AITKEN LABORATORIES LTD

Laboratory Test Results

Site : WESTQUARTER AVENUE, FALKIRK

Client :

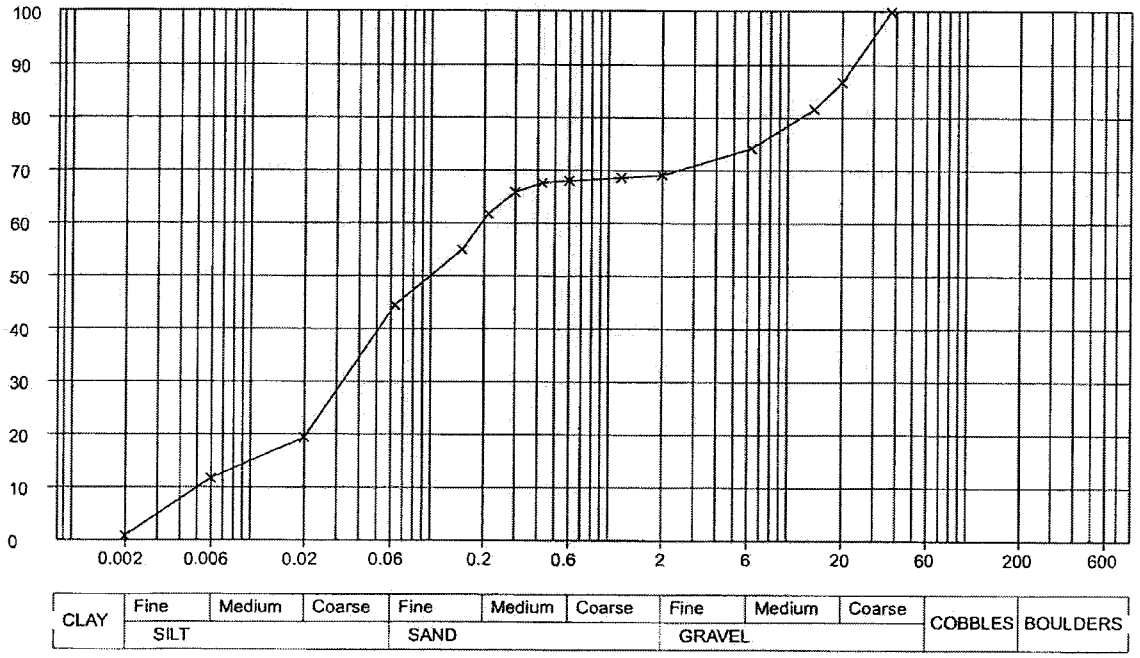
Engineer: SCOTT BENNETT ASSOCIATES LIMITED

Job Number: J725

Sheet: 1/2

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Description
BH1	2.00	B	



Sieve / Particle Size	% Passing
37.5 mm	100.0
20 mm	86.7
14 mm	81.6
6.3 mm	74.2
2 mm	69.1
1.18 mm	68.6
600 µm	68.0
425 µm	67.6
300 µm	65.8
212 µm	61.7
150 µm	54.9
63 µm	44.4
20 µm	19.4
6 µm	11.7
2 µm	0.8

Grading Analysis	
D85	17.8 mm
D60	194.4 µm
D10	5.1 µm
Uniformity Coefficient	38.5

Particle Proportions	
Cobbles + Boulders	-
Gravel	30.9%
Sand	25.8%
Silt	42.5%
Clay	0.8%

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 1990:7.4.5 Particle size tests

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

AITKEN LABORATORIES LTD

Laboratory Test Results

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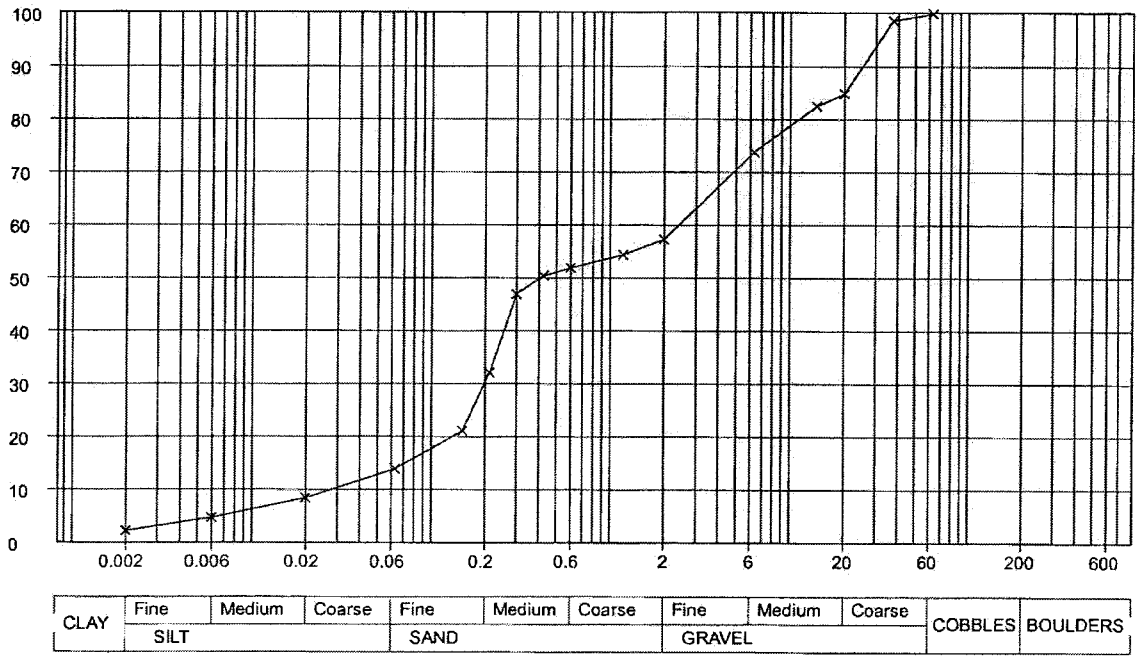
Job Number: J725

Sheet: 2/2

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Description
BH2A	1.00	T	



Sieve / Particle Size	% Passing
63 mm	100.0
37.5 mm	98.7
20 mm	84.9
14 mm	82.5
6.3 mm	73.8
2 mm	57.3
1.18 mm	54.4
600 µm	51.9
425 µm	50.4
300 µm	46.9
212 µm	32.1
150 µm	21.1
63 µm	13.9
20 µm	8.4
6 µm	4.7
2 µm	2.2

Grading Analysis	
D85	20.1 mm
D60	2.4 mm
D10	27.9 µm
Uniformity Coefficient	86.4

Particle Proportions	
Cobbles + Boulders	0.1%
Gravel	42.6%
Sand	43.6%
Silt	11.5%
Clay	2.2%

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 1990:7.4.5 Particle size tests

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

Appendix G

Chemical Analysis Results

Chemical Analysis Results (Soil)

Derwentside Environmental Testing Services

Certificate of Analysis

Certificate Number 14-02871

17-Apr-14

Client Aitken Laboratories Ltd
Casterhill House
Bank Street
Slamannan
FK1 3EZ

Our Reference 14-02871

Client Reference J725

Contract Title Westquarter Avenue, Falkirk

Description 4 Soil samples, 4 Leachate samples.

Date Received 03-Apr-14

Date Started 03-Apr-14

Date Completed 17-Apr-14

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the scope of UKAS accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Mark Hughes
Operations Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 14-02871
Client Ref J725
Contract Title Westquarter Avenue, Falkirk

	Lab No	629067	629068	629069	629070
	Sample ID	TP01	TP02	TP03	TP04
	Depth	0.50	0.50	1.00	0.50
	Other ID				
	Sample Type	SOIL	SOIL	SOIL	SOIL
	Sampling Date	21/03/14	21/03/14	21/03/14	21/03/14
	Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
Preparation							
Moisture Content	DETSC 1004*	0.1	%	14	16	13	10
Metals							
Arsenic	DETSC 2301#	0.2	mg/kg	7.9	4.0	4.5	3.9
Boron (water soluble)	DETSC 2123#	0.2	mg/kg	1.6	1.6	2.0	1.7
Cadmium	DETSC 2301#	0.1	mg/kg	0.5	0.8	0.6	0.9
Chromium	DETSC 2301#	0.15	mg/kg	11	14	14	19
Copper	DETSC 2301#	0.2	mg/kg	9.8	21	19	15
Lead	DETSC 2301#	0.3	mg/kg	61	71	160	14
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.52	0.64	< 0.05
Nickel	DETSC 2301#	1	mg/kg	13	23	15	21
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	41	80	75	86
Inorganics							
Conductivity	DETSC 2009	1	uS/cm	150	150	420	140
pH	DETSC 2008#			9.3	7.2	9.4	7.6
Cyanide total	DETSC 2130#	0.1	mg/kg	< 0.1	0.2	< 0.1	< 0.1
Organic matter	DETSC 2002#	0.1	%	1.3	4.7	1.5	2.0
Redox Potential	DETS 058*	-500	mV	150	160	130	-250
Sulphide	DETSC 2024#	10	mg/kg	< 10	< 10	< 10	< 10
Total Sulphate as SO4	DETSC 2321#	0.01	%	0.07	0.04	0.14	0.02

Derwentside Environmental Testing Services

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			Lab No	629067	629068	629069	629070
			Sample ID	TP01	TP02	TP03	TP04
			Depth	0.50	0.50	1.00	0.50
			Other ID				
			Sample Type	SOIL	SOIL	SOIL	SOIL
			Sampling Date	21/03/14	21/03/14	21/03/14	21/03/14
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Petroleum Hydrocarbons							
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	0.26	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	0.85	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	0.33	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	1.8	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	17	< 1.4	7.1	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	17	< 10	< 10	< 10
TPH Ali/Aro	DETSC 3072*	10	mg/kg	18	< 10	< 10	< 10
C5-C10 Gasoline Range Organics (GRO)	DETSC 3321*	0.1	mg/kg	1.5	< 0.1	< 0.1	< 0.1
C10-C24 Diesel Range Organics (DRO)	DETSC 3311#	10	mg/kg	22	20	19	22
C24-C40 Lube Oil Range Organics (LORO)	DETSC 3311#	10	mg/kg	33	21	35	12
EPH (C11-C20)	DETSC 3311	10	mg/kg	14	13	11	15
EPH (C20-C40)	DETSC 3311	10	mg/kg	41	28	43	19

Key: * -not accredited. # -MCERTS (accreditation only implied if report carries the MCERTS logo). n/s -not supplied.

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Soil Samples

Our Ref 14-02871
Client Ref J725
Contract Title Westquarter Avenue, Falkirk

			Lab No	629067	629068	629069	629070
			Sample ID	TP01	TP02	TP03	TP04
			Depth	0.50	0.50	1.00	0.50
			Other ID				
			Sample Type	SOIL	SOIL	SOIL	SOIL
			Sampling Date	21/03/14	21/03/14	21/03/14	21/03/14
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
PAHs							
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
PAH	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6
Phenols							
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only implied if report carries the MCERTS logo). n/s -not supplied.

Derwentside Environmental Testing Services

Summary of Chemical Analysis
Soil Samples

Our Ref 14-02871
Client Ref J725
Contract Title Westquarter Avenue, Falkirk

			Lab No	629067	629068	629069	629070
			Sample ID	TP01	TP02	TP03	TP04
			Depth	0.50	0.50	1.00	0.50
			Other ID				
			Sample Type	SOIL	SOIL	SOIL	SOIL
			Sampling Date	21/03/14	21/03/14	21/03/14	21/03/14
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
VOCs							
Vinyl Chloride	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Carbon tetrachloride	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Trichloroethylene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
m+p-Xylene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
o-Xylene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Bromoform	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Bromobenzene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01

Summary of Chemical Analysis
Soil Samples

Our Ref 14-02871
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			Lab No	629067	629068	629069	629070
			Sample ID	TP01	TP02	TP03	TP04
			Depth	0.50	0.50	1.00	0.50
			Other ID				
			Sample Type	SOIL	SOIL	SOIL	SOIL
			Sampling Date	21/03/14	21/03/14	21/03/14	21/03/14
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
sec-butylbenzene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
MBTE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
SVOCs							
Phenol	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aniline	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Chlorophenol	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzyl Alcohol	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
3&4-Methylphenol	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dimethylphenol	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dichlorophenol	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylnaphthalene	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorocyclopentadiene	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Nitroaniline	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dinitrotoluene	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
3-Nitroaniline	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4-Nitrophenol	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzofuran	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Diethylphthalate	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4-Chlorophenylphenylether	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4-Nitroaniline	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Diphenylamine	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4-Bromophenylphenylether	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1

Summary of Chemical Analysis
Soil Samples

Our Ref 14-02871
Client Ref J725
Contract Title Westquarter Avenue, Falkirk

			Lab No	629067	629068	629069	629070
			Sample ID	TP01	TP02	TP03	TP04
			Depth	0.50	0.50	1.00	0.50
			Other ID				
			Sample Type	SOIL	SOIL	SOIL	SOIL
			Sampling Date	21/03/14	21/03/14	21/03/14	21/03/14
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Hexachlorobenzene	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Pentachlorophenol	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Di-n-butylphthalate	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Butylbenzylphthalate	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-ethylhexyl)phthalate	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Di-n-octylphthalate	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dinitrobenzene	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dinitrobenzene	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dinitrobenzene	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Azobenzene	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Carbazole	DETS 071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
VOC TICs							
2-Ethoxyethylamine (TIC)	DETSC 3431*		mg/kg		2.583		2.756

Key: * -not accredited. # -MCERTS (accreditation only implied if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 14-02871
Client Ref J725
Contract Title Westquarter Avenue, Falkirk

			Lab No	629067	629068	629069	629070
			Sample ID	TP01	TP02	TP03	TP04
			Depth	0.50	0.50	1.00	0.50
			Other ID				
			Sample Type	SOIL	SOIL	SOIL	SOIL
			Sampling Date	21/03/14	21/03/14	21/03/14	21/03/14
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Conductivity	DETSC 2009	1	uS/cm	150	150	420	140
pH	DETSC 2008#			9.3	7.2	9.4	7.6
Redox Potential	DETS 058*	-500	mV	150	160	130	-250
EPH (C11-C20)	DETSC 3311	10	mg/kg	14	13	11	15
EPH (C20-C40)	DETSC 3311	10	mg/kg	41	28	43	19
Total VOC's	DETSC3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
BTEX + MTBE	DETSC3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Total SVOC's	DETSC3431*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Phenol	DETSC071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Cresols and Chlorinated Phenols	DETSC071*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
TIC's to include Ethers, Ketones, Aldehydes and Amines	DETSC3431*			None Detected	None Detected	None Detected	None Detected

Key: * -not accredited. # -MCERTS (accreditation only implied if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 14-02871
Client Ref J725
Contract Title Westquarter Avenue, Falkirk

	Lab No	629071	629072	629073	629074
	Sample ID	TP01	TP02	TP03	TP04
	Depth	0.50	0.50	1.00	0.50
	Other ID				
	Sample Type	LEACHATE	LEACHATE	LEACHATE	LEACHATE
	Sampling Date	21/03/14	21/03/14	21/03/14	21/03/14
	Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Preparation					
NRA Leachate Preparation	DETS 036*			Y	Y	Y	Y
Metals					
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	2.6	0.16	0.96	< 0.16
Boron	DETSC 2123	100	ug/l	300	250	300	510
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03
Calcium, Dissolved	DETSC 2306	0.09	mg/l	10	0.76	5.4	0.63
Chromium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	< 0.25	< 0.25	< 0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	< 0.4	< 0.4	0.4	< 0.4
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.15	< 0.09	0.45	< 0.09
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.30	< 0.25	0.54	< 0.25
Zinc, Dissolved	DETSC 2306	1.25	ug/l	3.30	< 1.25	< 1.25	< 1.25
Inorganics					
pH	DETSC 2008			7.6	7.9	7.7	8.0
Cyanide total	DETSC 2130	40	ug/l	< 40	< 40	< 40	< 40
Hardness	DETSC 2303*	0.1	mg/l	27.5	2.35	14.6	1.91
Sulphate as SO4	DETSC 2055	0.1	mg/l	1.5	1.6	11	1.8
Sulphide	DETSC 2208	10	ug/l	10	10	10	10
Phenols					
Phenol	*	0.5	ug/l	< 0.50	< 0.50	< 0.50	< 0.50

Key: * -not accredited. n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 14-02871
Client Ref J725
Contract Westquarter Avenue, Falkirk

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
629067	TP01 0.50 SOIL	21/03/14	GJ 1L (1L), GV (40ml), PT 1L (1kg)	pH (7 days)	
629068	TP02 0.50 SOIL	21/03/14	GJ 1L (1L), GV (40ml), PT 1L (1kg)	pH (7 days)	
629069	TP03 1.00 SOIL	21/03/14	GJ 1L (1L), GV (40ml), PT 1L (1kg)	pH (7 days)	
629070	TP04 0.50 SOIL	21/03/14	GJ 1L (1L), GV (40ml), PT 1L (1kg)	pH (7 days)	
629071	TP01 0.50 LEACHATE	21/03/14	GJ 1L (1L)		
629072	TP02 0.50 LEACHATE	21/03/14	GJ 1L (1L)		
629073	TP03 1.00 LEACHATE	21/03/14	GJ 1L (1L)		
629074	TP04 0.50 LEACHATE	21/03/14	GJ 1L (1L)		

Key: G-Glass P-Plastic J-Jar V-Vial T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time and/or inappropriate containers are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix H

Risk Assessment Input Parameters and Screening Guidelines

Standard Risk Assessment Criteria Sheets

Scott Bennett Associates

Scott Bennett Associates (Group 1) Limited
No.19 South Castle Drive, Carnegie Campus, Dunfermline KY11 8PD
T: +44 (0)1383 627537 F: +44 (0)1383 627538
E: enquiries@sbascotland.com W: www.sbascotland.com

