200	421.2
0.200	421.2	0.900	421.2	1.600	421.2	2.300	421.2
0.300	421.2	1.000	421.2	1.700	421.2	2.400	421.2
0.400	421.2	1.100	421.2	1.800	421.2	2.500	421.2
0.500	421.2	1.200	421.2	1.900	421.2		
0.600	421.2	1.300	421.2	2.000	421.2		

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0079-3000-1200-3000
Design Head (m)	1.200
Design Flow (l/s)	3.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	79
Invert Level (m)	7.900
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	3.0
Flush-Flo™	0.348	2.9
Kick-Flo®	0.707	2.4
Mean Flow over Head Range	-	2.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.3	1.200	3.0	3.000	4.6	7.000	6.8
0.200	2.8	1.400	3.2	3.500	4.9	7.500	7.0
0.300	2.9	1.600	3.4	4.000	5.2	8.000	7.3
0.400	2.9	1.800	3.6	4.500	5.5	8.500	7.5
0.500	2.8	2.000	3.8	5.000	5.8	9.000	7.7
0.600	2.7	2.200	4.0	5.500	6.1	9.500	7.9
0.800	2.5	2.400	4.1	6.000	6.3		
1.000	2.8	2.600	4.3	6.500	6.6		