

**SURFACE WATER DRAINAGE ASSESSMENT
for
LLAY NEW ROAD
RHOSROBIN, WREXHAM, LL11 2UB**

REVISION C 2 OCTOBER 2014

Client:

SURFACE WATER DRAINAGE ASSESSMENT FOR
LLAY NEW ROAD, RHOSROBIN, WREXHAM, LL11 2UB

Document Verification

Project Title	Surface Water Drainage Assessment for Proposed Residential Development at Llay New Road, Rhosrobin, Wrexham LL11 2UB
Project Number	1241
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Prepared by

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Revision Record

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C	2 Oct 14	Soakaway locations and Results	AK

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**SURFACE WATER DRAINAGE ASSESSMENT FOR
LLAY NEW ROAD, RHOSROBIN, WREXHAM, LL11 2UB**

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- 1 Proposed layout by Axis Architectural Services Ltd
Drawing number CGL/TMJ-01 Revision C June 2014
- 2. Drainage Layout by KANE DESIGN
Drawing number 1241-101 Revision B dated 24 September 2014.
- 3. Drainage Layout by KANE DESIGN
Drawing number 1241-101 Revision B dated 24 September 2014.
with scanned development layout enclosed.
- 4. Soakaway Test Locations by KANE DESIGN
Drawing number 1241-100 Revision A dated 6 September 2014
- 5. Soakaway Test Results by KANE DESIGN

**SURFACE WATER DRAINAGE ASSESSMENT FOR
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1.0 Introduction

- 1.1 This report has been commissioned by Castlemead Group Ltd and considers surface water drainage options on their proposed development adjacent to the cemetery at Llay New Road, Rhosrobin, Wrexham LL12 2UB. The current preliminary layout indicates 117 proposed residential plots. Approximate site area is 6.2Ha.
- 1.2 The proposed site sub-strata is a mixture of clay, which cannot be drained, and areas which are suitable to drain by soakaways. The intention is to take the proposed surface water run-off to the suitable areas. The enclosed drawing demonstrates that within the site constraints, a workable solution exists.
- 1.3 The enclosed drawing, which constitutes part of the report, provides a layout utilising the suitable areas. This is a broad overview, and not a design. There may be other solutions, and also other portions of the site, currently untested, where infiltration meets the required standards.
- 1.4 This report has been commissioned by Castlemead Group Ltd. The copyright of this report is owned by Kane Design. Consequently this report may not be amended or adapted without the approval of Kane Design. Complete copies of this report may, however, be made and distributed by the client in dealing with matters directly related to its commission.
- 1.5 Alan Kane has been trading as Kane Design since April 2001 supplying infrastructure design services to the construction industry. A total of 149 schemes have been successfully completed for a variety of clients ranging from large developers including David Wilson Homes and Persimmon Homes, to smaller local clients. Site locations have ranged from Dumbarton (Scotland), to Hampshire.
- Projects have included large residential estates, hotels, industrial and commercial sites. Drainage / sewerage design is the core business but services also include highways, earthworks, flood assessments, sustainability design and reports, and transport / traffic studies.
- Expert and unique drainage solutions have been designed for problematic sites inherited from other consultants, in Llangollen, Rossett, Bala, and Llandudno,
- From April 2008 to May 2009 Alan Kane / Kane Design was employed by Costain Oil, Gas and Projects Ltd, as the lead drainage design engineer for the Holford (Cheshire) Underground Gas Storage Project, commissioned by Eon Gas, and valued at £144 Million.
- Kane Design was previously based in Red Hill House, Chester, employing four staff. Alan Kane (I.Eng.1991) has 37 years experience.

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2.0 Existing Site Description

- 2.1 This site is greenfield, very heavily overgrown, and site levels range from 84 to 91m. Soakaways tests were carried out by Kane Design on 10 June and 2 September 2014. Eight of these indicated clay areas, and four indicated areas that had satisfactory infiltration rates for soakaways, to British Standard B.S 363.
- 2.2 Welsh Water stated that there is insufficient spare capacity in the adjacent public surface water sewerage network to take any proposed flows from the development. No watercourses were in evidence in the site locality. Hence the requirement for a soakaway solution.

3.0 Methodology

A series of piped drainage networks have been designed, which take account of proposed areas, proposed flows, and the depth required to collect the farthest away runs. Soakaway results, and the locations of suitable infiltration areas are taken from Kane Design Report 'Soakaway results and Calculations' Revision A, 9 September 2014

Highway drainage is included in the above. The highway authority may want a separate, but smaller, system draining to dedicated highway soakaways.

Surface Water Attenuation:

It is cheaper to use smaller pipes as indicated in the enclosed design, with no flow control apparatus, and thereby take the full run-off to the good infiltration / soakaway areas. However, the option exists for larger diameter pipes with flow controls to limit the volume discharge to the soakaways. This would limit soakaway size / numbers.