SBA Human Health Soil Assessment Criteria

Contaminant	Unit	Residential with plant uptake	Allotment	Commercial	Criteria Source
Arsenic	mg/kg	32	43	640	SGV 2009
Beryllium	mg/kg	51	55	420	LQM-CIEH (2nd Ed) 2009
Boron	mg/kg	291	45	192000	LQM-CIEH (2nd Ed) 2009
Cadmium	mg/kg	10	1.8	230	SGV 2009 (LQM-CIEH 2009 in brackets)
Chromium III	mg/kg	627	15300	8840	LQM-CIEH (2nd Ed) 2009
Chromium VI	mg/kg	4.3	2.1	35	LQM-CIEH (2nd Ed) 2009
Copper	mg/kg	2330	524	71700	LQM-CIEH (2nd Ed) 2009
Lead	mg/kg	450	450	750	SGV 2002
Mercury	mg/kg	170	80	3600	SGV 2009
Nickel	mg/kg	130	230	1800	SGV 2009
Selenium	mg/kg	350	120	13000	SGV 2009
Vanadium	mg/kg	75	18	3160	LQM-CIEH (2nd Ed) 2009
Zinc	mg/kg	3750	618	665000	LQM-CIEH (2nd Ed) 2009
Phenol	mg/kg	420	280	3200	SGV 2009
Acenaphthene	mg/kg	1000	200	100000	LQM-CIEH (2nd Ed) 2009
Acenaphthylene	mg/kg	850	160	100000	LQM-CIEH (2nd Ed) 2009
Anthracene	mg/kg	9200	2200	540000	LQM-CIEH (2nd Ed) 2009
Benzo(a)anthracene	mg/kg	5.9	10	97	LQM-CIEH (2nd Ed) 2009
Benzo(a)pyrene	mg/kg	1	2.1	14	LQM-CIEH (2nd Ed) 2009
Benzo(b)fluoranthene	mg/kg	7	13	100	LQM-CIEH (2nd Ed) 2009
Benzo(g,h,i)perylene	mg/kg	47	160	660	LQM-CIEH (2nd Ed) 2009
Benzo(k)fluoranthene	mg/kg	10	23	140	LQM-CIEH (2nd Ed) 2009
Chrysene	mg/kg	9.3	12	140	LQM-CIEH (2nd Ed) 2009
Dibenzo(a,h)anthracene	mg/kg	0.9	2.3	13	LQM-CIEH (2nd Ed) 2009
Fluoranthrene	mg/kg	670	290	23000	LQM-CIEH (2nd Ed) 2009
Fluorene	mg/kg	780	160	71000	LQM-CIEH (2nd Ed) 2009
Indeno(1,2,3,c,d)pyrene	mg/kg	4.2	7.1	62	LQM-CIEH (2nd Ed) 2009
Naphthalene	mg/kg	8.7	23	1100 (432 sol)	LQM-CIEH (2nd Ed) 2009
Phenanthrene	mg/kg	380	90	23000	LQM-CIEH (2nd Ed) 2009
Pyrene	mg/kg	1600	620	54000	LQM-CIEH (2nd Ed) 2009
Benzene	mg/kg	0.33	0.07	95	SGV 2009
Toluene	mg/kg	610	120	4400	SGV 2009
Ethylbenzene	mg/kg	350	90	2800	SGV 2009
Xylenes	mg/kg	230	160	2600	SGV 2009
TPH C5-C6 (Aliphatic)	mg/kg	110	3900	13000 (1150 sol)	LQM-CIEH (2nd Ed) 2009
TPH C6-C8 (Aliphatic)	mg/kg	370	13000	42000 (736 sol)	LQM-CIEH (2nd Ed) 2009
TPH C8-C10 (Aliphatic)	mg/kg	110	1700	12000 (451 vap)	LQM-CIEH (2nd Ed) 2009
TPH C10-C12 (Aliphatic)	mg/kg	540 (238 vap)	7300	49000 (283 vap)	LQM-CIEH (2nd Ed) 2009
TPH C12-C16 (Aliphatic)	mg/kg	3000 (142 sol)	13000	91000 (142sol)	LQM-CIEH (2nd Ed) 2009
TPH C16-C21 (Aliphatic)	mg/kg	76000	270000	1800000	LQM-CIEH (2nd Ed) 2009
TPH C21-C35 (Aliphatic)	mg/kg	76000	270000	1800000	LQM-CIEH (2nd Ed) 2009
TPH C35-C44 (Aliphatic)	mg/kg	76000	270000	1800000	LQM-CIEH (2nd Ed) 2009
TPH C6-C7 (Aromatic)	mg/kg	280	57	90000 (4710 sol)	LQM-CIEH (2nd Ed) 2009
TPH C7-C8 (Aromatic)	mg/kg	611	120	190000 (4360 vap)	LQM-CIEH (2nd Ed) 2009
TPH C8-C10 (Aromatic)	mg/kg	151	51	18000 (3580 vap)	LQM-CIEH (2nd Ed) 2009
TPH C10-C12 (Aromatic)	mg/kg	346	74	34500 (2150 sol)	LQM-CIEH (2nd Ed) 2009
TPH C12-C16 (Aromatic)	mg/kg	593	130	37800	LQM-CIEH (2nd Ed) 2009
TPH C16-C21 (Aromatic)	mg/kg	770	260	28000	LQM-CIEH (2nd Ed) 2009
TPH C21-C35 (Aromatic)	mg/kg	1230	1600	28000	LQM-CIEH (2nd Ed) 2009
TPH C35-C44 (Aromatic)	mg/kg	1230	1600	28000	LQM-CIEH (2nd Ed) 2009
TPH C44-C70 (Ali & Aro	mg/kg	1300	3000	28000	LQM-CIEH (2nd Ed) 2009
PCB (7 Congeners)	mg/kg	0.4	NA	9.5	SBA GAC

Note : Human health soil assessment criteria based on soil organic matter=6%, pH=7, sandy loam

SBA Phytotoxicity Soil Assessment Criteria

From Scottish Executive Publication Prevention of Environmental Pollution from Agricultural Activity, A Code of Good Practice, 2005.

Sludge (Use in Agriculture) Regulations 1989, as amended: Maximum permissible concentrations of potentially toxic elements (PTE) in soil (0-25 cm)[1] after application of sewage sludge waste.

Potentially Toxic Element (PTE)	Maximum permissible concentration of PTE in soil (mg/kg dry solids)			
	pH 5.0 – 5.5	pH 5.5-6.0	pH 6.0-7.0	pH >7.0
Zinc	200*	250*	300*	450*
Copper	80 (130)	100 (70)	135 (225)	200
Nickel	50 (80)	60 (100)	75 (125)	110

Potentially Toxic Element (PTE)	Maximum permissible concentration of PTE in soil (mg/kg dry solids) For pH 5.0 and above
Cadmium	3
Lead	300
Mercury	1 (1.5)
Chromium[2]	400 (600)
Molybdenum[2]	4
Selenium[2]	3 (5)
Arsenic[2]	50
Fluoride[2]	500

* The UK Code of Practice for Agricultural Use of Sewage Sludge (amended 1996) set precautionary limits of 200mg/kg for Zn (300 mg/kg pH>7.0) and this has been accepted by the water industry and is recommended

Footnotes

1. The maximum permissible concentration for grassland soils sampled to a depth of 7.5cm is the same except where given in brackets.
2. These are recommended, not regulatory limits.
3. Application of sludge to soils with a pH less than 5.0 is prohibited.

SBA Water Contaminants Assessment Criteria

Contaminants	Units	Scotland Drinking Water Standards	EU Drinking Water Standards	EQS Freshwater	WHO Health	WHO ATO	USEPA	SEPA RPV
Acrylamide	ug/l	0.1	0.1		0.5		TT	
Alachlor	ug/l	0.1	0.1	0.7 (MAC)	20		2	0.1
Aldicarb	ug/l	0.1	0.1		10			
Aldrin	ug/l	0.03	0.03	0.01	0.03			0.03
Alpha/photon emitters	pCi/l						15	
Aluminium	ug/l	200	200	10-25 (MAC)		200		
Ammonia	mg/l			0.015		1.5		0.5
Ammonium	mg/l	0.5	0.5					
Anthracene				0.4 (MAC)				
Antimony	ug/l	5	5		5		6	5
Arsenic	ug/l	10	10	50 (AA)	10		10	10
Asbestos	mg/l						7 MFL	
Atrazine	ug/l	0.1	0.1	2 (MAC)	2		3	0.1
Azinphos-methyl	ug/l	0.1	0.1	0.01 (AA)				
Barium	mg/l	1			0.7		2	0.7
Bentazone	mg/l	0.1	0.1	500 (AA)	0.03			
Benzene	ug/l	1	1	30 (MAC)	10		5	1
Benzo [a] pyrene	ug/l	0.01	0.01		0.7		0.2	0.01
Beryllium	ug/l						4	4
Beta photon emitters	millirems						4	
Biphenyl	ug/l			25 (AA)				
Boron	mg/l	1	1	2 (AA)	0.3			1
Bromate	ug/l	10	10				10	10
Brominated diphenylether				0.5 (AA)				
Bromoxynil	ug/l	0.1	0.1	1000				
Cadmium	ug/l	5		<0.45 -1.5 (MAC)	3		5	5
Calcium	mg/l	250						
Carbofuran	ug/l	0.1	0.1		5		40	7
Carbon tetrachloride	mg/l			12 (AA)			5	3
Chloramines	mg/l						4 MRDL	
Chlordane (all Isomars)	ug/l	0.1	0.1		0.2		2	0.1
Chlorfenvinphos	ug/l	0.1	0.1	0.3 (MAC)				0.1
Chloride	mg/l	250	250	250 (AA)		250		
Chlorine	ug/l			2 (AA)			4 MRDL	
Chlorine Dioxide	mg/l						8 MRDL	
Chlorite	mg/l						1	
Chloroalkanes				1.4 (MAC)				
Chlorobenzene	mg/l						0.1	0.1
Chloroform	ug/l			2.5 (AA)	200			
Chloroform extractable substances	ug/l	1000						
Chlorphenylid	ug/l	0.1	0.1	0.05				
Chloronitrotoluenes	ug/l			10 (AA)				
Chlorothalonil	ug/l	0.1	0.1	1 (MAC)				
Chlorpyrifos	mg/l			0.1 (MAC)				0.03
Chlorpropham	ug/l	0.1	0.1	40 (MAC)				
Chlorotoluron	ug/l	0.1	0.1	20 (MAC)	30			300
Chromium	ug/l	50	50	32 (95% ile)	50		100	50
Colour	mg/l	20						
Conductivity	uS/cm	2500						
Copper	ug/l	2000	2000	1 - 28 (AA)	2000	1000	1300 (TT)	
Coumaphos	ug/l	0.1	0.1	0.1 (MAC)				

Contaminants	Units	Scotland Drinking Water Standards	EU Drinking Water Standards	EQS Freshwater	WHO Health	WHO ATO	USEPA	SEPA RPV
Cryptosporidium	mg/l						TT	
Cyanide	ug/l	50	50	5 (95% ile)	70		200	50
Cyfluthrin	ug/l	0.1	0.1	0.001 (95% ile)				
Dalapon	mg/l						0.2	0.1
2,4-dichlorophenoxyacetic acid	ug/l	0.1	0.1	1.3 (95% ile)	30		70	100
Demtons	ug/l	0.1	0.1	0.5 (AA)				
Diazinon	ug/l	0.1	0.1	0.02 (95% ile)				0.1
Dichlorodiphenyltrichloroethane	ug/l			0.025				
Para, para-DDT	ug/l	0.1	0.1	0.1 (AA)	2			
1,2-Dichloroethane (1,2-DCA)	ug/l	3	3	10 (AA)	30		5	30
1,1-Dichloroethene (1,1-DCE)	ug/l				30			7
1,2-Dichloroethene (1,2-DCE)	ug/l				50			
1,1-Dichloroethylene	mg/l						0.007	
cis-1,2-Dichloroethylene	mg/l						0.07	0.007
1,2-dibromoethane	ug/l							0.4
1,2-dibromo-3-chloropropane	ug/l	0.1	0.1		1		0.2	0.6
1,2-Dichlorobenzene	ug/l			∑ = 200 (AA)	1000	1 to 10	75	600
1,2-Dichloropropane	ug/l	0.1	0.1		20		0	5
1,3-Dichloropropene	ug/l	0.1	0.1		20			
1,4-Dichlorobenzene	ug/l				300	0.3 to 30	60	80
Trans-1,2-Dichloroethylene	mg/l						0.1	0.05
Di(2-ethylhexyl)adipate	ug/l				80		0.4	
Di(2-ethylhexyl)phthalate	ug/l			1.3 (AA)	8		6	6
Dichloromethane	ug/l			20 (AA)	20		5	5
Dichlorprop (DCPP)	ug/l	0.1	0.1		100		5	2
Dichlorvos	ug/l	100	100	0.001 (AA)				
Dieldrin	ug/l	0.03	0.03	0.01	0.03			0.3
Dinoseb	ug/l						7	7
Dioxin (2,3,7,8-TCDD)	ug/l						0.00003	0.00003
Diquat	ug/l						20	0.1
Diuron				1.8 (MAC)				
Dimethoate	ug/l	0.1	0.1	4 (95% ile)				6
Drins (total)	ug/l	0.1	0.1	0.03				
Edetic Acid (EDTA)	ug/l			4000 (MAC)	200			
Endothall	mg/l						0.1	
Endosulfan	ng/l	100	100	0.01 (MAC)				
Endrin	ug/l	0.1	0.1	0.005			2	0.6
Epichlorohydrin	ug/l	0.1	0.1		0.4		TT	0.1
Ethylbenzene	ug/l			200 (MAC)	2 to 200		700	300
Ethylene dibromide	ug/l						0.05	0.05
Fecal coliform	mg/l						MCL	
Fenchlorphos	ug/l	0.1	0.1	0.1 (MAC				
Fenoprop	ug/l	0.1	0.1		9			
Fenitrothion	ug/l	0.1	0.1	0.01 (AA)				0.1
Fenithion	ug/l							0.1
Flucofuron	ug/l	0.1	0.1	1 (95% ile)				
Fluoranthene				1 (MAC)				
Fluoride	ug/l	1500	1500	3000-15000 (MAC)			4000	1500
Formaldehyde	ug/l	0.1	0.1	50 (MAC)	900			
Giardia lamblia	mg/l						TT	
Glyphosate	mg/l						0.7	0.1
Haloacetic Acids	mg/l						0.06	
Heptachlor	ug/l	0.03	0.03		0.03		0.4	0.03
Heptachlor epoxide	ug/l						0.2	0.03
Hexachlorobenzene	ug/l	0.1	0.1	0.05 (AA)	1		1	0.1
Hexachlorobutadiene	ug/l			0.6 (MAC)	0.6			0.6
Hexachlorocyclohexane (lindane)	ug/l	0.1	0.1	0.04 (MAC)	2			0.1

Contaminants	Units	Scotland Drinking Water Standards	EU Drinking Water Standards	EQS Freshwater	WHO Health	WHO ATO	USEPA	SEPA RPV
Hexachlorocyclopentadiene	mg/l						0.05	
Hydrocarbons (dissolved/emulsions)	ug/l	10						
Hydrogen ion	pH value	6.5-9.5						
Hydrogen sulphide (H2S as S)	ug/l			1 (MAC)				
Ioxynil	ug/l	0.1	0.1	100 (MAC)				
Iron	mg/l	0.2	0.2	1 (AA)	0.3			200
Isodrin	ug/l	0.1	0.1					
Isoproturon	ug/l	0.1	0.1	1.0 (MAC)	9			
Lead (inorganic - dissolved)	ug/l	25 (10 from 25/12/13)	10	7.2 (AA)	10		15	25
Legionella	mg/l						TT	
Lindane	mg/l						0.0002	
Linuron	ug/l	0.1	0.1	0.9 (95% ile)				
Magnesium	mg/l	50						
Malachite Green	ug/l			100 (MAC)				
Malathion	ug/l	0.1	0.1	0.01 (AA)				0.1
Manganese	ug/l	50	50	300 (MAC)	500	100		50
MCPA	ug/l	0.1	0.1	120-800 (MAC)	2			
Mecoprop (MCPP)	ug/l	0.1	0.1	187 (95% ile)	10			0.1
Mercury	ug/l	1	1	0.07 (MAC)	1		2	1
Methylbenzene	ug/l							
Methoxychlor	ug/l	0.1	0.1		20		40	0.1
Metolachlor	ug/l	0.1	0.1		10			
Mevinphos	ug/l			0.02 (MAC)				0.1
Molinate	ug/l	0.1	0.1		6			
Molybdenum	ug/l				70			
Monochlorobenzene	ug/l				300	10 to 120		
Napthalene	ug/l			2.4 (AA)				
Nickel	ug/l	20	20	20 (AA)	20			20
Nitrate (as NO3)	mg/l	50	50		50		10	50
Nitrite (as NO2)	ug/l	100	500		3		1000	500
Nitriloacetic acid	ug/l			10000 (MAC)	200			
Nonylphenol				2.0 (MAC)				
Octylphenol				0.1 (AA)				
Oils/hydrocarbons	ug/l	10						
Omethoate	ug/l	0.1	0.1	0.01 (AA)				
Oxyamyl (Vydate)	ug/l						200	0.1
Parathion	ug/l							0.1
Parathion Methyl	ug/l							0.1
Polycyclic Aromatic (PAH) Hydrocarbons	ug/l	0.1	0.1					0.1
Polychlorinated biphenyls (PCBs)	ug/l						0.5	0.5
Pendimethalin	ug/l	0.1	0.1	6 (MAC)	20			
Pentachlorobenzene				0.007 (AA)				
Pentachlorophenol	ug/l	0.1	0.1	1 (MAC)	9		1	0.1
Permethrin	ug/l	0.1	0.1	0.01 (95% ile)	20			0.1
Pesticides (individual species, unless specified)	ug/l	0.030-0.10	0.1	∑=0.01 (AA)				
Pesticides (total)	ug/l	0.5	0.5					0.5
Phenol	ug/l	0.5	0.5	46 (95% ile)				
Picloram	mg/l						0.5	
Pirimicarb	ug/l	0.1	0.1	5 (MAC)				
Phosphorous	ug/l	2200	400					
Potassium	mg/l	12	10					
Propanil	ug/l	0.1	0.1		20			
Propetamphos	ug/l	0.1	0.1	0.1 (MAC)				

Contaminants	Units	Scotland Drinking Water Standards	EU Drinking Water Standards	EQS Freshwater	WHO Health	WHO ATO	USEPA	SEPA RPV
Pryidate	ug/l	0.1	0.1		100			
Radium 226 & 228 (combined)	pCi/l						5	
Selenium	ug/l	10	10		10		50	10
Silver	ug/l	10		0.1 (MAC)				
Simazine	ug/l	0.1	0.1	4 (MAC)	2		4	0.1
Sodium	mg/l	200	200	170		200		
Styrene	ug/l			500 (MAC)	20	4 to 2600	100	20
Sulcofuron	ug/l	0.1	0.1	25 (95% ile)				
Sulphate	mg/l	250	250	400 (AA)		250		
Sulphide	ug/l			0.25				
Surfactants	ug/l	200						
2,4,5-trichlorophenoxyacetic acid (2,4,5-T)	ug/l	0.1	0.1		9		50	9
Tecnazene	ug/l			10 (MAC)				
Tetrachloroethene (PCE)	ug/l	10	10	10 (AA)	40		0	10
Tetrachloromethane (PCM, carbon tetrachloride)	ug/l	3		2.5 (AA)	2			
Thaibendazole	ug/l	0.1	0.1	50 (MAC)				
Thallium	ug/l						0.5	2
Tin (inorganic)	ug/l			25 (AA)				
Toluene	ug/l			380 (95% ile)	700	24 to 170	1000	700
Toxaphene	mg/l						3	
Triazophos	ug/l	0.1	0.1	0.005 (AA)				
Tributylin (oxide)	ug/l			0.0015 (MAC)	0.02			
1,1,1-Trichloroethane (1,1,1-TCA)	ug/l			100 (AA)			200	200
1,1,2-Trichloroethane (1,1,2-TCA)	ug/l			400 (AA)			5	5
Trichloroethene (TCE)	ug/l	10	10	10 (AA)	70		5	10
Triclorobenzenes (total)	ug/l			0.4 (AA)	20	5 to 50	70	700
2,4,6-Trichlorophenol	ug/l							200
Trihalomethanes (total)	ug/l	100	100				80	
Trifluralin	ug/l	0.1	0.1	0.03 (AA)	20			
Triphenyltin	ug/l			0.02 (AA)				
Uranium	ug/l						30	
Vanadium	ug/l			20-60 (AA)				
Vinyl chloride (chloroethene)	ug/l	0.5	0.5		5		2	0.5
Xylene	ug/l			30(AA)	500	20 to 1800	10000	500
Zinc	ug/l	5000		8-125 (AA)	3000			

pCi/L = Pico Curies per litre
MFL = Million Fibres per litre
MAC = Maximum Acceptable Concentratio
MRDL = Maximum Residual Disinfectant Level

