
S.I. Ltd Contract No: 5588

Client: Cairn Homes
Engineer: Waterman Moylan
Contractor: Site Investigations Ltd

Hollybank,
Swords, Co. Dublin
Additional Site Investigation Report

Prepared by:

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Stephen Letch

| | |
|-------------|------------|
| Issue Date: | 18/04/2019 |
| Status | Final |
| Revision | 1 |

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1. Introduction

In October 2017 and on the instructions of Waterman Moylan, Site Investigations Ltd (SIL) completed a ground investigation at Glen Ellan Road, Swords, County Dublin. The investigation was for a new residential development of the site, Hollybank, and was completed on behalf of the Client, Cairn Homes. Following this initial investigation, additional soakaway tests were requested in December 2018 but these tests failed to pass the specification. This report covers further investigation into the drainage of the site.

The fieldworks comprised a programme of shallow soakaway tests. All fieldwork was carried out in accordance with Eurocode 7: Geotechnical Design and the IEI Specification & Related Documents for Ground Investigation in Ireland (2006).

This report presents the factual geotechnical data obtained from the field and laboratory testing with interpretation of the ground conditions discussed.

2. Fieldwork

The fieldworks were started and completed in April 2019 and comprised the following:

- 11 No. soakaway tests

2.1. Soakaway Tests

At 11 No. locations, soakaway tests were scheduled to be completed. Following the initial soakaway tests encountering groundwater at 1.80mbgl, these tests were scheduled to be completed at shallower depths to test the drainage of the upper soils. The soakaway test is used to identify possible areas for storm water drainage. The pit is excavated and with water three times to ensure that the ground is saturated and then the fall rate of the groundwater is recorded over the third and final cycle to provide the infiltration rate. The time taken for the water level to fall from 75% volume to 25% volume is required to calculate the rate of infiltration.

Unfortunately, the drainage of the soil is very poor with all eleven tests failing to pass the BRE specification. All the tests failed on the first fill cycle and as three cycles are required for an f-value then it is deemed that these soils are unsuitable for soakaway design.

It should also be noted that these soils are over consolidated glacial tills and have very low permeability values due to the compression that was placed on them during the glacial re-advance following the initial deposition of the soil.

The logs and photographs are provided in Appendix 1.

2.2. Surveying

Following the completion of the works, a survey of the exploratory hole locations was completed using a GeoMax GPS Rover. The data is provided along with a site plan in Appendix 2.

Appendix 1
Soakaway Logs and Photographs

SOAKAWAY TEST



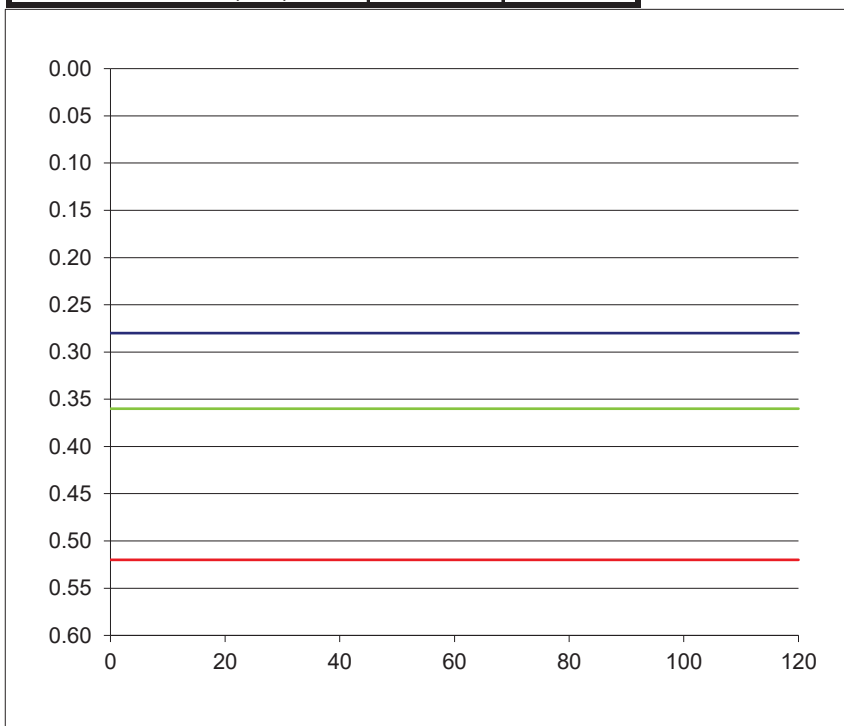
| | |
|---------------------------|--------------------|
| Project Reference: | 5588 |
| Contract name: | Hollybank |
| Location: | Swords, Co. Dublin |
| Test No: | SA01 |
| Date: | 15/04/2019 |

Ground Conditions

| From | To | |
|------|------|--|
| 0.00 | 0.20 | TOPSOIL. |
| 0.20 | 0.60 | Soft brown sandy slightly gravelly silty CLAY with low cobble content. |

| Elapsed Time (mins) | Fall of Water (m) |
|---------------------|-------------------|
| 0 | 0.28 |
| 0.5 | 0.28 |
| 1 | 0.28 |
| 1.5 | 0.28 |
| 2 | 0.28 |
| 2.5 | 0.28 |
| 3 | 0.28 |
| 3.5 | 0.28 |
| 4 | 0.28 |
| 4.5 | 0.28 |
| 5 | 0.28 |
| 6 | 0.28 |
| 7 | 0.28 |
| 8 | 0.28 |
| 9 | 0.28 |
| 10 | 0.28 |
| 12 | 0.28 |
| 14 | 0.28 |
| 16 | 0.28 |
| 18 | 0.28 |
| 20 | 0.28 |
| 25 | 0.28 |
| 30 | 0.28 |
| 40 | 0.28 |
| 50 | 0.28 |
| 60 | 0.28 |
| 75 | 0.28 |
| 90 | 0.28 |
| 120 | 0.28 |