4.0 Trial Pit Results

Trial pits tests: Results obtained 2 September 2014

- 1A: Satisfactory infiltration rate. Soakaways work to B.S. 363.
2A: No infiltration. Soakaways don't work
3A: No infiltration. Soakaways don't work
4A: Slow infiltration rate. Soakaways unlikely to work: Infiltration stopped 890mm depth

5A: Slow infiltration rate. Soakaways unlikely to work: Infiltration stopped 1200mm depth
6A: No infiltration. Soakaways don't work
7A: Slow infiltration rate. Soakaways unlikely to work: Infiltration stopped 740mm depth
8A: Slow infiltration rate. Soakaways workable to B.S. 363, but slow.

**SURFACE WATER DRAINAGE ASSESSMENT FOR
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Trial pits: Results obtained 10 June 2014

- 1: Satisfactory infiltration rate. Soakaways work to B.S. 363.
- 2: Satisfactory infiltration rate. Soakaways work to B.S. 363.
- 3: Test uncompleted but excavated material (sandy) same as test 3
- 4: No infiltration. Soakaways don't work

5.0 Enclosed Drawing: Comments.

Two areas have considered as suitable for soakaways.

These are the location of tests 2/3 and 8A.

All proposed surface water run-off from the preliminary layout hard-standing / roof areas / road is designed to drain to these areas.

Three options for soakaways are given in each case.

- Trench soakaway (effectively a box culvert), as a stone filled structure would lose too much soakage area.
- Cellular units. As manufactured by Stormcell Ltd of similar.
- Pre-cast-concrete rings.

6.0 Limitation and Comment

All measurements are approximate.

6.1 Soakaways:

The soakaway test results do not remove the need for a site investigation.

For detailed design, the Highway Authority will request further tests in the proposed road at the exact design location. They may want to have a presence on site for this. The full B.S. 363 testing criteria is for each test to be repeated three times.

This report has considered 12 locations on what is deemed a large site.

Detailed design would benefit from further tests, particularly in the good infiltration area to the east.

6.2 Layout:

The enclosed proposed layout is preliminary and may yet change significantly.

The lateral drainage routes required for each property to reach the main drainage under the proposed road have not been considered. Approximate lengths have been taken to indicate that each area can drain.

**SURFACE WATER DRAINAGE ASSESSMENT FOR
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7.0 Conclusion:

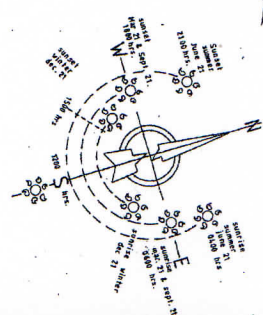
The enclosed indicates a workable surface water drainage scheme for the site.
Note that major changes to proposed layout / levels may affect this.
The exact arrangement of proposed soakaways has not been considered.

The surface water from the proposed layout can drain, in accordance with British Standards, to the good infiltration areas indicated on the enclosed drawing.
This fits in with the proposed development plan for the site.