The Water Supply (Water Quality) (Scotland) Regulations 2001

TABLE B - Chemical parameters

Part I: Directive requirements

Item	Parameters	Concentration or Value (maximum)	Units of Measurement	Point of compliance
1.	Acrylamide	0.10	µg/l	**(i)**
2.	Antimony	5.0	µgSb/l	consumers' taps
3.	Arsenic	10	µgAs/l	consumers' taps
4.	Benzene	1.0	µg/l	consumers' taps
5.	Benzo(a)pyrene	0.010	µg/l	consumers' taps
6.	Boron	1.0	mgB/l	consumers' taps
7.	Bromate	10	µgBrO_3/l	consumers' taps
8.	Cadmium	5.0	µgCd/l	consumers' taps
9.	Chromium	50	µgCr/l	consumers' taps
10.	Copper**(ii)**	2.0	mg Cu/l	consumers' taps
11.	Cyanide	50	µgCN/l	consumers' taps
12.	1, 2 dichloroethane	3.0	µg/l	consumers' taps
13.	Epichlorohydrin	0.10	µg/l	**(i)**
14.	Fluoride	1.5	mg F/l	consumers' taps
15.	Lead	(a) 25 from 25th December 2003 until immediately before 25th December 2013 (b) 10, on and after 25th December 2013	µgPb/l µgPb/l	consumers' taps consumers' taps
16.	Mercury	1.0	µgHg/l	consumers' taps
17.	Nickel **(ii)**	20	µgNi/l	consumers' taps
18.	Nitrate **(iii)**	50	mgNO_3/l	consumers' taps
19.	Nitrite **(iii)**	0.50	mgNO_2/l	consumers' taps
20.	Pesticides **(iv)(v)** aldrin} dieldrin} heptachlor} heptachlor} epoxide} other pesticides	0.030 0.010	µg/l µg/l	consumers' taps consumers' taps
21.	Pesticides: Total **(vi)**	0.50	µg/l	consumers' taps
22.	Polycyclic aromatic hydrocarbons **(vii)**	0.10	µg/l	Consumers' taps
23.	Selenium Sulphate	10 250	µgSe/l µgSe/l	consumers' taps consumers' taps
24.	Tetrachloroethene and Trichloroethene **(viii)**	10	µg/l	consumers' taps
25.	Trihalomethanes: Total **(ix)** Zinc	100 5000	µg/l	consumers' taps Water Supply Regulations 2000
26.	Vinyl chloride	0.50	µg/l	**(i)**

Notes:

(i) The parametric value refers to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water. This is controlled by product specification.

(ii) "The value applies to a sample of water intended for human consumption obtained by an adequate sampling method ["to be added following the outcome of the study currently being carried out"] at the tap and taken so as to be representative of a weekly average volume ingested by consumers. Where appropriate the sampling and monitoring methods must be applied in a harmonised fashion to be drawn up in accordance with Article 7(4). Member States must take account of the occurrence of peak levels that may cause adverse effects on human health."

(iii) See also regulation 4(5).

(iv) See the definition of "pesticides and related products" in regulation 2.

(v) The parametric value applies to each individual pesticide.

(vi) "Pesticides: Total" means the sum of the concentrations of the individual pesticides detected and quantified in the monitoring procedure.

(vii) The specified compounds are:

- benzo(b)fluoranthene
- benzo(k)fluoranthene
- benzo(ghi)perylene
- indeno(1,2,3-cd)pyrene.
-

The parametric value applies to the sum of the concentrations of the individual compounds detected and quantified in the monitoring process.

(viii) The parametric value applies to the sum of the concentrations of the individual compounds detected and quantified in the monitoring process.

(ix) The specified compounds are:

- chloroform
- bromoform
- dibromochloromethane
- bromodichloromethane.

The parametric value applies to the sum of the concentrations of the individual compounds detected and quantified in the monitoring process.

Appendix I

Gas Data and Risk Assessment

Gas Monitoring Table
Standard Assessment of Gas Characterisation – CIRIA C665 Sheet

J2429 – Westquarter Avenue, Falkirk

RESULTS OF GAS AND WATER LEVEL MONITORING																
Bore-hole No.	Date	Time	Weather	Logged by	Atmos. Press. (mBar)	Differential Press. (Pa)		Flow (l/hr)		CH4 (%vol)		CO2 (%vol)		O2 (%vol)		Water Depth (m)	Comments
						Peak	S/S	Peak	S/S	Peak	S/S	Peak	S/S	Min	S/S		
CP01	27.03.14	13:45	Dry, Overcast	RS	-	-	-	-	-	-	-	-	-	-	-	-	- Could not open cover
	03.0.4.14	12:00	Damp, Overcast	RS	990	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.8	0.7	19.4	19.5	DRY	-
	11.04.14	14:30	Dry, Overcast	RS	1018	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	20.4	20.6	DRY	-
	17.04.14	13:30	Dry, Overcast	RS	1010	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	20.2	20.4	DRY	-
	25.04.14	16.06	Dry, Overcast	SMcF	1012	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.7	1.7	18.0	18.0	DRY	-
	01.05.14	14:10	Dry, Overcast	RS	1010	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.2	1.0	19.6	19.9	DRY	-

Scott Bennett Associates (Group 1) Limited
No.19 South Castle Drive, Carnegie Campus, Dunfermline KY11 8PD
T: +44 (0)1383 627537 F: +44 (0)1383 627538
E: enquiries@sbascotland.com W: www.sbascotland.com

Assessment of Gas Characterisation

Table 8.5 CIRIA C665 (P88)

Characteristic Situation (CIRIA 149)	Comparable partners in technology gas regime (DETR, 1997)	Risk Classification	Gas Screening Value (CH4 or CO2) (l/hr)	Additional Limiting Factors	Typical Source of Generation
1	A	Very low risk	<0.07	Typical methane ≤1% by volume & carbon dioxide ≤5% by volume. Otherwise consider increase to Situation 2.	Natural soils with low organic content 'Typical' made ground
2	B	Low risk	<0.7	Borehole air flow rate not to exceed 70l/hr otherwise increase to characteristic Situation 3.	Natural soils, high peat/organic content. 'Typical' made ground
3	C	Moderate risk	<3.5		Old Landfill, inert waste, mineworking flooded
4	D	Moderate to high risk	<15	Quantitative risk assessment required to evaluate scope of protection measures.	Mineworking – susceptible to flooding, completed landfill, inert waste (WMP26B criteria)
5	E	High risk	<70		Mineworking unflooded inactive with shallow workings near surface
6	F	Very high risk	>70		Recent landfill site

Notes

1. Gas Screening Value = Gas concentration (decimal) x Measured borehole flow rate.
2. Site Characterisation should be based on gas monitoring of concentrations and borehole flow rates for the minimum periods defined in Table 5.5 (CIRIA C659). At least two sets of readings must be at low and falling atmospheric pressure (worst case conditions) (but not restricted to periods below <1000mb)

Scope of Protection Measures

Table 8.6 CIRIA C665 (P90)

Characteristic Situation	Residential Building (Not low rise traditional housing)		Office/ Commercial/ Industrial Development	
	No. of Levels of Protection	Typical Scope of Protective Measures	Number of Levels of Protection	Typical Scope of Protective Measures
1	None	No special precautions.	None	No special precautions.
2	2	a. Reinforced concrete cast in-situ floor slab (suspended, non-suspended or raft) with at least 1200 g DPM and under floor venting. b. Beam and block or pre-cast concrete and 2000 g DPM/ reinforced gas membrane and under floor venting. All joints and penetrations sealed.	1 to 2	a. Reinforced concrete cast *in-situ* floor slab (suspended, non-suspended or raft) with at least 1200 g DPM. b. Beam and block or pre-cast concrete slab and minimum 2000 g DPM/ reinforced gas membrane. c. Possibly under floor venting or pressurisation in combination with a) and b) depending on use. All joints and penetrations sealed.
3	2	All types of floor slab as above. All joints and penetrations sealed. Proprietary gas resistant membrane and passively ventilated or positively pressurized under floor sub-space.	1 to 2	All types of floor slab as above. All joints and penetrations sealed. Minimum 2000 g/reinforced gas proof membrane and passively ventilated under floor sub-space or positively pressurized under floor sub-space.
4	3	All types of floor slab as above. All joints and penetrations sealed. Proprietary gas resistant membrane and passively ventilated under floor sub-space or positively pressurized under floor sub-space, oversite capping or blinding and in ground venting layer.	2 to 3	All types of floor slab as above. All joints and penetrations sealed. Proprietary gas resistant membrane and passively ventilated or positively pressurized under floor sub-space with monitoring facility.
5	4	Reinforced concrete cast *in-situ* floor slab (suspended, non-suspended or raft). All joints and penetrations sealed. Proprietary gas resistant membrane and ventilated or positively pressurized under floor sub-space, oversite capping and in ground venting layer and in ground venting wells or barriers.	3 to 4	Reinforced concrete cast *in-situ* floor slab (suspended, non-suspended or raft). All joints and penetrations sealed. Proprietary gas resistant membrane and passively ventilated or positively pressurized under floor sub-space with monitoring facility. In ground venting wells or barriers.
6	5	Not suitable unless gas regime is reduced first and quantitative risk assessment carried out to assess design of protection measures in conjunction with foundation design.	4 to 5	Reinforced concrete cast *in-situ* floor slab (suspended, non-suspended or raft). All joints and penetrations sealed. Proprietary gas resistant membrane and actively ventilated or positively pressurized under floor sub-space with monitoring facility. In ground venting wells and reduction of gas regime.

Scott Bennett Associates
consulting civil and structural engineers

Scott Bennett Associates (Group 1) Ltd.
19 South Castle Drive, Carnegie Campus, Dunfermline, KY11 8PD
T: 01383 627537, F: 01383 627538, E: Enquiries@sbascotland.com

Title	West Quarter, Falkirk
Contents	SWS Calculations
Job Ref. J2429	Date 17.07.14
Calcs. By SP	Checked CS

PROPOSED RESIDENTIAL DEVELOPMENT AT WEST QUARTER, FALKIRK

DESIGN PARAMETERS :-

SCOTTISH WATER :-

The system should not flood under 1 in 30 year return period.
and comply with the design guidelines in "Sewers For Scotland 2".

SEPA :-

Design to be in accordance with C697 - "SUDS Design Manual".
Residential Developments require 2 Stage of treatment,

FALKIRK COUNCIL - FLOOD DEPARTMENT :-

Under 1 in 100 year return period, no flooding occurs.
Under 1 in 200 year return period, checks to be made to ensure that properties on and off site are protected against flooding.

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Summary of WinDes Printouts

Scott Bennett Associates (Group 1) Ltd		Page 1
No. 19 South Castle Drive Carnegie Campus, Dunfermline KY11 8PD		
Date 17/07/2014 15:57 File J2429-SWS.MDX	Designed by steven.patrick Checked by	
Elstree Computing Ltd	Network 2014.1.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - Scotland and Ireland

Return Period (years)	2	Add Flow / Climate Change (%)	0
M5-60 (mm)	13.800	Minimum Backdrop Height (m)	1.000
Ratio R	0.250	Maximum Backdrop Height (m)	5.000
Maximum Rainfall (mm/hr)	50	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.053	4-8	0.078

Total Area Contributing (ha) = 0.131

Total Pipe Volume (m^3) = 56.935

Network Design Table 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)	Auto Design
1.000	15.890	0.410	38.8	0.054	5.00	0.0	0.600	o	150	
1.001	7.090	1.037	6.8	0.000	0.00	0.0	0.600	o	150	
1.002	18.600	0.037	502.7	0.000	0.00	0.0	0.600	o	750	
2.000	21.620	0.043	502.8	0.044	5.00	0.0	0.600	o	750	
2.001	82.840	0.166	499.0	0.033	0.00	0.0	0.600	o	750	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	39.05	5.16	45.000	0.054	0.0	0.0	0.0	1.62	28.7	5.7
1.001	38.97	5.19	44.590	0.054	0.0	0.0	0.0	3.88	68.5	5.7
1.002	38.31	5.44	43.028	0.054	0.0	0.0	0.0	1.24	548.4	5.7
2.000	38.71	5.29	43.200	0.044	0.0	0.0	0.0	1.24	548.3	4.6
2.001	36.03	6.40	43.157	0.077	0.0	0.0	0.0	1.25	550.4	7.5

Network Design Table 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)	Auto Design
1.003	9.330	0.187	49.9	0.000	0.00	0.0	0.600	o	150	
1.004	88.860	3.800	23.4	0.000	0.00	0.0	0.600	o	150	
1.005	17.760	0.200	88.8	0.000	0.00	0.0	0.600	o	150	
1.006	6.410	0.200	32.1	0.000	0.00	0.0	0.600	o	150	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.003	35.79	6.51	42.991	0.131	0.0	0.0	0.0	1.43	25.2	12.7
1.004	34.33	7.22	42.804	0.131	0.0	0.0	0.0	2.09	37.0	12.7
1.005	33.80	7.49	39.004	0.131	0.0	0.0	0.0	1.07	18.9	12.7
1.006	33.69	7.55	38.804	0.131	0.0	0.0	0.0	1.78	31.5	12.7

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	2	Cv (Summer)	0.750
Region	Scotland and Ireland	Cv (Winter)	0.840
M5-60 (mm)	13.800	Storm Duration (mins)	30
Ratio R	0.250		

Online Controls for Storm

Hydro-Brake Optimum® Manhole: 4, DS/PN: 1.003, Volume (m³): 53.8

Unit Reference	MD-SHE-0040-1000-2000-1000
Design Head (m)	2.000
Design Flow (l/s)	1.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	40
Invert Level (m)	42.991
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.000	1.0
Flush-Flo™	0.173	0.6
Kick-Flo®	0.355	0.5
Mean Flow over Head Range	-	0.7

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	0.5	1.200	0.8	3.000	1.2	7.000	1.8
0.200	0.6	1.400	0.9	3.500	1.3	7.500	1.8
0.300	0.5	1.600	0.9	4.000	1.4	8.000	1.9
0.400	0.5	1.800	1.0	4.500	1.4	8.500	1.9
0.500	0.5	2.000	1.0	5.000	1.5	9.000	2.0
0.600	0.6	2.200	1.0	5.500	1.6	9.500	2.0
0.800	0.7	2.400	1.1	6.000	1.6		
1.000	0.7	2.600	1.1	6.500	1.7		

Summary Wizard of 15 minute 30 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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	0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	5	45.075	-0.075	0.000	0.49	0.0	12.9	OK
1.001	2	5	44.638	-0.102	0.000	0.22	0.0	12.8	OK
1.002	3	36	43.302	-0.476	0.000	0.04	0.0	11.7	OK
2.000	8	36	43.302	-0.648	0.000	0.03	0.0	10.2	OK
2.001	9	36	43.302	-0.605	0.000	0.03	0.0	16.2	OK
1.003	4	36	43.302	0.161	0.000	0.02	0.0	0.6	SURCHARGED
1.004	5	35	42.815	-0.139	0.000	0.01	0.0	0.5	OK
1.005	6	34	39.021	-0.133	0.000	0.03	0.0	0.5	OK
1.006	7	34	38.818	-0.136	0.000	0.02	0.0	0.5	OK

Summary Wizard of 30 minute 30 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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	0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	7	45.067	-0.083	0.000	0.41	0.0	10.9	OK
1.001	2	7	44.634	-0.106	0.000	0.19	0.0	10.9	OK
1.002	3	34	43.363	-0.415	0.000	0.03	0.0	10.0	OK
2.000	8	34	43.363	-0.587	0.000	0.02	0.0	8.7	OK
2.001	9	34	43.363	-0.544	0.000	0.03	0.0	13.5	OK
1.003	4	34	43.363	0.222	0.000	0.02	0.0	0.6	SURCHARGED
1.004	5	31	42.815	-0.139	0.000	0.02	0.0	0.6	OK
1.005	6	32	39.021	-0.133	0.000	0.03	0.0	0.6	OK
1.006	7	32	38.819	-0.135	0.000	0.02	0.0	0.5	OK

Summary Wizard of 60 minute 30 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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	0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	9	45.055	-0.095	0.000	0.29	0.0	7.7	OK
1.001	2	9	44.626	-0.114	0.000	0.13	0.0	7.7	OK
1.002	3	31	43.428	-0.350	0.000	0.02	0.0	7.1	OK
2.000	8	31	43.427	-0.523	0.000	0.02	0.0	6.0	OK
2.001	9	31	43.428	-0.479	0.000	0.02	0.0	9.1	OK
1.003	4	31	43.428	0.287	0.000	0.02	0.0	0.6	SURCHARGED
1.004	5	32	42.815	-0.139	0.000	0.02	0.0	0.6	OK
1.005	6	29	39.021	-0.133	0.000	0.03	0.0	0.6	OK
1.006	7	30	38.819	-0.135	0.000	0.02	0.0	0.6	OK

Summary Wizard of 120 minute 30 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	14	45.044	-0.106	0.000	0.19	0.0	5.1	OK
1.001	2	14	44.620	-0.120	0.000	0.09	0.0	5.1	OK
1.002	3	29	43.493	-0.285	0.000	0.01	0.0	4.8	OK
2.000	8	29	43.493	-0.457	0.000	0.01	0.0	3.8	OK
2.001	9	29	43.493	-0.414	0.000	0.01	0.0	5.5	OK
1.003	4	29	43.493	0.352	0.000	0.02	0.0	0.6	SURCHARGED
1.004	5	29	42.815	-0.139	0.000	0.02	0.0	0.6	OK
1.005	6	28	39.021	-0.133	0.000	0.03	0.0	0.6	OK
1.006	7	28	38.819	-0.135	0.000	0.02	0.0	0.6	OK

Summary Wizard of 180 minute 30 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	17	45.039	-0.111	0.000	0.15	0.0	4.0	OK
1.001	2	17	44.616	-0.124	0.000	0.07	0.0	4.0	OK
1.002	3	27	43.535	-0.243	0.000	0.01	0.0	3.7	OK
2.000	8	27	43.535	-0.415	0.000	0.01	0.0	2.9	OK
2.001	9	27	43.535	-0.372	0.000	0.01	0.0	4.3	OK
1.003	4	27	43.536	0.395	0.000	0.03	0.0	0.6	SURCHARGED
1.004	5	27	42.815	-0.139	0.000	0.02	0.0	0.6	OK
1.005	6	27	39.021	-0.133	0.000	0.03	0.0	0.6	OK
1.006	7	27	38.819	-0.135	0.000	0.02	0.0	0.6	OK

Summary Wizard of 240 minute 30 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	19	45.035	-0.115	0.000	0.12	0.0	3.3	OK
1.001	2	19	44.613	-0.127	0.000	0.06	0.0	3.3	OK
1.002	3	26	43.559	-0.219	0.000	0.01	0.0	3.1	OK
2.000	8	26	43.559	-0.391	0.000	0.01	0.0	2.4	OK
2.001	9	26	43.559	-0.348	0.000	0.01	0.0	3.5	OK
1.003	4	26	43.559	0.418	0.000	0.03	0.0	0.6	SURCHARGED
1.004	5	26	42.815	-0.139	0.000	0.02	0.0	0.6	OK
1.005	6	26	39.022	-0.132	0.000	0.03	0.0	0.6	OK
1.006	7	26	38.819	-0.135	0.000	0.02	0.0	0.6	OK

Summary Wizard of 360 minute 30 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	24	45.031	-0.119	0.000	0.10	0.0	2.5	OK
1.001	2	24	44.610	-0.130	0.000	0.04	0.0	2.5	OK
1.002	3	23	43.611	-0.167	0.000	0.01	0.0	2.4	OK
2.000	8	23	43.611	-0.339	0.000	0.01	0.0	1.9	OK
2.001	9	23	43.611	-0.296	0.000	0.01	0.0	2.6	OK
1.003	4	23	43.611	0.470	0.000	0.03	0.0	0.6	SURCHARGED
1.004	5	23	42.816	-0.138	0.000	0.02	0.0	0.6	OK
1.005	6	23	39.022	-0.132	0.000	0.03	0.0	0.6	OK
1.006	7	23	38.819	-0.135	0.000	0.02	0.0	0.6	OK

Summary Wizard of 480 minute 30 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	27	45.028	-0.122	0.000	0.08	0.0	2.1	OK
1.001	2	27	44.608	-0.132	0.000	0.04	0.0	2.1	OK
1.002	3	22	43.614	-0.164	0.000	0.01	0.0	2.0	OK
2.000	8	22	43.614	-0.336	0.000	0.00	0.0	1.6	OK
2.001	9	22	43.614	-0.293	0.000	0.00	0.0	2.2	OK
1.003	4	22	43.615	0.474	0.000	0.03	0.0	0.6	SURCHARGED
1.004	5	22	42.816	-0.138	0.000	0.02	0.0	0.6	OK
1.005	6	22	39.022	-0.132	0.000	0.03	0.0	0.6	OK
1.006	7	22	38.819	-0.135	0.000	0.02	0.0	0.6	OK

Summary Wizard of 600 minute 30 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	30	45.026	-0.124	0.000	0.07	0.0	1.8	OK
1.001	2	30	44.607	-0.133	0.000	0.03	0.0	1.8	OK
1.002	3	21	43.620	-0.158	0.000	0.01	0.0	1.7	OK
2.000	8	21	43.620	-0.330	0.000	0.00	0.0	1.4	OK
2.001	9	21	43.620	-0.287	0.000	0.00	0.0	1.9	OK
1.003	4	21	43.620	0.479	0.000	0.03	0.0	0.6	SURCHARGED
1.004	5	21	42.816	-0.138	0.000	0.02	0.0	0.6	OK
1.005	6	21	39.022	-0.132	0.000	0.03	0.0	0.6	OK
1.006	7	21	38.819	-0.135	0.000	0.02	0.0	0.6	OK

Summary Wizard of 720 minute 30 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	32	45.024	-0.126	0.000	0.06	0.0	1.6	OK
1.001	2	32	44.606	-0.134	0.000	0.03	0.0	1.6	OK
1.002	3	19	43.624	-0.154	0.000	0.00	0.0	1.5	OK
2.000	8	18	43.624	-0.326	0.000	0.00	0.0	1.2	OK
2.001	9	18	43.625	-0.282	0.000	0.00	0.0	1.7	OK
1.003	4	18	43.625	0.484	0.000	0.03	0.0	0.6	SURCHARGED
1.004	5	18	42.816	-0.138	0.000	0.02	0.0	0.6	OK
1.005	6	18	39.022	-0.132	0.000	0.03	0.0	0.6	OK
1.006	7	18	38.819	-0.135	0.000	0.02	0.0	0.6	OK

Summary Wizard of 960 minute 30 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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	0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	34	45.021	-0.129	0.000	0.05	0.0	1.3	OK
1.001	2	34	44.605	-0.135	0.000	0.02	0.0	1.3	OK
1.002	3	18	43.624	-0.154	0.000	0.00	0.0	1.3	OK
2.000	8	19	43.624	-0.326	0.000	0.00	0.0	1.0	OK
2.001	9	19	43.624	-0.283	0.000	0.00	0.0	1.4	OK
1.003	4	19	43.624	0.483	0.000	0.03	0.0	0.6	SURCHARGED
1.004	5	19	42.816	-0.138	0.000	0.02	0.0	0.6	OK
1.005	6	19	39.022	-0.132	0.000	0.03	0.0	0.6	OK
1.006	7	19	38.819	-0.135	0.000	0.02	0.0	0.6	OK

Summary Wizard of 1440 minute 30 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	36	45.019	-0.131	0.000	0.04	0.0	1.0	OK
1.001	2	36	44.602	-0.138	0.000	0.02	0.0	1.0	OK
1.002	3	20	43.622	-0.156	0.000	0.00	0.0	1.0	OK
2.000	8	20	43.622	-0.328	0.000	0.00	0.0	0.8	OK
2.001	9	20	43.622	-0.285	0.000	0.00	0.0	1.1	OK
1.003	4	20	43.622	0.481	0.000	0.03	0.0	0.6	SURCHARGED
1.004	5	20	42.816	-0.138	0.000	0.02	0.0	0.6	OK
1.005	6	20	39.022	-0.132	0.000	0.03	0.0	0.6	OK
1.006	7	20	38.819	-0.135	0.000	0.02	0.0	0.6	OK

Summary Wizard of 15 minute 100 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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	0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	2	45.087	-0.063	0.000	0.63	0.0	16.7	OK
1.001	2	2	44.645	-0.095	0.000	0.28	0.0	16.5	OK
1.002	3	35	43.349	-0.429	0.000	0.05	0.0	15.4	OK
2.000	8	35	43.349	-0.601	0.000	0.04	0.0	13.1	OK
2.001	9	35	43.349	-0.558	0.000	0.04	0.0	20.2	OK
1.003	4	35	43.349	0.208	0.000	0.02	0.0	0.5	SURCHARGED
1.004	5	34	42.815	-0.139	0.000	0.01	0.0	0.5	OK
1.005	6	35	39.021	-0.133	0.000	0.03	0.0	0.5	OK
1.006	7	35	38.818	-0.136	0.000	0.02	0.0	0.5	OK

Summary Wizard of 30 minute 100 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	4	45.078	-0.072	0.000	0.53	0.0	14.2	OK
1.001	2	4	44.640	-0.100	0.000	0.24	0.0	14.2	OK
1.002	3	32	43.427	-0.351	0.000	0.04	0.0	13.0	OK
2.000	8	32	43.427	-0.523	0.000	0.03	0.0	11.1	OK
2.001	9	32	43.427	-0.480	0.000	0.03	0.0	16.7	OK
1.003	4	32	43.428	0.287	0.000	0.02	0.0	0.6	SURCHARGED
1.004	5	33	42.815	-0.139	0.000	0.02	0.0	0.6	OK
1.005	6	33	39.021	-0.133	0.000	0.03	0.0	0.6	OK
1.006	7	31	38.819	-0.135	0.000	0.02	0.0	0.5	OK

Summary Wizard of 60 minute 100 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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	0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	8	45.064	-0.086	0.000	0.38	0.0	10.0	OK
1.001	2	8	44.632	-0.108	0.000	0.17	0.0	10.0	OK
1.002	3	28	43.513	-0.265	0.000	0.03	0.0	9.3	OK
2.000	8	28	43.513	-0.437	0.000	0.02	0.0	7.6	OK
2.001	9	28	43.513	-0.394	0.000	0.02	0.0	11.0	OK
1.003	4	28	43.514	0.373	0.000	0.02	0.0	0.6	SURCHARGED
1.004	5	28	42.815	-0.139	0.000	0.02	0.0	0.6	OK
1.005	6	30	39.021	-0.133	0.000	0.03	0.0	0.6	OK
1.006	7	29	38.819	-0.135	0.000	0.02	0.0	0.6	OK

Summary Wizard of 120 minute 100 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	11	45.051	-0.099	0.000	0.25	0.0	6.6	OK
1.001	2	11	44.623	-0.117	0.000	0.11	0.0	6.6	OK
1.002	3	24	43.602	-0.176	0.000	0.02	0.0	6.2	OK
2.000	8	24	43.602	-0.348	0.000	0.01	0.0	4.9	OK
2.001	9	24	43.602	-0.305	0.000	0.01	0.0	6.8	OK
1.003	4	24	43.602	0.461	0.000	0.03	0.0	0.6	SURCHARGED
1.004	5	24	42.816	-0.138	0.000	0.02	0.0	0.6	OK
1.005	6	24	39.022	-0.132	0.000	0.03	0.0	0.6	OK
1.006	7	24	38.819	-0.135	0.000	0.02	0.0	0.6	OK

Summary Wizard of 180 minute 100 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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	0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	13	45.045	-0.105	0.000	0.19	0.0	5.1	OK
1.001	2	13	44.620	-0.120	0.000	0.09	0.0	5.1	OK
1.002	3	17	43.660	-0.118	0.000	0.01	0.0	4.8	OK
2.000	8	17	43.660	-0.290	0.000	0.01	0.0	3.8	OK
2.001	9	17	43.660	-0.247	0.000	0.01	0.0	5.1	OK
1.003	4	17	43.660	0.519	0.000	0.03	0.0	0.6	SURCHARGED
1.004	5	17	42.816	-0.138	0.000	0.02	0.0	0.6	OK
1.005	6	17	39.022	-0.132	0.000	0.03	0.0	0.6	OK
1.006	7	17	38.819	-0.135	0.000	0.02	0.0	0.6	OK

Summary Wizard of 240 minute 100 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	16	45.040	-0.110	0.000	0.16	0.0	4.3	OK
1.001	2	16	44.616	-0.124	0.000	0.07	0.0	4.3	OK
1.002	3	15	43.700	-0.078	0.000	0.01	0.0	4.0	OK
2.000	8	15	43.699	-0.251	0.000	0.01	0.0	3.2	OK
2.001	9	15	43.700	-0.207	0.000	0.01	0.0	4.2	OK
1.003	4	15	43.700	0.559	0.000	0.03	0.0	0.6	SURCHARGED
1.004	5	15	42.816	-0.138	0.000	0.02	0.0	0.6	OK
1.005	6	15	39.022	-0.132	0.000	0.04	0.0	0.6	OK
1.006	7	15	38.820	-0.134	0.000	0.02	0.0	0.6	OK

Summary Wizard of 360 minute 100 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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	0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	20	45.035	-0.115	0.000	0.12	0.0	3.2	OK
1.001	2	20	44.613	-0.127	0.000	0.06	0.0	3.2	OK
1.002	3	14	43.765	-0.013	0.000	0.01	0.0	3.1	OK
2.000	8	14	43.765	-0.185	0.000	0.01	0.0	2.4	OK
2.001	9	14	43.765	-0.142	0.000	0.01	0.0	3.2	OK
1.003	4	14	43.765	0.624	0.000	0.03	0.0	0.7	SURCHARGED
1.004	5	14	42.817	-0.137	0.000	0.02	0.0	0.7	OK
1.005	6	14	39.023	-0.131	0.000	0.04	0.0	0.7	OK
1.006	7	14	38.820	-0.134	0.000	0.02	0.0	0.7	OK

Summary Wizard of 480 minute 100 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	22	45.032	-0.118	0.000	0.10	0.0	2.7	OK
1.001	2	22	44.610	-0.130	0.000	0.05	0.0	2.7	OK
1.002	3	12	43.805	0.027	0.000	0.01	0.0	2.5	SURCHARGED
2.000	8	12	43.805	-0.145	0.000	0.01	0.0	2.0	OK
2.001	9	12	43.805	-0.102	0.000	0.01	0.0	2.7	OK
1.003	4	12	43.805	0.664	0.000	0.03	0.0	0.7	SURCHARGED
1.004	5	12	42.817	-0.137	0.000	0.02	0.0	0.7	OK
1.005	6	12	39.023	-0.131	0.000	0.04	0.0	0.7	OK
1.006	7	12	38.820	-0.134	0.000	0.03	0.0	0.7	OK

Summary Wizard of 600 minute 100 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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	0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	26	45.030	-0.120	0.000	0.09	0.0	2.3	OK
1.001	2	26	44.609	-0.131	0.000	0.04	0.0	2.3	OK
1.002	3	11	43.842	0.064	0.000	0.01	0.0	2.2	SURCHARGED
2.000	8	11	43.842	-0.108	0.000	0.00	0.0	1.7	OK
2.001	9	11	43.842	-0.065	0.000	0.00	0.0	2.3	OK
1.003	4	11	43.842	0.701	0.000	0.03	0.0	0.7	SURCHARGED
1.004	5	11	42.817	-0.137	0.000	0.02	0.0	0.7	OK
1.005	6	11	39.023	-0.131	0.000	0.04	0.0	0.7	OK
1.006	7	11	38.820	-0.134	0.000	0.03	0.0	0.7	OK

Summary Wizard of 720 minute 100 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	28	45.027	-0.123	0.000	0.08	0.0	2.0	OK
1.001	2	28	44.608	-0.132	0.000	0.03	0.0	2.0	OK
1.002	3	8	43.865	0.087	0.000	0.01	0.0	1.9	SURCHARGED
2.000	8	8	43.865	-0.085	0.000	0.00	0.0	1.5	OK
2.001	9	8	43.865	-0.042	0.000	0.00	0.0	2.0	OK
1.003	4	8	43.865	0.724	0.000	0.03	0.0	0.7	SURCHARGED
1.004	5	8	42.817	-0.137	0.000	0.02	0.0	0.7	OK
1.005	6	8	39.023	-0.131	0.000	0.04	0.0	0.7	OK
1.006	7	8	38.820	-0.134	0.000	0.03	0.0	0.7	OK

Summary Wizard of 960 minute 100 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	31	45.024	-0.126	0.000	0.06	0.0	1.7	OK
1.001	2	31	44.607	-0.133	0.000	0.03	0.0	1.7	OK
1.002	3	7	43.875	0.097	0.000	0.00	0.0	1.6	SURCHARGED
2.000	8	7	43.875	-0.075	0.000	0.00	0.0	1.2	OK
2.001	9	7	43.875	-0.032	0.000	0.00	0.0	1.7	OK
1.003	4	7	43.875	0.734	0.000	0.03	0.0	0.7	SURCHARGED
1.004	5	7	42.818	-0.136	0.000	0.02	0.0	0.7	OK
1.005	6	7	39.023	-0.131	0.000	0.04	0.0	0.7	OK
1.006	7	7	38.820	-0.134	0.000	0.03	0.0	0.7	OK

Summary Wizard of 1440 minute 100 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	35	45.021	-0.129	0.000	0.05	0.0	1.3	OK
1.001	2	35	44.605	-0.135	0.000	0.02	0.0	1.3	OK
1.002	3	10	43.855	0.077	0.000	0.00	0.0	1.2	SURCHARGED
2.000	8	10	43.854	-0.096	0.000	0.00	0.0	0.9	OK
2.001	9	10	43.855	-0.052	0.000	0.00	0.0	1.3	OK
1.003	4	10	43.855	0.714	0.000	0.03	0.0	0.7	SURCHARGED
1.004	5	10	42.817	-0.137	0.000	0.02	0.0	0.7	OK
1.005	6	10	39.023	-0.131	0.000	0.04	0.0	0.7	OK
1.006	7	9	38.820	-0.134	0.000	0.03	0.0	0.7	OK

Summary Wizard of 15 minute 200 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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	0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	1	45.096	-0.054	0.000	0.73	0.0	19.3	OK
1.001	2	1	44.650	-0.090	0.000	0.33	0.0	19.1	OK
1.002	3	33	43.381	-0.397	0.000	0.05	0.0	17.8	OK
2.000	8	33	43.381	-0.569	0.000	0.04	0.0	15.1	OK
2.001	9	33	43.381	-0.526	0.000	0.05	0.0	23.2	OK
1.003	4	33	43.381	0.240	0.000	0.02	0.0	0.6	SURCHARGED
1.004	5	36	42.815	-0.139	0.000	0.01	0.0	0.5	OK
1.005	6	36	39.021	-0.133	0.000	0.03	0.0	0.5	OK
1.006	7	36	38.818	-0.136	0.000	0.02	0.0	0.5	OK

Summary Wizard of 30 minute 200 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	3	45.086	-0.064	0.000	0.62	0.0	16.5	OK
1.001	2	3	44.644	-0.096	0.000	0.28	0.0	16.5	OK
1.002	3	30	43.472	-0.306	0.000	0.05	0.0	15.2	OK
2.000	8	30	43.472	-0.478	0.000	0.03	0.0	12.8	OK
2.001	9	30	43.472	-0.435	0.000	0.04	0.0	19.2	OK
1.003	4	30	43.472	0.331	0.000	0.02	0.0	0.6	SURCHARGED
1.004	5	30	42.815	-0.139	0.000	0.02	0.0	0.6	OK
1.005	6	31	39.021	-0.133	0.000	0.03	0.0	0.5	OK
1.006	7	33	38.819	-0.135	0.000	0.02	0.0	0.5	OK