**SURFACE WATER DRAINAGE ASSESSMENT FOR
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Appendix 1

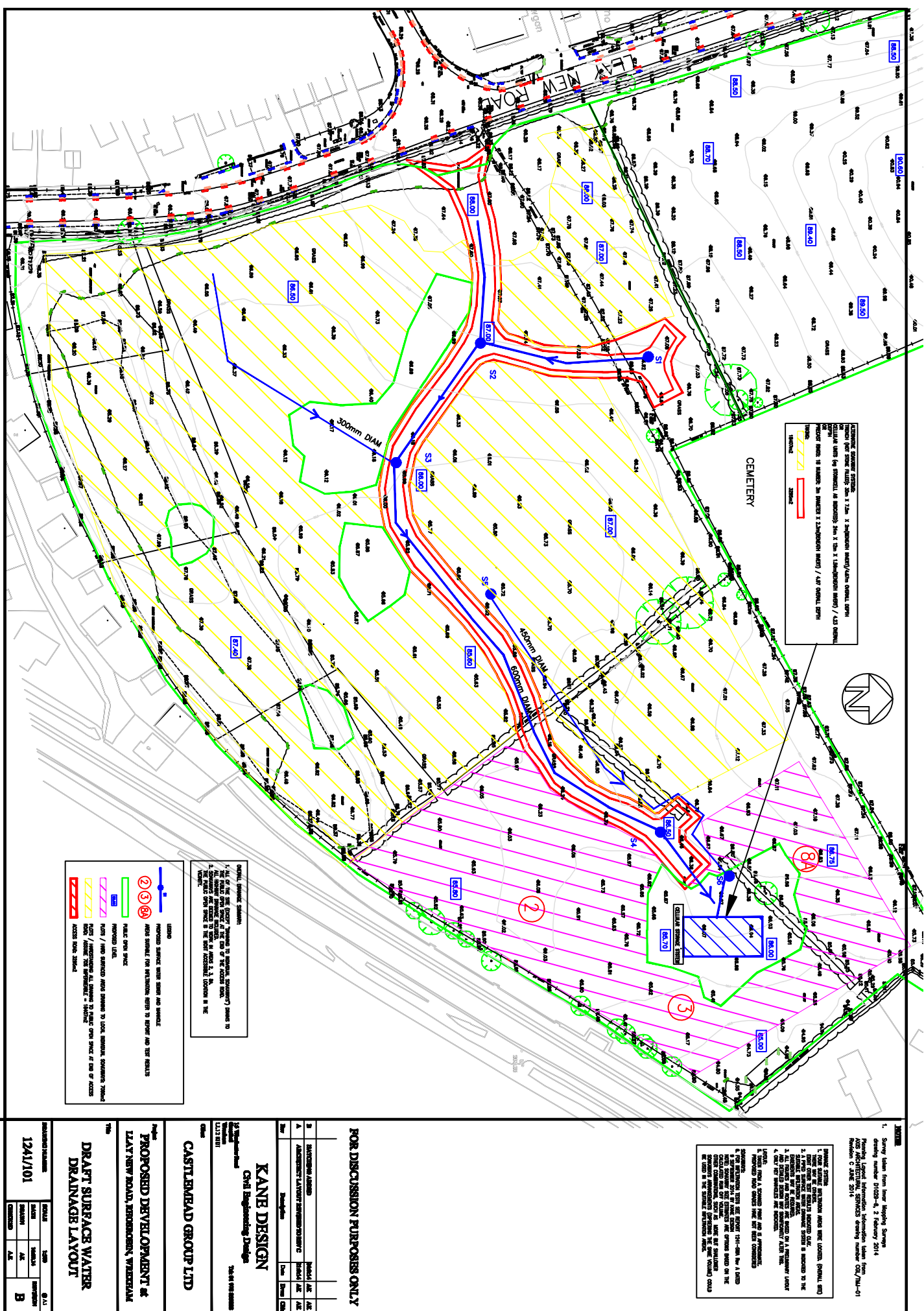




**SURFACE WATER DRAINAGE ASSESSMENT FOR
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Appendix 2

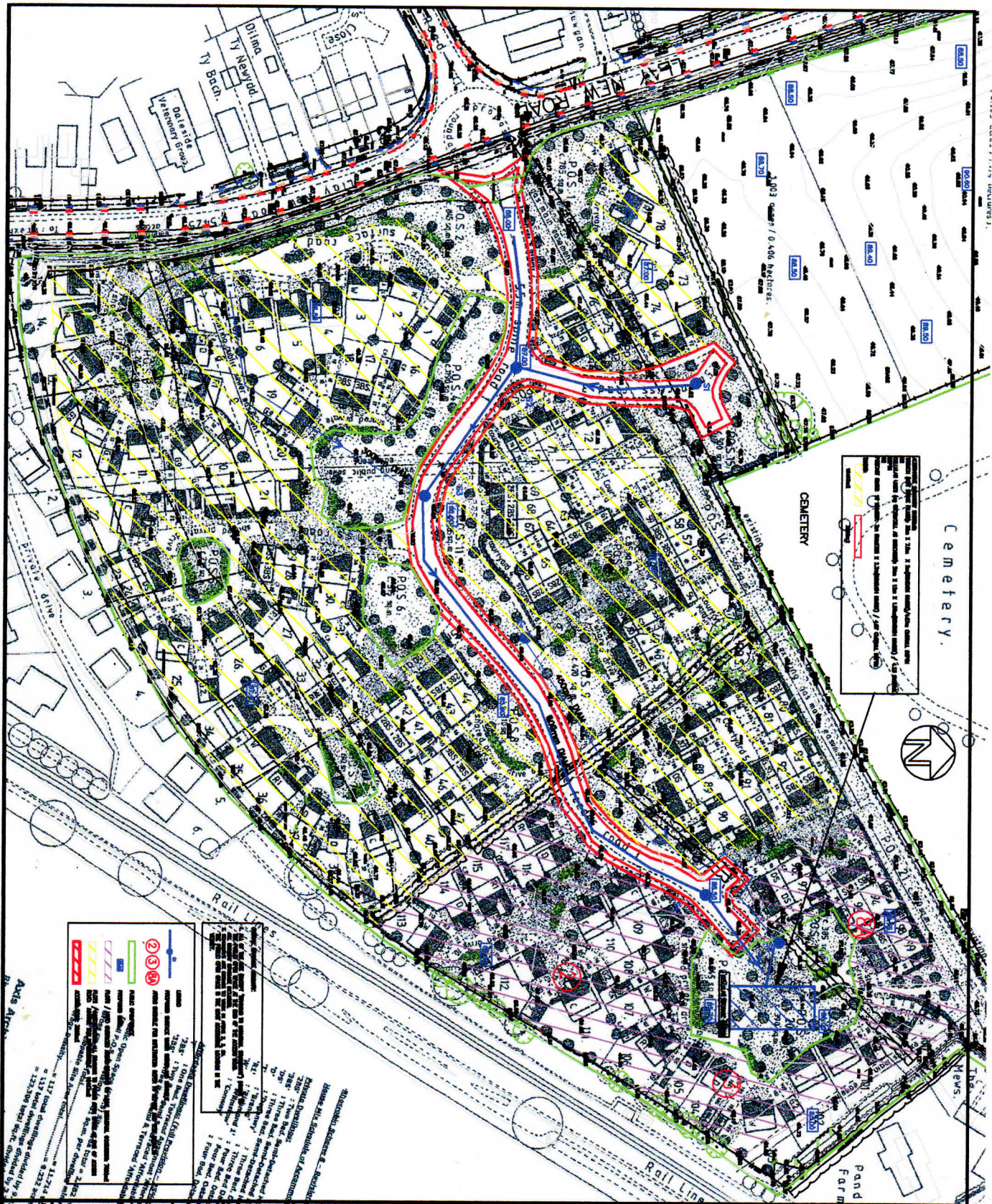