Summary Wizard of 60 minute 200 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	6	45.070	-0.080	0.000	0.44	0.0	11.7	OK
1.001	2	6	44.635	-0.105	0.000	0.20	0.0	11.6	OK
1.002	3	25	43.574	-0.204	0.000	0.03	0.0	10.9	OK
2.000	8	25	43.574	-0.376	0.000	0.02	0.0	8.8	OK
2.001	9	25	43.575	-0.332	0.000	0.03	0.0	12.7	OK
1.003	4	25	43.575	0.434	0.000	0.03	0.0	0.6	SURCHARGED
1.004	5	25	42.815	-0.139	0.000	0.02	0.0	0.6	OK
1.005	6	25	39.022	-0.132	0.000	0.03	0.0	0.6	OK
1.006	7	25	38.819	-0.135	0.000	0.02	0.0	0.6	OK

Summary Wizard of 120 minute 200 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	10	45.055	-0.095	0.000	0.29	0.0	7.7	OK
1.001	2	10	44.626	-0.114	0.000	0.13	0.0	7.7	OK
1.002	3	16	43.685	-0.093	0.000	0.02	0.0	7.2	OK
2.000	8	16	43.685	-0.265	0.000	0.02	0.0	5.7	OK
2.001	9	16	43.685	-0.222	0.000	0.02	0.0	7.5	OK
1.003	4	16	43.685	0.544	0.000	0.03	0.0	0.6	SURCHARGED
1.004	5	16	42.816	-0.138	0.000	0.02	0.0	0.6	OK
1.005	6	16	39.022	-0.132	0.000	0.04	0.0	0.6	OK
1.006	7	16	38.820	-0.134	0.000	0.02	0.0	0.6	OK

Summary Wizard of 180 minute 200 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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	0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	12	45.048	-0.102	0.000	0.22	0.0	6.0	OK
1.001	2	12	44.622	-0.118	0.000	0.10	0.0	5.9	OK
1.002	3	13	43.769	-0.009	0.000	0.02	0.0	5.6	OK
2.000	8	13	43.769	-0.181	0.000	0.01	0.0	4.4	OK
2.001	9	13	43.769	-0.138	0.000	0.01	0.0	5.9	OK
1.003	4	13	43.769	0.628	0.000	0.03	0.0	0.7	SURCHARGED
1.004	5	13	42.817	-0.137	0.000	0.02	0.0	0.7	OK
1.005	6	13	39.023	-0.131	0.000	0.04	0.0	0.7	OK
1.006	7	13	38.820	-0.134	0.000	0.02	0.0	0.7	OK

Summary Wizard of 240 minute 200 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	15	45.043	-0.107	0.000	0.19	0.0	4.9	OK
1.001	2	15	44.619	-0.121	0.000	0.08	0.0	4.9	OK
1.002	3	9	43.856	0.078	0.000	0.01	0.0	4.6	SURCHARGED
2.000	8	9	43.856	-0.094	0.000	0.01	0.0	3.6	OK
2.001	9	9	43.856	-0.051	0.000	0.01	0.0	4.8	OK
1.003	4	9	43.856	0.715	0.000	0.03	0.0	0.7	SURCHARGED
1.004	5	9	42.817	-0.137	0.000	0.02	0.0	0.7	OK
1.005	6	9	39.023	-0.131	0.000	0.04	0.0	0.7	OK
1.006	7	10	38.820	-0.134	0.000	0.03	0.0	0.7	OK

Summary Wizard of 360 minute 200 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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	0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	18	45.037	-0.113	0.000	0.14	0.0	3.7	OK
1.001	2	18	44.614	-0.126	0.000	0.06	0.0	3.7	OK
1.002	3	6	44.117	0.339	0.000	0.01	0.0	3.5	SURCHARGED
2.000	8	6	44.117	0.167	0.000	0.01	0.0	2.8	SURCHARGED
2.001	9	6	44.117	0.210	0.000	0.01	0.0	3.6	SURCHARGED
1.003	4	6	44.117	0.976	0.000	0.03	0.0	0.8	SURCHARGED
1.004	5	6	42.819	-0.135	0.000	0.02	0.0	0.8	OK
1.005	6	6	39.024	-0.130	0.000	0.04	0.0	0.8	OK
1.006	7	6	38.821	-0.133	0.000	0.03	0.0	0.8	OK

Summary Wizard of 480 minute 200 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	21	45.034	-0.116	0.000	0.12	0.0	3.1	OK
1.001	2	21	44.612	-0.128	0.000	0.05	0.0	3.1	OK
1.002	3	5	44.314	0.536	0.000	0.01	0.0	2.9	SURCHARGED
2.000	8	5	44.314	0.364	0.000	0.01	0.0	2.3	SURCHARGED
2.001	9	5	44.314	0.407	0.000	0.01	0.0	2.9	SURCHARGED
1.003	4	5	44.314	1.173	0.000	0.04	0.0	0.8	SURCHARGED
1.004	5	5	42.819	-0.135	0.000	0.02	0.0	0.8	OK
1.005	6	5	39.025	-0.129	0.000	0.05	0.0	0.8	OK
1.006	7	5	38.821	-0.133	0.000	0.03	0.0	0.8	OK

Summary Wizard of 600 minute 200 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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	0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	23	45.031	-0.119	0.000	0.10	0.0	2.6	OK
1.001	2	23	44.610	-0.130	0.000	0.04	0.0	2.6	OK
1.002	3	4	44.418	0.640	0.000	0.01	0.0	2.5	SURCHARGED
2.000	8	4	44.418	0.468	0.000	0.01	0.0	2.0	SURCHARGED
2.001	9	4	44.418	0.511	0.000	0.01	0.0	2.5	SURCHARGED
1.003	4	4	44.418	1.277	0.000	0.04	0.0	0.9	SURCHARGED
1.004	5	4	42.820	-0.134	0.000	0.02	0.0	0.9	OK
1.005	6	4	39.025	-0.129	0.000	0.05	0.0	0.9	OK
1.006	7	4	38.821	-0.133	0.000	0.03	0.0	0.9	OK

Summary Wizard of 720 minute 200 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	25	45.030	-0.120	0.000	0.09	0.0	2.3	OK
1.001	2	25	44.609	-0.131	0.000	0.04	0.0	2.3	OK
1.002	3	2	44.469	0.691	0.000	0.01	0.0	2.2	SURCHARGED
2.000	8	2	44.468	0.518	0.000	0.00	0.0	1.7	SURCHARGED
2.001	9	2	44.468	0.561	0.000	0.00	0.0	2.2	SURCHARGED
1.003	4	2	44.469	1.328	0.000	0.04	0.0	0.9	SURCHARGED
1.004	5	2	42.820	-0.134	0.000	0.02	0.0	0.9	OK
1.005	6	2	39.025	-0.129	0.000	0.05	0.0	0.9	OK
1.006	7	2	38.822	-0.132	0.000	0.03	0.0	0.9	OK

Summary Wizard of 960 minute 200 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	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 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	29	45.026	-0.124	0.000	0.07	0.0	1.9	OK
1.001	2	29	44.607	-0.133	0.000	0.03	0.0	1.9	OK
1.002	3	1	44.488	0.710	0.000	0.01	0.0	1.8	SURCHARGED
2.000	8	1	44.488	0.538	0.000	0.00	0.0	1.4	SURCHARGED
2.001	9	1	44.488	0.581	0.000	0.00	0.0	1.9	SURCHARGED
1.003	4	1	44.488	1.347	0.000	0.04	0.0	0.9	SURCHARGED
1.004	5	1	42.820	-0.134	0.000	0.02	0.0	0.9	OK
1.005	6	1	39.025	-0.129	0.000	0.05	0.0	0.9	OK
1.006	7	1	38.822	-0.132	0.000	0.03	0.0	0.9	OK

Summary Wizard of 1440 minute 200 year Winter I+20% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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	0
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

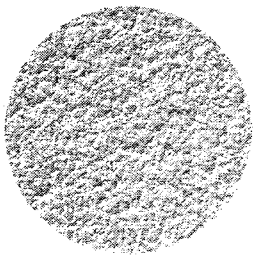
Rainfall Model		FSR	Ratio R 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	13.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	20, 20, 20

PN	US/MH Name	Rank	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	33	45.022	-0.128	0.000	0.05	0.0	1.4	OK
1.001	2	33	44.606	-0.134	0.000	0.02	0.0	1.4	OK
1.002	3	3	44.461	0.683	0.000	0.00	0.0	1.3	SURCHARGED
2.000	8	3	44.461	0.511	0.000	0.00	0.0	1.1	SURCHARGED
2.001	9	3	44.461	0.554	0.000	0.00	0.0	1.4	SURCHARGED
1.003	4	3	44.461	1.320	0.000	0.04	0.0	0.9	SURCHARGED
1.004	5	3	42.820	-0.134	0.000	0.02	0.0	0.9	OK
1.005	6	3	39.025	-0.129	0.000	0.05	0.0	0.9	OK
1.006	7	3	38.822	-0.132	0.000	0.03	0.0	0.9	OK

REND Kilwaughter Chemical Company Limited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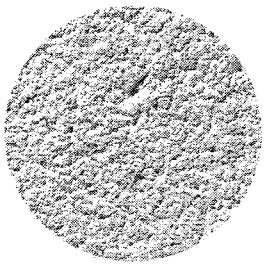
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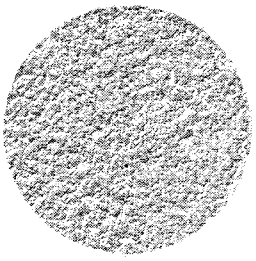
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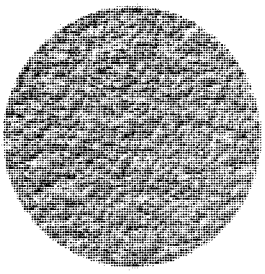
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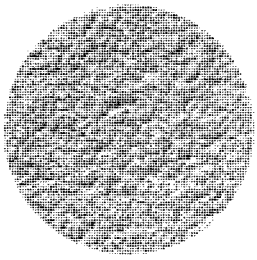
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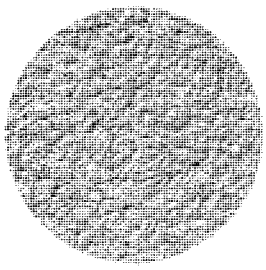
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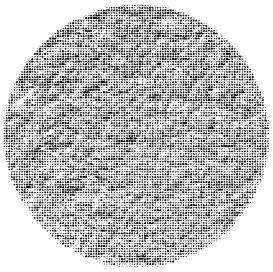
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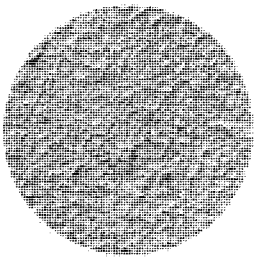
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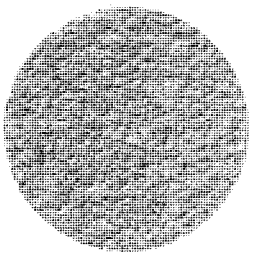
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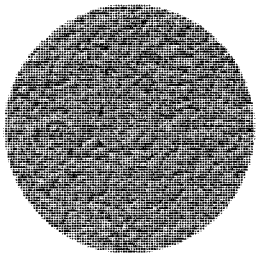
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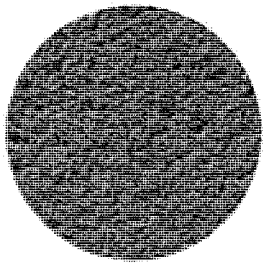
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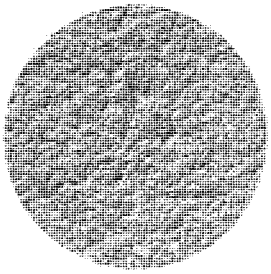
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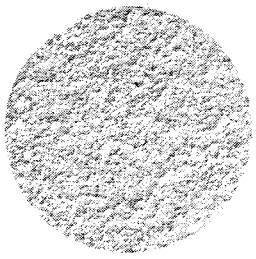
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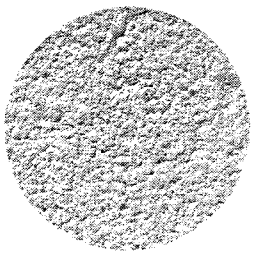
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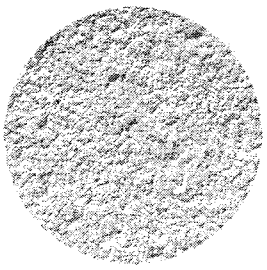
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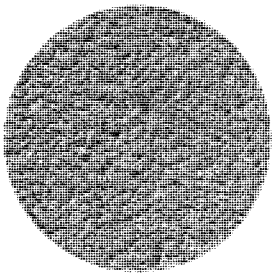
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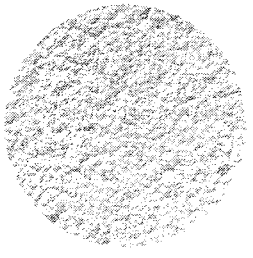
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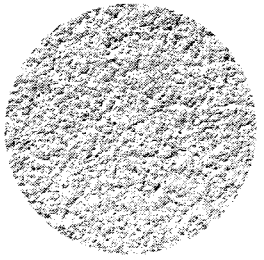
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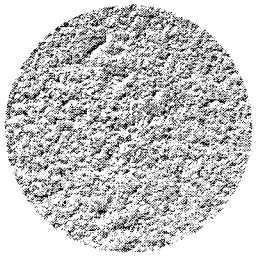
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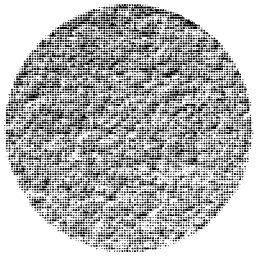

Fintry Stone

Colours above are representative. Product samples & special colours are available on request.

Tree Survey
and
Arboricultural Constraints

WESTQUARTER, FALKIRK

For

HANOVER (SCOTLAND) HOUSING ASSOCIATION LTD

Institute of Chartered Foresters
Registered Consultant

Fairlie House, Main Street, Buchlyvie, Stirling FK8 3LX
T/F: 01360 850534 • Mob: 07866 389284 • E: alan@alanmotion.co.uk
Director: Alan R Motion BScFor, FICFor, CEnv, MArborA. Reg No SC396461

GENERAL INTRODUCTION AND SUMMARY

This tree survey has been carried out for Hanover (Scotland) Housing Association Ltd, in relation to proposed development on land at Westquarter, Falkirk. It relates to 20 trees within the survey boundary shown on the plans appended to the report. Small trees of less than 15cm stem diameter, and areas of undergrowth are described in general terms, but are not recorded in detail. The survey has been carried out in accordance with BS5837:2012 "Trees in relation to design, demolition and construction – Recommendations."

STANDARD CONDITIONS RELATING TO TREE SURVEY INFORMATION

1. Unless otherwise stated, tree surveys are undertaken from ground level using established visual assessment methodology. The inspection is designed to determine, as far as possible, the following:
    a. The presence of fungal disease in the root, stem, or branch structure that may give rise to a risk of structural failure of part or all of the tree;
    b. The presence of structural defects, such as root heave, cavities, weak forks, hazard beams, included bark, cracks, and the like, that may give rise to a risk of structural failure of part or all of the tree;
    c. The presence of soil disturbance, excavations, infilling, compaction, or other changes in the surrounding environment, such as adjacent tree removal or erection of new structures, that may give rise to a risk of structural failure of part or all of the tree;
    d. The presence of the foregoing or any other factor not specifically referred to, which may give rise to a decline or death of the tree.
    e. The presence of surrounding structures, roads, footpaths, utilities, boundaries and the like where growth of the tree may present a hazard or nuisance.
2. Where further investigation is required, either by climbing or the use of specialised decay detection equipment, this will be identified in the report.
3. The findings and recommendations contained within this report are valid for a period of twelve months. Trees are living organisms subject to change - it is strongly recommended that they are inspected at regular intervals for reasons of safety.

4. Whilst every effort has been made to detect defects within the trees inspected, no guarantee can be given as to the absolute safety or otherwise of any individual tree. Extreme climatic conditions can cause damage to apparently healthy trees.
5. The findings and recommendations contained within this report are based on the current site conditions. The construction of roads, buildings, service wayleaves, removal of shelter, and alterations to established soil moisture conditions can all have a detrimental effect on the health and stability of retained trees. Accordingly, a re-inspection of retained trees is recommended on completion of any development operations.
6. This report has been prepared for the sole use of Hanover (Scotland) Housing Association Ltd and their appointed agents. Any third party referring to this report or relying on information contained within it does so entirely at their own risk.

GENERAL DESCRIPTION

The site is located at Garden Crescent/Cedar Terrace off Westquarter Avenue in Westquarter, Falkirk. A disused former social club building occupies the main part of the site, with a group of trees and amenity grass strip running along the east boundary. The majority of the 20 trees form an overgrown, unmaintained beech hedgerow of 17m height. There are 3 mature specimens of sycamore and a single mature Lawson cypress. The trees are separated from the developed area of the site by a low brick wall.

STATUTORY PROTECTION

The trees within the site are not subject to any statutory protection.

TREE SURVEY AND ANALYSIS

A visual assessment has been carried out from the ground level of 20 trees within the site. The location of the trees is plotted on the attached Tree Survey Plan, and their condition and recommended remedial works are recorded in detail in the schedule attached at page 9 of this document. This records relevant details in accordance with the recommendations contained in BS 5837:2012, and includes:

- Tree number (Tree tag number where used, or plan reference number)
- Tree species (common name)
- Stem diameter at breast height (1.5m above ground level)
- Canopy spread in metres (average)
- Tree height (estimate in metres)
- Crown height (clearance to lowest branches in metres)
- Tree Condition Category
- General condition (good, fair, poor, dead)
- Age (Young, middle-aged, mature, over-mature, veteran)
- Whether single or multi-stemmed
- Comments and observations on the overall health and condition of the tree, highlighting any problems or defects
- Recommended remedial works, where necessary.

Where appropriate, recommendations have been made on necessary remedial action such as tree surgery or felling. This is specified where there is likely to be significant risk to safety or tree health, or to abate a nuisance. The recommendations are general in nature and do not constitute a detailed work specification. Specifications, where required, can be provided to accord with the guidance and recommendations contained in BS3998:2010, "Tree work – Recommendations."

The trees have been tagged with round 4-digit tags ranging from 9074-9093.

Trees and groups have been categorised in accordance with the guidelines contained in BS 5837 as follows:

3 Category A

0 Category B,

17 Category C

0 Category U.

For details of the tree categorisation, refer to the table on page 8. Categorisation is carried out without reference to the proposed development or site alterations, and is based solely on tree health, condition, safe life expectancy, and amenity value. The presence of trees and their quality is only one factor in the design and planning process, and the retention of good quality,

healthy trees may be inappropriate in the context of wider planning and development considerations.

CONSTRAINTS POSED BY EXISTING TREES

In order to minimise the risk of long-term damage to trees from construction operations, particular care is required to protect trees from physical damage. Significant damage can be caused to root systems by ground level changes; soil compaction; contamination from oils and cement; and changes in soil moisture content. For these reasons, BS 5837:2012 '*Trees in relation to design, demolition and construction – Recommendations*' sets out a minimum recommended Root Protection Area (RPA) in m^2 based on the stem diameter of the tree. The RPA represents the below-ground constraints presented by trees within the proposed development area and must be taken into account in the design process. Whilst BS5837 recommends specifying the RPA as a circle, for practical purposes this report uses the equivalent square area centred on the stem of the tree. The RPA may be adjusted where restrictions to normal rooting patterns suggest that root growth will be minimal (*e.g.* adjacent to walls, sealed surfaces, watercourses, or existing utility trenches).

Above-ground constraints include ultimate tree height and canopy spread which will affect both physical presence and daylight availability to any proposed structures. Species characteristics, such as evergreen or dense foliage, potential for branch drop, fruit fall, *etc*, will all have an influence on the potential for development of the site. Other factors that may need to be taken into account will include easements for underground and above-ground apparatus; road safety and visibility; or the proposed end use of space adjacent to retained trees.

ARBORICULTURAL IMPACT ASSESSMENT

Designs have been prepared for the demolition of the existing building, and construction of new residential properties with off-street parking. The row of beech trees were originally planted as a hedge, but have not been maintained as such. As a result several individuals are heavily suppressed, and most have very asymmetric crown development. There are few realistic options for management of the group. Any attempt to thin out to the best individual stems is

likely to result in crown dieback due to exposure, or a significant risk of wind damage. They are not really suited to long-term retention within a residential development, so the most sensible option would be to remove the group and provide replacement planting closer to the road verge to form a new landscaped boundary to the site.

The three sycamore trees (9074, 9091, 9092) are good, dominant specimens. It will be possible to retain the tree in the NE corner (9074) within the proposed scheme, although some care will be needed in the formation of the service strip to avoid root damage. It will not be possible to retain the remaining sycamores within the current designs.

There is space within the existing amenity grass verge along Westquarter Avenue to provide significant replacement tree planting, which should include some larger-growing specimens to replace trees to be removed.

TREE PROTECTION PLAN

The Tree Protection Plan indicates the location of all proposed structures and hard surfacing, and the location of the required Construction Exclusion Zone (CEZ) around trees proposed for retention. It indicates appropriate Construction Exclusion Zones, which are based on the recommended Root Protection Areas and other identified constraints, including daylight shading, tree species, vigour, amenity values, and specific ground conditions which are likely to influence the rooting environment. Trees recommended for retention must be protected barriers and/or ground protection prior to commencement of any development works, including demolition. Barriers should consist of a scaffold framework in accordance with Figure 2 of BS 5837:2012, comprising a vertical and horizontal framework, well braced to resist impacts, with vertical tubes spaced at a maximum interval of 3 m. Onto this, weld mesh panels should be securely fixed with wire or scaffold clamps. Heras Fencing may be used providing that the panels are joined together with a minimum of two anti-tamper couplings, and that panels are braced on the inside of the CEZ with stabiliser struts in accordance with Figure 3 of BS5837:2012.

There should be no movement of machinery, stockpiling of materials, excavations (including service runs), or changes in existing ground levels within the Construction Exclusion Zone throughout the duration of the construction works. Where service runs must pass through the protected area (indicated by hatching), excavations should be dug by hand, and all tree roots

encountered that are greater than 25mm diameter should be retained intact. Cables, pipes and ducts should be fed below roots, and trenches should be backfilled as soon as possible to prevent desiccation of roots.

BS 5837:2012 Tree Categorisation

TREES FOR REMOVAL				
Category and definition	**Criteria**			**Identification on plan**
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other U Category trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality NOTE : *Category U trees can have existing or potential conservation value which it might be desirable to preserve.*			**Red**
TREES TO BE CONSIDERED FOR RETENTION				
Category and definition	**Criteria – Subcategories**			**Identification on plan**
	1 Mainly arboricultural values	**2 Mainly landscape values**	**3 Mainly cultural values, including conservation**	
Category A **Trees of high quality** with an estimated remaining life expectancy of 40 years	Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural features and/or landscape features.	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	**Green**
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in Category A, but are downgraded because of impaired condition (*e.g.* presence of significant though remediable defects including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention beyond 40 years; or trees lacking the special quality necessary to merit the Category A designation	Trees present in numbers, usually as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality.	Trees with material conservation or other cultural value	**Blue**
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them a greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	**Grey**

Tree Survey Schedule

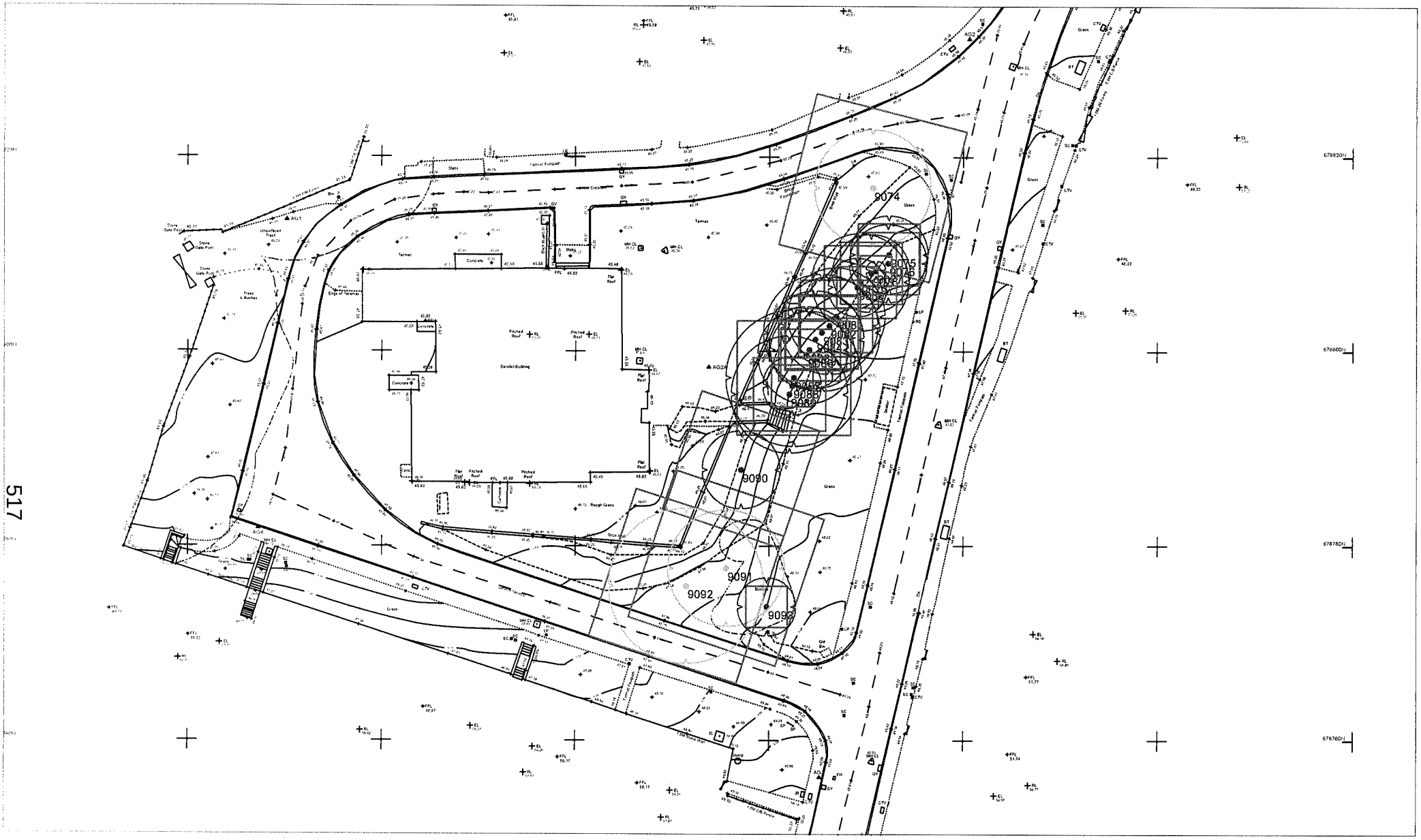
Tag No	Species	DBH	Canopy	Ht	C.Ht	BS Cat	Condition	Age	Stems	Comments	Recommendations
9074	Sycamore	0.75	6	14	3	A1	Good	M	1	Branches affecting adjacent lampost	Tip back secondary branch growth to clear lampost. Ground protection measures required during construction to minimise root disturbance.
9075	Beech	0.30	4	16	2	C1	Fair	M-A	1	Start of group of unmaintained hedge.	Not suitable for long-term retention close to housing. If site is redeveloped, consider removal as a group.
9076	Beech	0.30	4	16	2	C1	Fair	M-A	1		
9077	Beech	0.15	1	12	3	C1	Poor	M-A	1	Canopy suppressed.	
9078	Beech	0.30	4	17	3	C1	Fair	M-A	1		
9079	Beech	0.35	5	17	2	C1	Fair	M-A	1		
9080	Beech	0.20	3	12	2	C1	Poor	M-A	1	Canopy suppressed.	
9081	Beech	0.35	5	17	2	C1	Fair	M-A	1		
9082	Beech	0.30	5	8	2	C1	Poor	M-A	1	Canopy 1-sided. Canopy suppressed.	
9083	Beech	0.35	6	16	2	C1	Fair	M-A	1		
9084	Beech	0.30	5	17	1	C1	Fair	M-A	1	Physical damage to bark at 1m.	
9085	Beech	0.30	4	15	2	C1	Fair	M-A	1	Canopy 1-sided.	
9086	Beech	0.25	5	16	1	C1	Fair	M-A	1		
9087	Beech	0.55	7	16	2	C1	Poor	M-A	M	Included bark, compression fork at ground level. Dominant stem in group but weak, with minor decay from union.	
9088	Beech	0.20	3	10	3	C1	Poor	M-A	1	Canopy 1-sided. Canopy suppressed.	
9089	Beech	0.35	6	15	1	C1	Fair	M-A	1	End of group.	
9090	Lawson cypress	0.60	4	18	1	C1	Fair	M	1	Fire damage. Dead crown W side to 8m. Remainder healthy.	Remove to permit proposed development.
9091	Sycamore	0.75	6	17	3	A1	Good	M	1		Remove to permit proposed development.
9092	Sycamore	0.75	8	17	4	A1	Good	M	1		Remove to permit proposed development.
9093	Sycamore	0.20	3	8	2	C1	Fair	Y-M	1	Small in clump of holly, no tag.	Remove to permit proposed development.

NOTE: Recommendations given in the foregoing schedule do not constitute a detailed tree work specification. This schedule should not be used for tendering or instructing tree surgery operations. A detailed Tree Works Specification can be provided in accordance with BS3998:2010, "Tree Work – Recommendations" where required.

Tree Survey Schedule

KEY TO TREE SURVEY SCHEDULE

No	Number as shown on survey plan (refers to tree tags where used)
Species	Common name
DBH	Stem Diameter at Breast Height, measured at 1.5m above ground level. Diameter measured in 0.05m bands and ***rounded up*** to next 0.05m.
Canopy	Average canopy radius in metres (survey drawing shows actual canopy radius at 4 cardinal points).
Ht	Approximate tree height in metres
C Ht	Crown height, indicating clearance from ground level to lowest branches, measured in metres
BS Cat	British Standard 5837:2012 tree categorisation
Condition	General overall description of condition: Good, Fair, Poor, Dead
Age	Age class (Young, Middle-Aged, Mature, Over-Mature, Veteran)
Stems	Single (1) or multiple (M) stems from below 1.5m, used to determine the appropriate Root Protection Area.
Comments	Comments on any observed defects within the root zone or affecting visible buttress root system; on the main stem up to and including the point of the first main fork; and affecting main scaffold branch system or secondary branch structure. Will be left blank where no defects are noted and growth characteristics are normal
Recommendations	Description of any recommended remedial tree work operations to be carried out in accordance with BS 3998:2010, and following the specifications identified in the Arboricultural Association Specification for Tree Works. Will be left blank where no work is required



517

Alan Motion Tree Consulting Ltd
Chartered Forester/Arboricultural Consultant
Fairlie House-Main Street-Buchlyvie-Stirling-FK8 3LX
Mob-07866 389284 Tel-01360 850534
alan@alanmotion.co.uk
www.alanmotion.co.uk

CLIENT: Hanover (Scotland) Housing Association Ltd

PROJECT: Westquarter, Falkirk

DRAWING TITLE: Tree Survey as existing

DRAWING No: HH-WQ-TS-01

DATE: 17-6-14 | SCALE: 1:500 at A4 | REV:

1234 TREES CATEGORY A

1234 TREES CATEGORY B

1234 TREES CATEGORY C

1234 TREES CATEGORY U

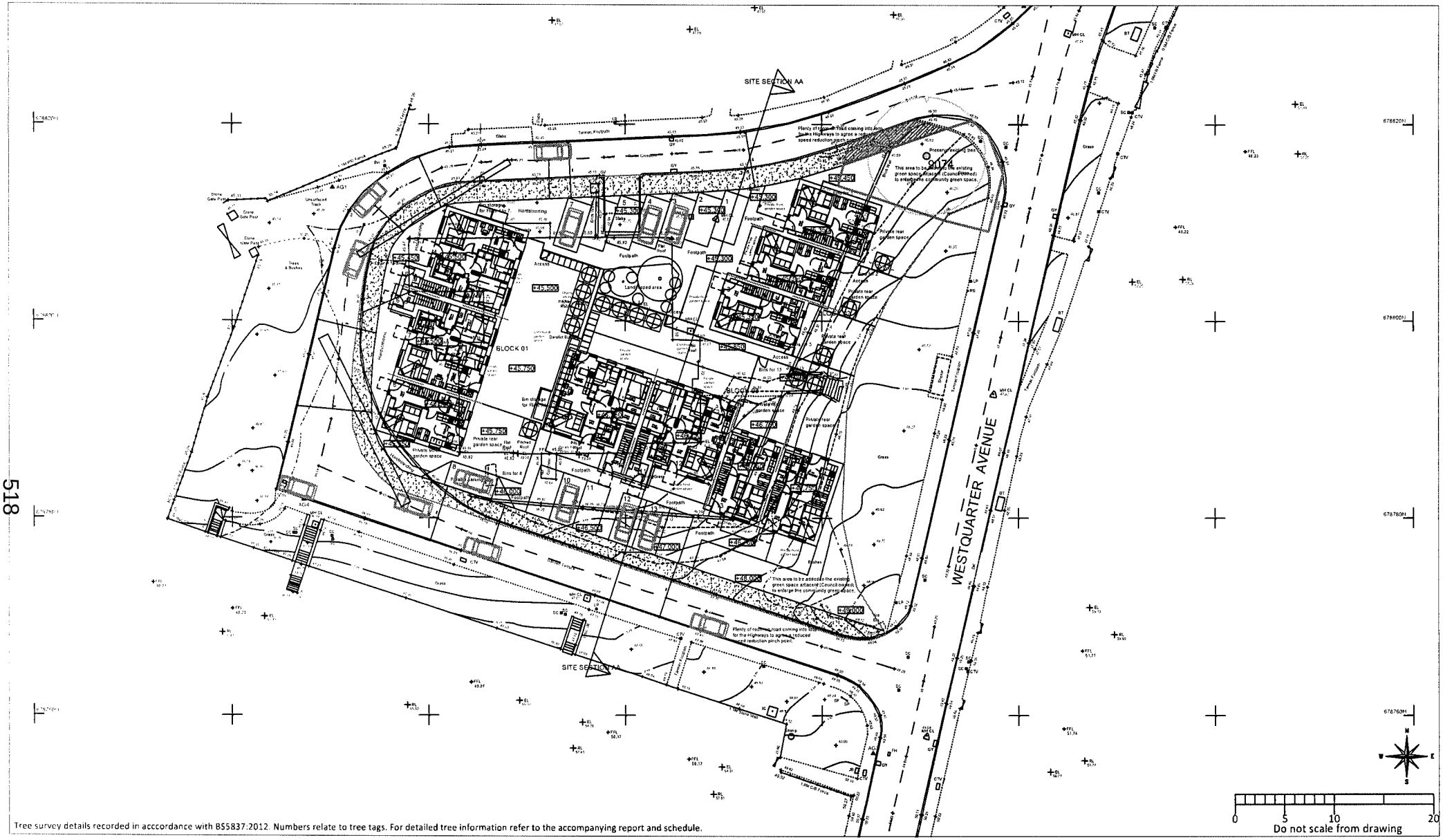
Tree survey details recorded in acccordance with BS5837:2012. Numbers relate to tree tags. For detailed tree information refer to the accompanying report and schedule.

Root Protection Area identified for each individual tree

N W E S

0 5 10 20

Do not scale from drawing



518

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CLIENT: Hanover (Scotland) Housing Association Ltd

PROJECT:
Westquarter, Falkirk

DRAWING TITLE: Tree Survey as existing
DRAWING No: HH-WQ-TPP-01

DATE: 17-6-14 | SCALE: 1:500 at A4 | REV:

1234 TREES RETAINED

1234 TREES REMOVED

NOTE: Colour relates to BS category standard colours

CONSTRUCTION EXCLUSION ZONE: LINE OF PROTECTIVE FENCE

ROOT PROTECTION AREA: HAND DIG ONLY

NOTE: All trees designated for retention to be protected by the erection of fencing in accordance with Section 6.2 and Figure 2 or 3 of BS5837:2012, as indicated by Construction Exclusion Zone. Protective fencing must be installed prior to all construction operations, including demolition works. There should be no alterations in ground levels, excavations, storage of materials, or access by machinery within the Construction Exclusion Zone through the duration of the works. Any required reailignment of any part of the CEZ must be approved in writing by the local planning authority.

PLANNING APPLICATION DETERMINED BY DIRECTOR OF DEVELOPMENT SERVICES UNDER DELEGATED POWERS – REPORT OF HANDLING

PROPOSAL	:	**Demolition of Existing Clubhouse Building and Erection of 14 No. Residential Units with Associated Parking, Landscaping and Infrastructure**
LOCATION	:	**Westquarter Workers Welfare, Westquarter Avenue, Westquarter, Falkirk, FK2 9RQ,**
APPLICANT	:	**Hanover (Scotland) Housing Association Ltd**
APPN. NO.	:	**P/14/0428/FUL**
REGISTRATION DATE	:	**31 July 2014**

1. SITE LOCATION / DESCRIPTION OF PROPOSAL

This detailed application proposes the construction of six, two storey, terraced houses and 8 flats on the site of an existing derelict public house within Westquarter, Falkirk. The proposal includes the demolition of the existing social club building, the removal of a number of trees from the site as well as the redevelopment of the existing loop road at Garden Terrace and Cedar Crescent to incorporate vehicle overrun areas and off street parking for the proposed dwellings.