**SURFACE WATER DRAINAGE ASSESSMENT FOR
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Appendix 3





FOR DISCUSSION PURPOSES ONLY

NO.	REVISION	DATE	BY	CHKD.
1	ISSUED FOR DISCUSSION	12/01/01		

KANE DESIGN
Civil Engineering Design

CASTLEMEAD GROUP LTD

PROPOSED DEVELOPMENT & DRAFT SURFACE WATER DRAINAGE LAYOUT

12/01/01

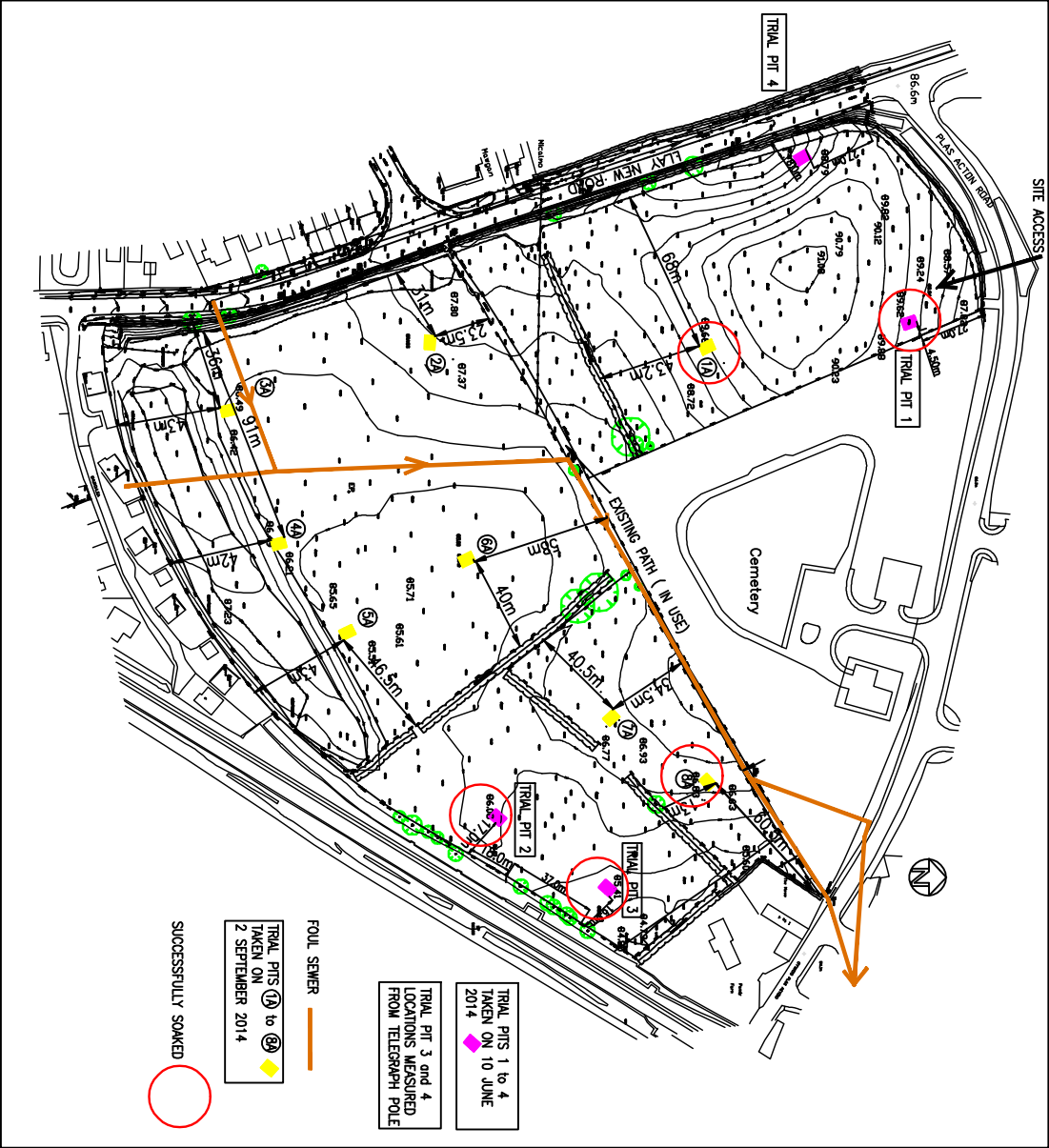
NOTES:

1. THE SITE IS A 100% DEVELOPMENT OF 100 PLOTS.
2. THE SITE IS A 100% DEVELOPMENT OF 100 PLOTS.
3. THE SITE IS A 100% DEVELOPMENT OF 100 PLOTS.
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**SURFACE WATER DRAINAGE ASSESSMENT FOR
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Appendix 4





NOTES

1. SURVEY TAKEN FROM
2. TRIAL PITS DIMENSIONS ARE APPROXIMATE
3. EXISTING FOUL SEWER LOCATION TO BE CONFIRMED
4. REFER TO REPORT "SOAKAWAY RESULTS AND CALCULATIONS OF LAY NEW ROAD, RHOSROBIN, WREXHAM LL11 2UB" 11 JULY 2014 by KANE DESIGN

SIZE: A3

KANE DESIGN
Civil Engineering Design

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PROPOSED DEVELOPMENT of
LAY NEW ROAD, RHOSROBIN
WREXHAM LL11 2UB

SOAKAWAY TEST LOCATIONS

Fig No.	Scale	Date	Rev.
1241-100	AK	11.06.14	12000 A

**SURFACE WATER DRAINAGE ASSESSMENT FOR
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Appendix 5



PROPOSED DEVELOPMENT at LLAY NEW ROAD, RHOSROBIN, WREXHAM, LL11 2UB

KANE DESIGN

FURTHER TESTS: 2 September 2014

JOB NUMBER:

1241

SOAKAWAY RESULTS

CLIENT

Castelemead Homes

02 September 2014

Alan Kane

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SOAKAWAY REFERENCE : TRIAL PIT 1: 2nd Sept14

Approx. Ground level (m) 89.66

Bottom of pit (m) 87.86

Test details

Date Wed 2 September 2014

Weather: Hot sunny

DEPTH OF WATER IN PIT(mm)

TIME (MINS)

TIME			
START	9.35am	0	1000
	9.45am	10	1120
	9.50pm	15	1210
	9.56pm	21	1240
	11.00am	85	1550
	11.25am	110	1680
	12.07pm	152	1700
	12.21pm	166	1760
END	12.58pm	203	1770

PIT SIZE (m)

Length 1.50

Width 0.75

Average Depth 1.80

PIT AREA (m 1.13

Approx. makeup

Topsoil 400mm

Sandy 1000mm

TOTAL TIME 203 minutes

CALCULATED:

V25 25%

V75 75%

TIME TO FALL FROM 75% to 25% (mins)

	ACTUAL	INTERPLOATED
TIME (mins)	TIME	DEPTH (mm)
50.75	10.26am	1385.00
152.25	12.07pm	1700.00
101.5		315.00

CALCULATION:

INFILTRATION RATE = f =

V = Effective Storage Volume between 75% and 25% full

T= Time taken to drain above X AP

where AP = 50% internal surface area, including base:

= 5.18 m2

CALCULATED

V (V75-V25)

CALCULATED

SOAKAWAY

PIT AREA

FROM ABOVE

Depth 25%

Depth 75%

x PIT AREA

T

AP

f (Infiltration rate)

m2

mm

mm

m3

minutes

m2

1

1.13

1385.00

1700.00

0.354

101.50

5.18

1.12E-05

m3/second

PROPOSED DEVELOPMENT at LLAY NEW ROAD, RHOSROBIN, WREXHAM, LL11 2UB

KANE DESIGN

FURTHER TESTS: 2 September 2014

JOB NUMBER:

1241

SOAKAWAY RESULTS

CLIENT

Castelemead Homes

02 September 2014 Alan Kane

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SOAKAWAY REFERENCE : TRIAL PIT 2: 2nd Sept14

Approx. Ground level (m) 87.60

Bottom of pit (m) 85.75

Level at stop (m) 86.97

DEPTH OF WATER IN PIT(mm)TIME (MINS)

TIME

Approx. makeup

START	9.53pm	0	550
	10.42pm	49	630
	11.22pm	89	630
	12.04pm	131	640
	12.24pm	151	630
END	13.18pm	205	630

PIT SIZE (m)

Topsoil 400mm

Length 2.90

Clay

Width 0.75

Some seepage (small)

Average Depth 1.85

PIT AREA (m 2.18)

TOTAL TIME 205 minutes**TEST ABANDONED. NO MOVEMENT IN 156 MINUTES**

CALCULATED:

V25 25%

V75 75%

TIME TO FALL FROM 75% to 25% (mins)

	ACTUAL	INTERPLOATED
TIME (mins)	TIME	DEPTH (mm)
0		0.00

PROPOSED DEVELOPMENT at LLAY NEW ROAD, RHOSROBIN, WREXHAM, LL11 2UB

KANE DESIGN

FURTHER TESTS: 2 September 2014

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SOAKAWAY RESULTS

CLIENT

Castelemead Homes

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SOAKAWAY REFERENCE : TRIAL PIT 3: 2nd Sept14

Approx. Ground level (m) 86.40

Bottom of pit (m) 84.30

Level at stop (m) 85.53

DEPTH OF WATER IN PIT(mm)TIME (MINS)

TIME

Approx. makeup

START	11.44am	0	870
	12.26pm	42	890
	13.26pm	102	870
	14.26pm	162	870
END	15.10pm	206	870

PIT SIZE	(m)	Topsoil	400mm
Length	1.70	Clay	
Width	0.75		
Average Depth	2.10		

PIT AREA (m 1.28

TOTAL TIME 206 minutes

CALCULATED:

V25 25%

V75 75%

TIME TO FALL FROM 75% to 25% (mins)**TEST ABANDONED. NO MOVEMENT IN 206 MINUTES**

	ACTUAL	INTERPLOATED
TIME (mins)	TIME	DEPTH (mm)

PROPOSED DEVELOPMENT at LLAY NEW ROAD, RHOSROBIN, WREXHAM, LL11 2UB**KANE DESIGN**
SOAKAWAY RESULTS

FURTHER TESTS: 2 September 2014

JOB NUMBER:**1241****CLIENT****Castelemead Homes**

02 September 2014

Alan Kane**PAGE****4/8****SOAKAWAY REFERENCE : TRIAL PIT 4: 2nd Sept14**

Approx. Ground level (m) 86.49
 Bottom of pit (m) 84.72
 Level at stop (m) 85.60

DEPTH OF WATER IN PIT(mm)TIME (MINS)

TIME						Approx. makeup
START	11.46am	0	700	PIT SIZE	(m)	Topsoil 400mm
	12.28pm	42	800	Length	1.70	Clay / silt
	13.23pm	97	830	Width	0.75	
	14.28pm	162	890	Average Depth	1.77	
	15.13pm	207	890			
END	15.58pm	252	890	PIT AREA (m	1.28	

TOTAL TIME 252 minutes

CALCULATED:

V25 25%
 V75 75%

TIME TO FALL FROM 75% to 25% (mins)

	ACTUAL	INTERPLOATED
TIME (mins)	TIME	DEPTH (mm)
63	12.49pm	811.00
189	14.55pm	890.00
126		79.00

CALCULATION:

INFILTRATION RATE = f =

V = Effective Storage Volume between 75% and 25% fullT= Time taken to drain above X AP

where AP = 50% internal surface area, including base:

= 5.61 m2

CALCULATED

V (V75-V25)

x PIT AREA

T

CALCULATED

AP

f (Infiltration rate)

SOAKAWAY**PIT AREA**

FROM ABOVE

mm

mm

0.101

126.00

5.61

2.37E-06**m3/second**

PROPOSED DEVELOPMENT at LLAY NEW ROAD, RHOSROBIN, WREXHAM, LL11 2UB**KANE DESIGN**
SOAKAWAY RESULTS

FURTHER TESTS: 2 September 2014

JOB NUMBER:**1241****CLIENT****Castelemead Homes**

02 September 2014

Alan Kane**PAGE****5/8****SOAKAWAY REFERENCE : TRIAL PIT 5: 2nd Sept14**

Approx. Ground level (m) 85.72
 Bottom of pit (m) 83.82
 Level at stop (m) 84.52

DEPTH OF WATER IN PIT(mm)TIME (MINS)