2. SITE HISTORY

F/2004/0026 - Change of use of Social Club to Public House - Granted 24/03/2004
P/07/0452/OUT - Development of Land for Housing Purposes - Withdrawn 09/12/2008

3. CONSULTATIONS

The following responses to consultation were received:

Roads Development Unit	The Roads Development Unit has expressed concerns in relation to the proposed roads layout and in particular to the proposal for an unadopted shared surface over-run area adjacent to the adopted road around the site. The specific concerns ~~in~~ raised in relation to this aspect are as follows: -The potential for driver and pedestrian confusion and road safety concerns due to the mixed approach to roads design. -The lack of adoptable standard public footpath to serve the development. -Anticipation that refuse vehicles will be forced to use this unadopted shared surface area -Anticipation of future maintenance problems. -Unlikely that service providers will agree to locate services under this area. -Shared surface access is not recommended for sheltered housing schemes where the elderly, blind or infirm would be regular users. Existing on street parking has been observed in this location and it is noted that surrounding residents do not currently have in curtilage parking provision. It is also noted that the current carriageway around the site is of restricted substandard width.

	The Roads Development Unit recommend that the proposal be redesigned to incorporate an adoptable standard road and footway arrangement around the site which would require to be accommodated by a reduction in units across the site. It has also been suggested that 4 off street visitor parking spaces shouls also be provided.
Scottish Water	No objection.
Environmental Protection Unit	No objection however a conaminated land condition has been requested to be applied to any consent given.
Education Services	Education Services request that, if this application is approved, it is on the condition that a pro-rata contribution of £2,100 per house (total £29,400) is made towards capacity related investment expected to be required at Graeme High School.
The Coal Authority	No objections subject to the imposition of a condition requiring further site investigations and remedial work if necessary.

Where the local Community Council requested consultation, their comments appear above.

4. PUBLIC REPRESENTATION

In the course of the application, 1 contributor(s) submitted letter(s) to the Council. The salient issues are summarised below.

Concern raised in relation to the narrow nature of the road and potential loss of on street parking required due to disability.

5. THE DEVELOPMENT PLAN

The Falkirk Local Development Plan was adopted on 16 July 2015. The proposed development was assessed against the following policy or policies:

HSG03 - Windfall Housing

HSG04 - Housing Design

INF02 - Developer Contributions to Community Infrastructure

INF04 - Open Space and New Residential Development

INF05 - Education and New Housing Development

GN04 - Trees, Woodland and Hedgerows

D03 - Urban Design

5A. MATERIAL CONSIDERATIONS

The following matters were considered to be material in the consideration of the application;

Consideration of the site in relation to coal mining legacy

National Planning Policies and Guidance

Falkirk Council Non-statutory Supplementary Guidance

Responses to Consultation

Responses to Consultation

Assessment of Public Representations

6. PLANNING ASSESSMENT

The Development Plan

The Falkirk Local Development Plan (LDP) was adopted on 16 July 2015. It replaces the previous Structure Plan and Local Plan and includes a number of Supplementary Guidance documents which now have statutory status.

Local Plan Policies

The proposed development achieves a good standard of design which is sympathetic to the character of the surrounding area without merely attempting to replicate its appearance. The proposal includes adequate garden ground and off street parking provision to serve each property and does not represent an overdevelopment of the plot. The proposal does not introduce any unacceptable overshadowing or privacy issues and would represent an overall improvement in visual amenity levels compared with the sites current appearance and state of general disrepair.

Whilst the proposal would result in the loss of an existing community facility (public house) it is accepted that the public house on the site has not been a viable business for some time and indeed the premises has been closed for a number of years resulting in vandalism of the buildings on the site. The lack of any letters of representation in relation to this aspect is seen as an indication of the desire of the residents of Westquarter to see the site redeveloped as opposed to it continuing as a visual blot on the character of the area.

Local Plan Policies

The proposal would result in the loss of a number of trees within the site however, these trees are not afforded any special protection and whilst they do contribute to the character of the area, it is accepted that the site is awkward to develop and retention of the trees would potentially affect the viability of any development on the site. The removal of trees and development of the wider site is considered on balance to be a more desirable outcome in terms of visual amenity levels than retention of the trees and no development at all. Replacement planting can also be achieved adjacent to the site.

The applicant has confirmed that they do not wish to enter into an appropriate legal agreement to secure financial contributions towards necessary education infrastructure investment as well as towards active and passive open space improvements in the surrounding area. These required contributions are as follows;

Open Space - £18,200
Education - £29,400

The proposal fails to accord with the terms of the Falkirk Local Development Plan.

National Planning Policies and Guidance

Scottish Planning Policy (SPP) makes placemaking a clear focus in all new development and supports the use of design statements and advocates applying designing streets policy to sites of this scale. In this instance the applicants have prepared a design statement in support of their proposals and have

worked through the designing streets toolbox when preparing their proposal. It is clear from reviewing the supporting documents submitted with the application that the applicants have opted for a design led approach as opposed to a standards based approach. This is entirely in line with national planning policy but unfortunately is at odds with Falkirk Council's current Roads Design Guidelines.

In line with the Designing Streets approach, the proposed development seeks to put place before movement despite being constrained by the existing narrow adopted roadway around the site. The result of this approach is the shared surfaces and vehicle overrun areas around the site which act to widen the available space for vehicles passing each other without resulting in an overly engineered appearance. The proposals achieve successful traffic movement around the site whilst maintaining provision for existing and increased on street parking thus in turn slowing traffic speeds and creating a more welcoming and safe environment.

Whilst there is a conflict between Falkirk Council roads design guidelines and National Planning policy in this instance, it is considered that the small scale nature of the development site and limited number of residential properties served by the access road, coupled with the limited length of affected road and the fact that it is segregated from the surrounding road network, means that the non-standard road solution would be safe and practical in this instance without setting a precedence for the same approach to be applied to other less appropriate sites in the future.

Responses to Consultation

In response to the Roads Development Unit consultation comments it is noted that the existing road around the site is of substandard width and is currently used by surrounding residents for on street parking. The application site is however of limited size and is currently an eyesore in need of redevelopment. The proposed development would be in keeping with the character of the surrounding pattern of development and it is considered that the limited number of properties proposed can adequately be served by a road of substandard width. If, as requested, the applicant were to amend the proposal to include an adoptable standard road and footpath around the site, the resultant area of land available for redevelopment would be significantly reduced and viability of the site would be brought into serious doubt with the proposed affordable housing units potentially being lost.

The applicant has, through pre application submissions, attempted to resolve the concerns raised in a number of different ways. The current scheme is seen as the best available solution allowing for the existing road to remain and by incorporating a widened strip around the site to act as a vehicle over run area and allowing for refuse and delivery vehicles to navigate the site around parked cars. The applicant proposes a clear change in materials between the existing tarmac carriageway and the vehicle overrun area thus making it clear to road users that there is a change in priority for road users on this shared surface area. A distinct change in materials in this way would also assist in providing for the needs of elderly, blind or infirm residents by ensuring a tactile transition from the shared surface area to the public road. In terms of pedestrian refuge areas, the access road would still benefit from the existing arrangement around the outside of this access road which includes a standard footway and raised kerb arrangement.

Responses to Consultation

Maintenance of this shared surface overrun area will be carried out privately by the applicants and will not fall to the local authority to maintain. Services are proposed to remain located beneath the existing adopted roadway and footpath around the site and not under the proposed shared surface area.

It is considered that the visitor parking space requirement in this instance (4 spaces) can be safely accommodated by utilising on street parking around the periphery of the site.

With the above considerations in mind it is clear that whilst the proposed development would result in an non-standard road design solution, the chosen layout would work in practice and allow safe vehicular access to the site whilst maintaining adequate levels of pedestrian safety. The design solution proposed is in line with the principles of designing streets and would result in a net benefit to the surrounding neighbours by increasing the overall width of the usable carriageway thus improving provision for on street parking. Whilst the concerns of the Roads Development Unit are noted, it is considered that the small scale of the proposals and the limited number of users of this access road allows for a non

standard approach in this instance. This approach allows for an affordable housing need to be met within the area whilst creating a sense of place and improving what is currently an eyesore and anti social behaviour burden on the local community.

Assessment of Public Representations

The existing narrow roadway is proposed to be widened by the provision of a vehicle overrun area around the internal radius of the existing crescent. Existing on street parking will remain available to surrounding residents. It is considered that the improved road will be able to accommodate additional visitor parking from the proposed development without adversely affecting existing residents or the ability of the road to be served by refuse and delivery vehicles.
Falkirk Council Non-statutory Supplementary Guidance

Falkirk Council Non- Statutory Guidance

Falkirk Council Supplementary Guidance SG10 - Education and New Housing Development and SG13 - Open Space and New Development identify circumstances where developer contributions are required in order to address deficiencies in Education and Open Space provision resulting from the development proposed. This guidance sets out a framework for calculating the value of the required contributions and sets out how these contributions can be used. In the case of the current application, it has been identified that there are capacity issues at local schools and the proposed layout does not provide for the required amount of open space provision. Developer contributions to the following values are therefore required to address these deficiencies:

Open Space - £18,200
Education - £29,400

The applicant has confirmed that they are unwilling to enter into a legal agreement to secure these contributions. This approach therefore fails to accord with the terms of the Supplementary Guidance.

Consideration of the Site in relation to Coal Mining Legacy

The application site falls within or is partially within the Development High Risk Area as defined by the Coal Authority. Any development proposal not exempt on grounds of type or nature, which would intersect with the ground requires the submission of a desk based Coal Mining Risk Assessment and Consultation with the Coal Authority.

The process recognises the need for flexibility and in cases where a further application (Matters Specified in Conditions) is necessary, the Coal Mining Risk Assessment may be deferred until that stage. If an assessment has been received and the views of the Coal Authority sought, these are summarised within the consultation responses above and appropriate conditions and/or informatives have been applied.

7. CONCLUSION

The proposal represents an acceptable form of development however fails to address anticipated deficiencies in Education and Open Space provision. The proposal is therefore contrary to the terms of Development Plan. There are no material planning considerations that warrant a grant of planning permission in this instance.

8. RECOMMENDATION

Refuse Planning Permission subject to the satisfactory conclusion of an obligation in terms of

Refusal is recommended for the following;

Reason(s):

1. Failure by the applicant to enter into an appropriate legal agreement to secure developer contributions towards Education and Open Space provision fails to address anticipated education capacity issues likely to arise as a result of this development and would result in a deficiency in open space provision needed to serve the development to the detriment of the residential amenity of the area. The proposal fails to accord with the terms of policies INF05 - Education and New Housing Development, INF04 - Open Space and New Housing Development and INF02 - Developer Contributions to Community Infrastructure of the Falkirk Local Development Plan and both Supplementary Guidance SG10 - Education and New Housing Development and SG13 - Open Space and New Development.

Informatives:

1. For the avoidance of doubt, the plan(s) to which this decision refer(s) bear our online reference number(s) 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18 and 19.

[redacted]

Director of Development Services

25.9.15

Date

Contact Officer : Kevin Brown
(Planning Officer) 01324 504701

Reference No. P/14/0428/FUL

Town and Country Planning (Scotland) Act 1997 as Amended
Issued under a Statutory Scheme of Delegation.

Falkirk Council

Refusal of Planning Permission

Agent

The Morrison Partnership
242 Queensferry Road
Edinburgh
EH4 2BP

Applicant

Hanover (Scotland) Housing
Association Ltd
95 McDonald Road
Edinburgh
EH7 4NS

This Notice refers to your application registered on 31 July 2014 for permission in respect of the following development:-

Development — Demolition of Existing Clubhouse Building and Erection of 14 No. Residential Units with Associated Parking, Landscaping and Infrastructure at

Location — Westquarter Workers Welfare, Westquarter Avenue, Westquarter, Falkirk, FK2 9RQ

The application was determined under Delegated Powers. Please see the attached guidance notes for further information, including how to request a review of the decision.

In respect of applications submitted on or after 1 January 2010, Falkirk Council does not issue paper plans. Plans referred to in the informatives below can be viewed online by inserting your application number at http://eplanning.falkirk.gov.uk/online/

In accordance with the plans docquetted or itemised in the attached informatives as relative hereto, Falkirk Council, in exercise of its powers under the above legislation, hereby

Refuses Detailed Planning Permission

The Council has made this decision for the following

Reason(s):

1. Failure by the applicant to enter into an appropriate legal agreement to secure developer contributions towards Education and Open Space provision fails to address anticipated education capacity issues likely to arise as a result of this development and would result in a deficiency in open space provision needed to serve the development to the detriment of the residential amenity of the area. The proposal fails to accord with the terms of policies INF05 - Education and New Housing Development, INF04 - Open Space and New Housing Development and INF02 - Developer Contributions to Community Infrastructure of the Falkirk Local Development Plan and both Supplementary Guidance SG10 - Education and New Housing Development and SG13 - Open Space and New Development.

Informatives:

1. For the avoidance of doubt, the plan(s) to which this decision refer(s) bear our online reference number(s) 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18 and 19.

[redacted]

25 September 2015 — Director of Development Services

Morris, John

Subject: FW: Application Number: P/14/0428/FUL Comments

From: P Nicholson & J Rogers
Sent: 12 August 2014 13:36
To: brown, kevin
Subject: Application Number: P/14/0428/FUL Comments

For the attention of Kevin Brown, Case Officer

Reference P/14/0428/FUL

Address Westquarter Workers Welfare Westquarter Avenue Westquarter Falkirk FK2 9RQ

Proposal Demolition of Existing Clubhouse Building and Erection of 14 No. Residential Units with Associated Parking, Landscaping and Infrastructure

Dear Mr. Brown

With reference to the above planning application please find below our comments.

Our major concern would be the parking of our disabled vehicle at Cedar Crescent. The crescent itself is a single lane road and on viewing the planning drawings it appears that it will remain so. Due to the severity of my partner's disability we rely on our vehicle enormously. We have applied for a Disabled Parking Bay and await a response from the council.

In Section 6 of the 'Application for Planning Permission' dated 24th July 2014 it stated that the Roads Officer quoted the Dept. of Roads Policy and said that the proposal failed to comply. Has this issue been resolved?

It was also noted that there had been 'Neighbour Consultations' and the latest consultation date stated was Friday 01 August 2014 - neither my partner, I nor any neighbours I have spoken to were aware of these meetings. Are there any minutes of any of the meetings available for our review?

Thank you for taking the time to read our comments and look forward to hearing from you.

Regards

P Nicholson & J Rogers

Morris, John

From: MacKenzie, Roddy
Sent: 15 August 2014 14:58
To: adtm1dmbscorr
Cc: Steedman, Russell
Subject: P-14-0428-FUL Westquarter Avenue

Development Services

Memo

To: **Kevin Brown, Planning Officer**
Planning and Transportation (Development Control)

From: Roddy Mackenzie, Roads Development

Date: 15 Aug 2014 **Enquiries:** 4908

Our Ref: RMK/ **Your Ref:** P/14/0428/FUL

Proposal : Demolition of existing Clubhouse Building & Erection of 14 Residential Units with associated Parking, Landscaping & Infrastructure
Location : Westquarter Workers Welfare, Westquarter Avenue, Westquarter, Falkirk FK2 9RQ
Application : P/14/0428/FUL

I refer to your consultation notice received on 01 Aug 2014 regarding the above application.

The applicant intends to develop land for social housing in the site of a former social club adjacent to Garden Terrace & Cedar Crescent, Westquarter.

Jointly, Garden Terrace and Cedar Cres form a quiet residential street with a substandard width carriageway and substandard width footways. On Garden Terrace and Cedar Cres there is no off-street parking available to serve the existing houses and no visitors parking areas. With only on-street parking available and with the substandard width of the existing carriageway, there is evidence that residents habitually park on the footways and verges. The existing parking situation does not seem to have been taken in to account with the proposed layout.

The proposal would result in the existing substandard road layout with a proposed private paved area located adjacent to it. This private paved area would be permeable and thus non-adoptable. This mixed approach to roads design where there is standard footway and carriageway on one half of the road in conjunction with some sort of private shared space on the other side, could lead to driver and pedestrian confusion and road safety concerns and is thus not acceptable.

This proposed shared space which is to have some soft feature planting, would thus be an unadopted private space where the general public would have no right of access, although it is mentioned that it could be used as some sort of overrun area as well. With car parking and feature planting on this shared space the proposal would have no public footway to service the housing

and pedestrians would have to step out from this area directly on to the carriageway. It is intimated that this shared area could also be used as a 'refuge' area for pedestrians but this cannot be guaranteed as it is to be a private unadopted area with private parking and soft feature planting. This is not acceptable from a roads point of view.

The swept path drawing shows a refuse vehicle manoeuvring through the street with no parked cars in place. As there will almost always be some parked vehicles in place, the refuse vehicle will be forced to use the private area to gain access along the street, and this is not acceptable. The design only provides 100% parking for the development with no visitor's provision, and so the likelihood is that resident and visitor parking will also take place on the private shared area, further adding to street congestion.

As proposed, this private shared area will be used by refuse vehicles, delivery vehicles and emergency vehicles, and so who will be responsible for the maintenance of the shared area? With this unadopted area being paved with blocks, there would have to be some sort of delineating kerbline which would inevitably result in maintenance problems. It is stated that the private shared area is to also be used for underground services, although it is highly unlikely that service providers would agree to this.

Shared surface areas are not recommended for access to sheltered housing, or where the elderly, blind or infirm would be regular users. The housing in Cedar Cres could be in this category and so this proposed road design would again be unacceptable.

In summary, the roads design as a mix of standard layout and shared area is fundamentally flawed by the fact that the paved area is to be private and unadopted. This is the product of over-development of the site, and I can only conclude from a roads point of view, that the site should be redesigned as a standard layout with a 5.5m wide carriageway with a 2m wide public footway to serve a reduced proposed number of units. Council guidelines for social housing parking provision are less onerous as it is generally thought that vehicle ownership will be lower within such a development. However we have now been finding that this is not the case and so the provision of visitor' spaces should be considered. Four visitor's spaces should be provided for this size of development.

No flood risk assessment will be required, and although Brian Raeburn has already pointed out a discrepancy with the surface water drainage strategy, I have passed the drainage details to our drainage consultants for approval.

Regards

RMK

Morris, John

From: hillis, alfred
Sent: 27 August 2014 10:00
To: adtm1dmbscorr
Subject: P/14/0428/FUL - Westquarter Workers Welfare,Westquarter Avenue, Westquarter

Contaminated Land

Conditioned due to the presence of mining, made ground potentially other contaminative activities within 250m of the site.

1. Unless otherwise agreed in writing no development shall commence on site until a contaminated land assessment in accordance with current guidance has been submitted and approved by the Planning Authority. The assessment shall determine the nature and extent of any contamination on the site, including contamination that may have originated from elsewhere, and also identify any potential risks to human health, property, the water environment or designated ecological sites .