TIME		
START 11.49am	0	600
12.30pm	41	820
13.32pm	103	1090
14.30pm	161	1100
15.15pm	206	1200
15.56pm	247	1200
END 16.30pm	281	1200

PIT SIZE (m)
 Length 2.40
 Width 0.75
 Average Depth 1.90

Approx. makeup
 Clay / silt 400mm

PIT AREA (m 1.80)

TOTAL TIME 281 minutes

CALCULATED:

V25 25%
 V75 75%

	ACTUAL	INTERPLOATED
TIME (mins)	TIME	DEPTH (mm)
70.25	12.59pm	955.00
210.75	15.19am	1200.00
TIME TO FALL FROM 75% to 25% (mins)	140.5	245.00

CALCULATION:

INFILTRATION RATE = f =

V = Effective Storage Volume between 75% and 25% fullT= Time taken to drain above X AP

where AP = 50% internal surface area, including base:

= 7.79 m2

CALCULATED

V (V75-V25)

CALCULATED

x PIT AREA T

AP

f (Infiltration rate)

SOAKAWAY**PIT AREA**

FROM ABOVE

m2

mm

mm

m3

minutes

m2

1

1.80

955.00

1200.00

0.441

140.50

7.79

6.72E-06**m3/second**

PROPOSED DEVELOPMENT at LLAY NEW ROAD, RHOSROBIN, WREXHAM, LL11 2UB**KANE DESIGN**

FURTHER TESTS: 2 September 2014

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Alan Kane**PAGE****6/8****SOAKAWAY REFERENCE : TRIAL PIT 6: 2nd Sept14**

Approx. Ground level (m) 85.72

Bottom of pit (m) 83.67

Level at stop (m) 85.37

DEPTH OF WATER IN PIT(mm)TIME (MINS)

	TIME		
START	11.55am	0	330
	12.32pm	37	350
	13.34pm	99	350
	14.34pm	159	350
END	15.19pm	204	350

PIT SIZE (m)

Length 1.65

Width 0.75

Average Depth 2.05

Approx. makeup

Topsoil 400mm

Clay

PIT AREA (m 1.24

TOTAL TIME 204 minutes

CALCULATED:

V25 25%

V75 75%

TIME TO FALL FROM 75% to 25% (mins)

	ACTUAL	INTERPLOATED
TIME (mins)	TIME	DEPTH (mm)
0		
0		
0		

TEST ABANDONED. NO MOVEMENT IN 167 MINUTES

PROPOSED DEVELOPMENT at LLAY NEW ROAD, RHOSROBIN, WREXHAM, LL11 2UB

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SOAKAWAY RESULTS

FURTHER TESTS: 2 September 2014

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SOAKAWAY REFERENCE : TRIAL PIT 7: 2nd Sept14

Approx. Ground level (m) 86.84
Bottom of pit (m) 84.64
Level at stop (m) 86.10

DEPTH OF WATER IN PIT(mm)

TIME (MINS)

TIME
START 13.56pm 0 700
14.36pm 40 740
15.21pm 85 740
END 16.03pm 127 740

PIT SIZE (m)
Length 3.00
Width 0.75
Average Depth 2.20

Approx. makeup
Topsoil 900mm
Clay

PIT AREA (m 2.25

TOTAL TIME 127 minutes

CALCULATED:

V25 25%
V75 75%

	ACTUAL	INTERPLOATED
TIME (mins)	TIME	DEPTH (mm)
31.75	14.28am	732.00
95.25	15.31am	740.00
TIME TO FALL FROM 75% to 25% (mins)	63.5	8.00

CALCULATION:

INFILTRATION RATE = f =

V = Effective Storage Volume between 75% and 25% full

T= Time taken to drain above X AP

where AP = 50% internal surface area, including base:

= 10.50 m2

CALCULATED

V (V75-V25)

CALCULATED

x PIT AREA

T

AP

f (Infiltration rate)

SOAKAWAY

PIT AREA

FROM ABOVE

Depth 25%

Depth 75%

m3 minutes

m2

1

2.25

mm 732.00

mm 740.00

0.018

63.50

10.50

4.50E-07

m3/second

PROPOSED DEVELOPMENT at LLAY NEW ROAD, RHOSROBIN, WREXHAM, LL11 2UB**KANE DESIGN**
SOAKAWAY RESULTS

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Alan Kane**PAGE****8/8****SOAKAWAY REFERENCE : TRIAL PIT 8: 2nd Sept14**

Approx. Ground level (m) 86.87
 Bottom of pit (m) 84.92
 Level at stop (m) 86.13

DEPTH OF WATER IN PIT(mm)TIME (MINS)

	TIME		
START	14.04pm	0	330
	14.37pm	33	550
	15.25pm	81	650
	16.07pm	123	740
END	16.35pm	151	770

PIT SIZE (m)
 Length 2.40
 Width 0.75
 Average Depth 1.95

Approx. makeup
 Topsoil 700mm

PIT AREA (m 1.80)

TOTAL TIME 151 minutes

CALCULATED:

V25 25%
 V75 75%

TIME TO FALL FROM 75% to 25% (mins)

	ACTUAL	INTERPLOATED
TIME (mins)	TIME	DEPTH (mm)
37.75	14.42pm	560.00
113.25	15.57pm	719.00
75.5		159.00

CALCULATION:

INFILTRATION RATE = f =

V = Effective Storage Volume between 75% and 25% fullT= Time taken to drain above X AP

where AP = 50% internal surface area, including base:

= 7.94 m2

CALCULATED

V (V75-V25)

x PIT AREA

T

CALCULATED

AP

f (Infiltration rate)

SOAKAWAY**PIT AREA**

FROM ABOVE

m2

Depth 25%

Depth 75%

mm

mm

m3

minutes

0.286

75.50

m2

7.94

7.95E-06**m3/second**

PROPOSED DEVELOPMENT at LLAY NEW ROAD, RHOSROBIN, WREXHAM, LL11 2UB

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SOAKAWAY RESULTS

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11 June 2014 AK

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SOAKAWAY REFERENCE : TRIAL PIT 1

Test details

Date Tue 10 June 2014

Weather: Hot sunny, some heavy showers

	TIME	DEPTH OF WATER IN PIT(mm)	
	TIME (MINS)		
START	11.30am	0 500	
	11.40am	10 500	
	12.10pm	40 350	
	12.20pm	50 280	
	12.46pm	76 190	
	13.05pm	95 150	
	13.25pm	115 120	
	13.45pm	135 110	
END	14.00pm	150 65	

PIT SIZE (m)

Length 3.8

Width 1.0

Average Depth 2.15 (depth average of 2.35+1.95)

PIT AREA (m 3.80

			CALCULATED:	
TOTAL TIME	150	minutes	V25	25%
			V75	75%
			TIME TO FALL FROM 75% to 25% (mins)	

	ACTUAL	INTERPLOATED
TIME (mins)	TIME	DEPTH (mm)
37.5		362.50
112.5		123.75
75		238.75

CALCULATION:

INFILTRATION RATE = f =

$V = \text{Effective Storage Volume between 75\% and 25\% full}$

$T = \text{Time taken to drain above } X \text{ AP}$

where AP = 50% internal surface area, including base:

= 14.12 m2

CALCULATED

SOAKAWAY	PIT AREA	FROM ABOVE Depth 25% Depth 75%	V (V75-V25) x PIT AREA	T	CALCULATED AP	f (Infiltration rate)
1	3.80	362.50 123.75	0.907	75.00	14.12	1.43E-05 m3/second

PROPOSED DEVELOPMENT at LLAY NEW ROAD, RHOSROBIN, WREXHAM, LL11 2UB

KANE DESIGN

JOB NUMBER:

1241

SOAKAWAY RESULTS

CLIENT

Castelemead Homes

11 June 2014 AK

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SOAKAWAY REFERENCE : TRIAL PIT 2

Test details

Date Tue 10 June 2014

Weather: Hot sunny, some heavy showers

DEPTH OF WATER IN PIT(mm)

TIME (MINS)

TIME

START	12.10pm	0	290
	12.30pm	20	200
	12.40pm	30	120
	12.55pm	45	50
END	13.15pm	65	20

PIT SIZE (m)

Length 1.8

Width 1.0

Average Depth 1.97

PIT AREA (m 1.80

TOTAL TIME 65 minutes

CALCULATED:

V25 25%

V75 75%

TIME TO FALL FROM 75% to 25% (mins)

	ACTUAL	INTERPLOATED
TIME (mins)	TIME	DEPTH (mm)
16.25		176.00
48.75		41.92
32.5		134.08

CALCULATION:

INFILTRATION RATE = f =

V = Effective Storage Volume between 75% and 25% full

T= Time taken to drain above X AP

where AP = 50% internal surface area, including base:

= 7.32 m2

CALCULATED

V (V75-V25)

CALCULATED

SOAKAWAY

PIT AREA

FROM ABOVE

Depth 25%

Depth 75%

x PIT AREA

T

AP

f (infiltration rate)

m2

mm

mm

m3

minutes

m2

1

1.80

176.00

41.92

0.241

32.50

7.32

1.69E-05

m3/second