2. Where contamination (as defined by Part IIA of the Environmental Protection Act 1990) is encountered, a detailed remediation strategy shall be submitted to and approved in writing by the Planning Authority. The strategy shall demonstrate how the site shall be made suitable for its intended use by the removal of any unacceptable risks caused by the contamination.

3. Prior to the commencement of development the remediation works shall be carried out in accordance with the terms and conditions of the remediation scheme as approved in writing by the Planning Authority. No part of the development shall be occupied until a remediation completion report/validation certificate has been submitted to and approved in writing by the Planning Authority.

4. In the event that unexpected contamination is encountered following the commencement of development, all work on the affected part of the site shall cease. The developer shall notify the Planning Authority immediately, carry out a contaminated land assessment and undertake any necessary remediation works. Development shall not recommence without the prior written approval of the Planning Authority.

Environmental Health

Noise need not be considered as a determining factor in considering this application.
Informative - The builder shall ensure that noisy work which is audible at the site boundary shall ONLY be conducted between the following hours:

Monday to Friday	08:00 - 18:00 Hours
Saturday	09:00 - 17:00 Hours
Sunday / Bank Holidays	10:00 - 16:00 Hours

Deviation from these hours of work is not permitted unless in emergency circumstances and with the prior approval of the Environmental Health Unit.

Alf Hillis
Environmental Health Officer
01324 504873

Richard Teed: Senior Forward Planning Officer
Sealock House, 2 Inchyra Road,
Grangemouth, FK3 9XB.
Phone:01324 506621 Fax:01324 506601 Email:Richard.teed@falkirk.gov.uk

MEMO

Falkirk Council
Education Services

To:	Kevin Brown		
From:	Richard Teed	Ext:	6621
Our Ref:		Your Ref:	P/14/0428/FUL/AD08
Date:	1st September 2014		

Subject: **Detailed Application for 14 Houses, Workers Welfare, Westquarter**

School Catchments
This application falls within the catchments for Westquarter Primary School, St. Andrew's RC Primary, Graeme High School and St Mungo's RC High School.

Impact of Development
Westquarter Primary School
Based on the current ratio of 0.25 pupils per house, we would expect 3-4 children from this development to enrol at Westquarter Primary School. The school will have sufficient capacity to accommodate this development.

St. Andrew's RC Primary School
Based on the current ratio of 0.09 pupils per house, we would expect 1-2 children from this development to enrol at St. Andrew's RC Primary. The school has sufficient long-term capacity to accommodate the extra pupils from this development.

Graeme High School
This development would be expected to result in an additional 2 children at Graeme High school, based on the 0.14 pupils/house ratio. The school is currently expected to reach capacity in the medium to long-term.

St Mungo's RC High School
This development is below the threshold where it would affect capacity at St Mungo's High School.

Conclusion
Education Services request tha, if this application is approved, it is on the condition that a pro-rata contribution of £2,100 per house (total £29,400) is made towards capacity related investment expected to be required at Graeme High School.

The Coal Authority

INVESTOR IN PEOPLE

200 Lichfield Lane
Berry Hill
Mansfield
Nottinghamshire
NG18 4RG

Tel: 01623 637 119 (Planning Enquiries)

Email: planningconsultation@coal.gov.uk

Web: www.coal.gov.uk/services/planning

For the Attention of: Mr K Brown – Case Officer
Falkirk Council

[By Email: dc@falkirk.gov.uk]

20 October 2014

Dear Mr Brown

PLANNING APPLICATION: P/14/0428/FUL

Demolition of existing clubhouse and erection of 14 No residential units with associated parking, landscaping and infrastructure ; Westquarter Workers Welfare, Westquarter Avenue, Westquarter, Falkirk, FK2 9RQ

Thank you for your consultation letter of 2 October 2014 seeking the views of The Coal Authority on the above planning application.

The Coal Authority is a non-departmental public body sponsored by the Department of Energy and Climate Change. As a statutory consultee, The Coal Authority has a duty to respond to planning applications and development plans in order to protect the public and the environment in mining areas.

The Coal Authority Response: **Material Consideration**

I have reviewed the proposals and confirm that the application site falls within the defined Development High Risk Area; therefore within the application site and surrounding area there are coal mining features and hazards which need to be considered in relation to the determination of this planning application.

The applicant has obtained appropriate and up-to-date coal mining information for the proposed development site and has used this information to inform the Site Investigation Report (May 2014, prepared by Scott Bennett Associates (Group 1) Ltd), which accompanies this planning application.

The Site Investigation Report correctly identifies that the application site has been subject to past coal mining activity. The Coal Authority records indicate that the site is likely to have been subject to historic unrecorded underground coal mining at shallow depth.

Whilst primarily having been informed by recent site investigations and historical BGS borehole data, the Site Investigation Report has also been informed by a range of sources of information; including a Coal Mining Report and Coal Authority Mine Abandonment Plans.

Based on a review of this information the Report concludes that shallow abandoned mine workings have been established to affect the entire site. Accordingly, appropriate recommendations are included in Section 10.4 for intrusive site investigation works, prior to development in order to establish the exact situation regarding ground conditions and to enable appropriate remedial measures to be identified, if necessary.

The Coal Authority concurs with the recommendations made and considers that due consideration should also be afforded to the potential risk posed by mine gas to the proposed development.

The Coal Authority Recommendation to the LPA

The Coal Authority concurs with the recommendations of the Site Investigation Report; that coal mining legacy potentially poses a risk to the proposed development and that intrusive site investigation works should be undertaken prior to development in order to establish the exact situation regarding coal mining legacy issues on the site.

The Coal Authority recommends that the LPA impose a Planning Condition should planning permission be granted for the proposed development requiring these site investigation works prior to commencement of development.

In the event that the site investigations confirm the need for remedial works to treat the areas of shallow mine workings to ensure the safety and stability of the proposed development, this should also be conditioned to ensure that any remedial works identified by the site investigation are undertaken prior to commencement of the development.

The Coal Authority considers that the content and conclusions of the Site Investigation Report are sufficient for the purposes of the planning system and meets the requirements of the planning system in demonstrating that the application site is, or can be made, safe and stable for the proposed development. The Coal Authority therefore has **no objection** to the proposed development **subject to the imposition of a condition or conditions to secure the above.**

Please do not hesitate to contact me if you would like to discuss this matter further.

Yours sincerely

Chris MacArthur

Chris MacArthur B.Sc. (Hons), DipTP, MRTPI
Planning Liaison Manager

General Information for the Applicant

Under the Coal Industry Act 1994 any intrusive activities, including initial site investigation boreholes, and/or any subsequent treatment of coal mine workings/coal mine entries for ground stability purposes require the prior written permission of The Coal Authority, since such activities can have serious public health and safety implications. Failure to obtain permission will result in trespass, with the potential for court action. Application forms for Coal Authority permission and further guidance can be obtained from The Coal Authority's website at: http://coal.decc.gov.uk/en/coal/cms/services/permits/permits.aspx

Disclaimer

The above consultation response is provided by The Coal Authority as a Statutory Consultee and is based upon the latest available coal mining data on the date of the response, and electronic consultation records held by The Coal Authority since 1 April 2013. The comments made are also based upon only the information provided to The Coal Authority by the Local Planning Authority and/or has been published on the Council's website for consultation purposes in relation to this specific planning application. The views and conclusions contained in this response may be subject to review and amendment by The Coal Authority if additional or new data/information (such as a revised Coal Mining Risk Assessment) is provided by the Local Planning Authority or the Applicant for consultation purposes.

5th November 2014

Falkirk Council Development
Abbotsford House
Davids Loan, Bainsford
Falkirk
FK2 7YZ

SCOTTISH WATER

Customer Connections
The Bridge
Buchanan Gate Business Park
Cumbernauld Road
Stepps
Glasgow
G33 6FB

Customer Support Team
T: 0141 414 7660
W: www.scottishwater.co.uk
E: individualconnections@scottishwater.co.uk

Dear Sir Madam

PLANNING APPLICATION NUMBER: P/14/0428/FUL
DEVELOPMENT: Falkirk Westquarter Westquarter Avenue Westquarter
OUR REFERENCE: 705771
PROPOSAL: Demolition of Existing Clubhouse Building and Erection of 14 No. Residential Units with Associated Parking, Landscaping and Infrastructure

Please quote our reference in all future correspondence

In terms of planning consent, Scottish Water does not object to this planning application. However, please note that any planning approval granted by the Local Authority does not guarantee a connection to our infrastructure. Approval for connection can only be given by Scottish Water when the appropriate application and technical details have been received.

Due to the size of this proposed development it is necessary for Scottish Water to assess the impact this new demand will have on our existing infrastructure. With Any development of 10 or more housing units, or equivalent, there is a requirement to submit a fully completed Development Impact Assessment form. Development Impact Assessment forms can be found at www.scottishwater.co.uk.

Carron Valley Water Treatment Works may have capacity to service this proposed development.

The water network that serves the proposed development may be able to supply the new demand.

Water Network – Our initial investigations have highlighted their may be a requirement for the Developer to carry out works on the local network to ensure there is no loss of service to existing customers.
The Developer should discuss the implications directly with Scottish Water.

Kinneil Kerse Waste Water Treatment Works may have capacity to service this proposed development.

The waste water network that serves the proposed development may be able to accommodate the new demand.

Wastewater Network – Our initial investigations have highlighted their may be a requirement for the Developer to carry out works on the local network to ensure there is no loss of service to existing customers. The Developer should discuss the implications directly with Scottish Water.

In some circumstances it may be necessary for the Developer to fund works on existing infrastructure to enable their development to connect. Should we become aware of any issues such as flooding, low pressure, etc the Developer will be required to fund works to mitigate the effect of the development on existing customers. Scottish Water can make a contribution to these costs through Reasonable Cost funding rules.

Scottish Water is funded to provide capacity at Water and Waste water Treatment Works for domestic demand.
Funding will be allocated to carry out work at treatment works to provide growth in line with the Local Authority priorities. Developers should discuss delivery timescales directly with us. Developers should discuss delivery timescales directly with us.

If this development requires the existing network to be upgraded, to enable connection, the developer will generally meet these costs in advance. Scottish Water can make a contribution to these costs through Reasonable Cost funding rules. Costs can be reimbursed by us through Reasonable Cost funding rules

A totally separate drainage system will be required with the surface water discharging to a suitable outlet. Scottish Water requires a sustainable urban drainage system (SUDS) as detailed in Sewers for Scotland 2 if the system is to be considered for adoption.

Scottish Water's current minimum level of service for water pressure is 1.0 bar or 10m head at the customer's boundary internal outlet. Any property which cannot be adequately serviced from the available pressure may require private pumping arrangements installed, subject to compliance with the current water byelaws. If the developer wishes to enquire about Scottish Water's procedure for checking the water pressure in the area then they should write to the Customer Connections department at the above address.

Should the developer require information regarding the location of Scottish Water infrastructure they should contact our Property Searches Department, Bullion House, Dundee, DD2 5BB. Tel – 0845 601 8855.

If the developer requires any further assistance or information on our response, please contact me on the above number or alternatively additional information is available on our website: www.scottishwater.co.uk.

Yours faithfully

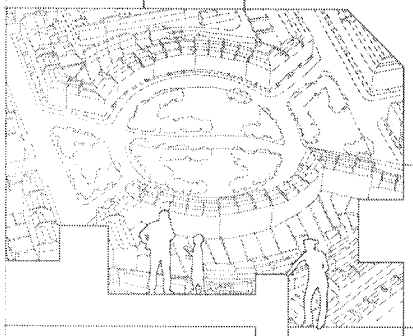
Anne MacNeil
Customer Connections Administrator

A Policy Statement for Scotland

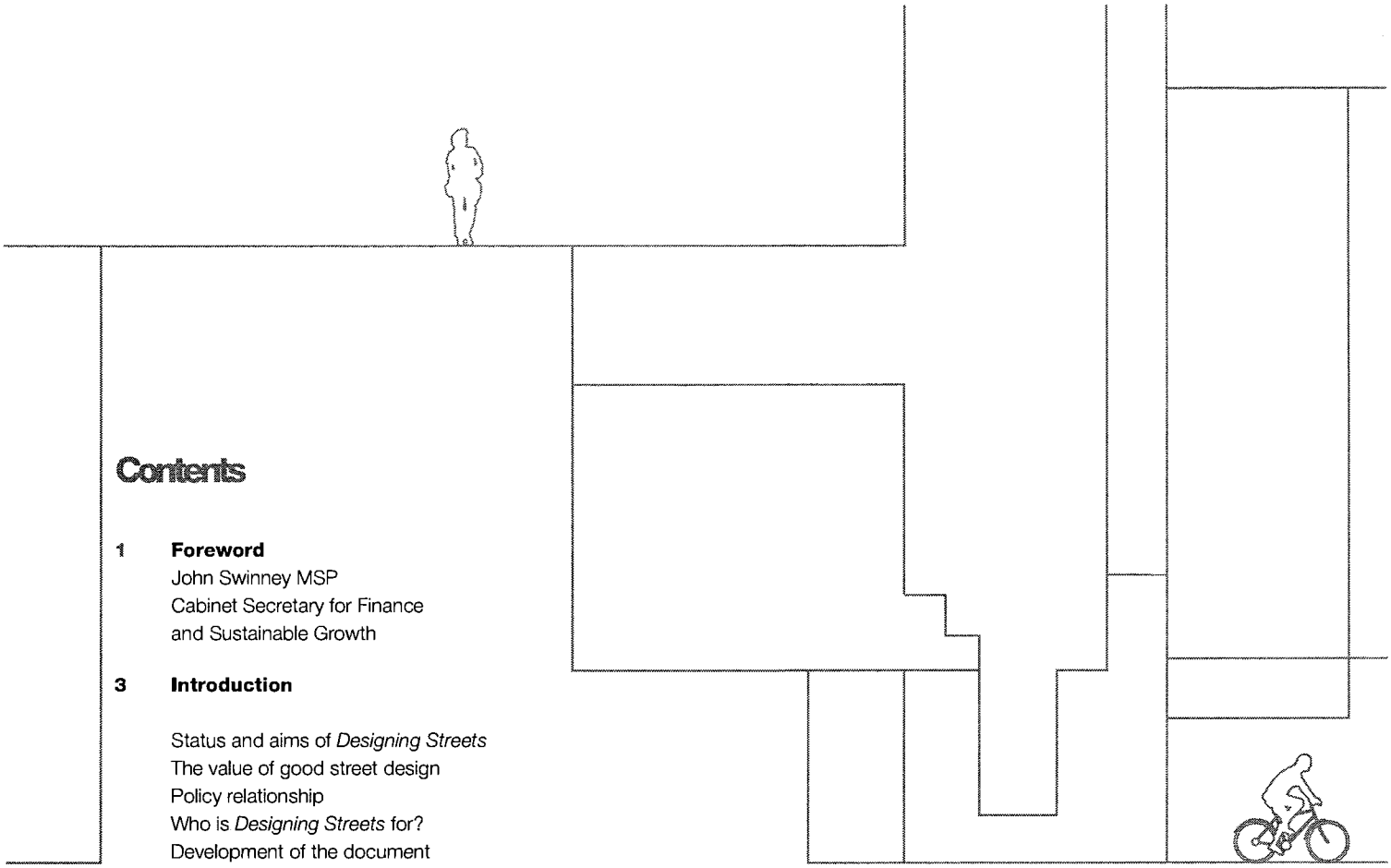
designing streets

Policies

- Street design must consider place before movement.
- Street design guidance, as set out in this document, can be a material consideration in determining planning applications and appeals.
- Street design should meet the six qualities of successful places, as set out in *Designing Places*.
- Street design should be based on balanced decision-making and must adopt a multidisciplinary collaborative approach.
- Street design should run planning permission and Road Construction Consent (RCC) processes in parallel.



The Scottish Government



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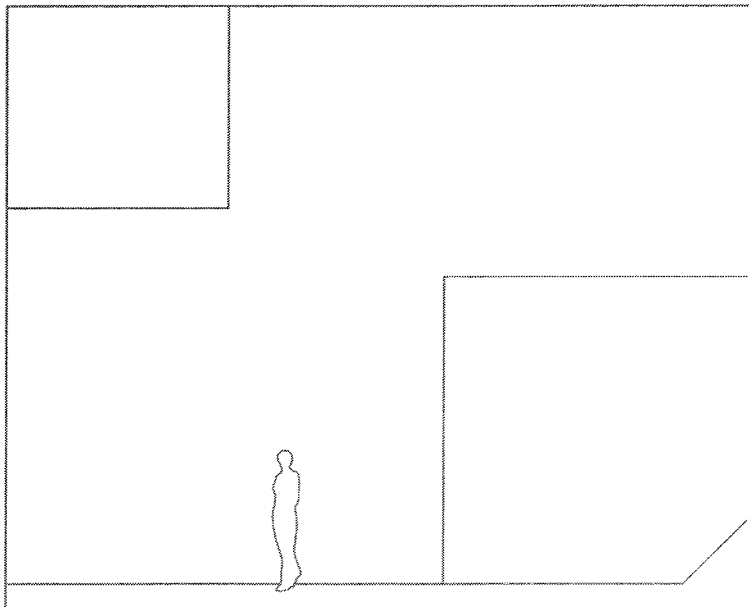

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The Scottish Government
St Andrew's House
Edinburgh
EH1 3DG

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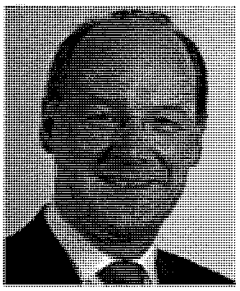

Foreword

Scotland's best streets provide some of the most valuable social spaces that we possess. The process of street design offers an opportunity to deliver far more to our society than simply transport corridors. Well-designed streets can be a vital resource in social, economic and cultural terms; they can be the main component of our public realm and a core element of local and national identity. Well-designed streets can also be crucial components in Scotland's drive towards sustainable development and responding to climate change. Attractive and well-connected street networks encourage more people to walk and cycle to local destinations, improving their health while reducing motor traffic, energy use and pollution.

Historically, Scotland has produced a wealth of unique and distinctive streets, squares, mews and lanes, and I believe that there is a great deal that can be learned from our past successes in this regard. *Designing Streets* is now positioned at the heart of planning, transport and architecture policy. This document underpins Scottish Ministers' resolve to move away from a prescriptive, standards-based approach in order to return to one which better enables designers and local authorities to unlock the full potential of our streets to become vibrant, safe and attractive places.

I welcome *Designing Streets* as a new policy document which puts place and people before the movement of motor vehicles. The Scottish Government is committed to an agenda of sustainable development that focuses on the creation of quality places and Scottish Ministers believe that good street design is of critical importance in this effort. This policy statement represents a step change in established practices and, given the direct influence that streets can have on our lives and environment, I believe it to be an essential change.

place
before movement

John Swinney MSP
Cabinet Secretary for Finance and Sustainable Growth