| Pit Dimensions (m) | |
|----------------------------|------------------------------|
| Length (m) | 1.85 m |
| Width (m) | 0.65 m |
| Depth | 0.60 m |
| Water | |
| Start Depth of Water | 0.28 m |
| Depth of Water | 0.32 m |
| 75% Full | 0.360 m |
| 25% Full | 0.520 m |
| 75%-25% | 0.16 m |
| Volume of water (75%-25%) | 0.192 m ³ |
| Area of Drainage | 3 m ² |
| Area of Drainage (75%-25%) | 2.0025 m ² |
| Time | |
| 75% Full | N/A min |
| 25% Full | N/A min |
| Time 75% to 25% | N/A min |
| Time 75% to 25% (sec) | N/A sec |



f = **Fail** or
m/min

Fail
m/s

SOAKAWAY TEST



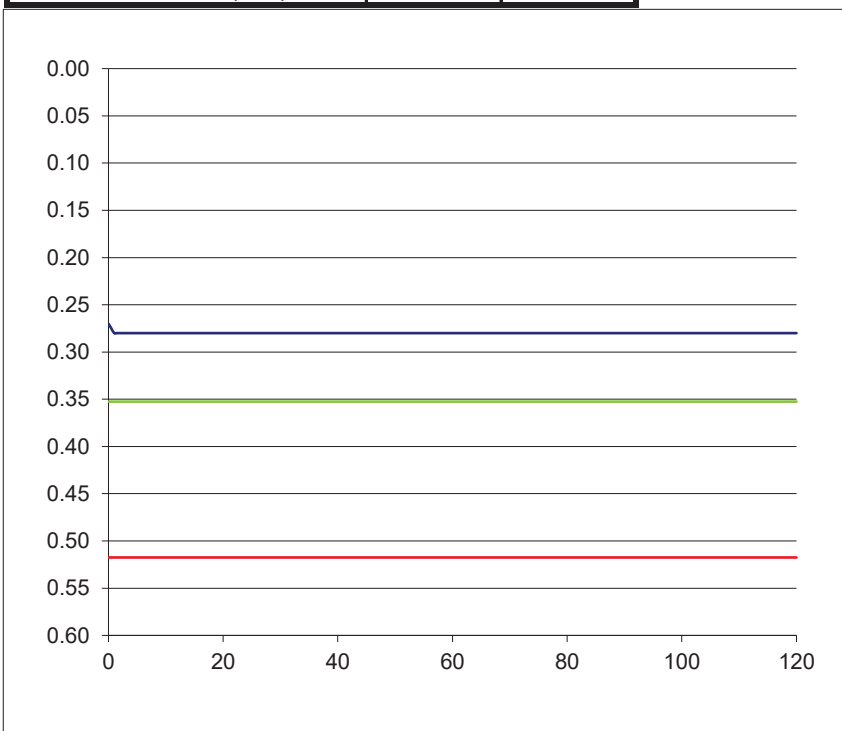
| | |
|---------------------------|--------------------|
| Project Reference: | 5588 |
| Contract name: | Hollybank |
| Location: | Swords, Co. Dublin |
| Test No: | SA02 |
| Date: | 15/04/2019 |

Ground Conditions

| From | To | |
|------|------|--|
| 0.00 | 0.20 | TOPSOIL. |
| 0.20 | 0.60 | Soft brown sandy slightly gravelly silty CLAY. |

| Elapsed Time (mins) | Fall of Water (m) |
|---------------------|-------------------|
| 0 | 0.27 |
| 0.5 | 0.28 |
| 1 | 0.28 |
| 1.5 | 0.28 |
| 2 | 0.28 |
| 2.5 | 0.28 |
| 3 | 0.28 |
| 3.5 | 0.28 |
| 4 | 0.28 |
| 4.5 | 0.28 |
| 5 | 0.28 |
| 6 | 0.28 |
| 7 | 0.28 |
| 8 | 0.28 |
| 9 | 0.28 |
| 10 | 0.28 |
| 12 | 0.28 |
| 14 | 0.28 |
| 16 | 0.28 |
| 18 | 0.28 |
| 20 | 0.28 |
| 25 | 0.28 |
| 30 | 0.28 |
| 40 | 0.28 |
| 50 | 0.28 |
| 60 | 0.28 |
| 75 | 0.28 |
| 90 | 0.28 |
| 120 | 0.28 |

| Pit Dimensions (m) | | |
|----------------------------|---------------|----------------|
| Length (m) | 1.70 | m |
| Width (m) | 0.65 | m |
| Depth | 0.60 | m |
| Water | | |
| Start Depth of Water | 0.27 | m |
| Depth of Water | 0.33 | m |
| 75% Full | 0.353 | m |
| 25% Full | 0.518 | m |
| 75%-25% | 0.17 | m |
| Volume of water (75%-25%) | 0.182 | m ³ |
| Area of Drainage | 2.82 | m ² |
| Area of Drainage (75%-25%) | 1.8805 | m ² |
| Time | | |
| 75% Full | N/A | min |
| 25% Full | N/A | min |
| Time 75% to 25% | N/A | min |
| Time 75% to 25% (sec) | N/A | sec |



f = **Fail** m/min or **Fail** m/s

SOAKAWAY TEST



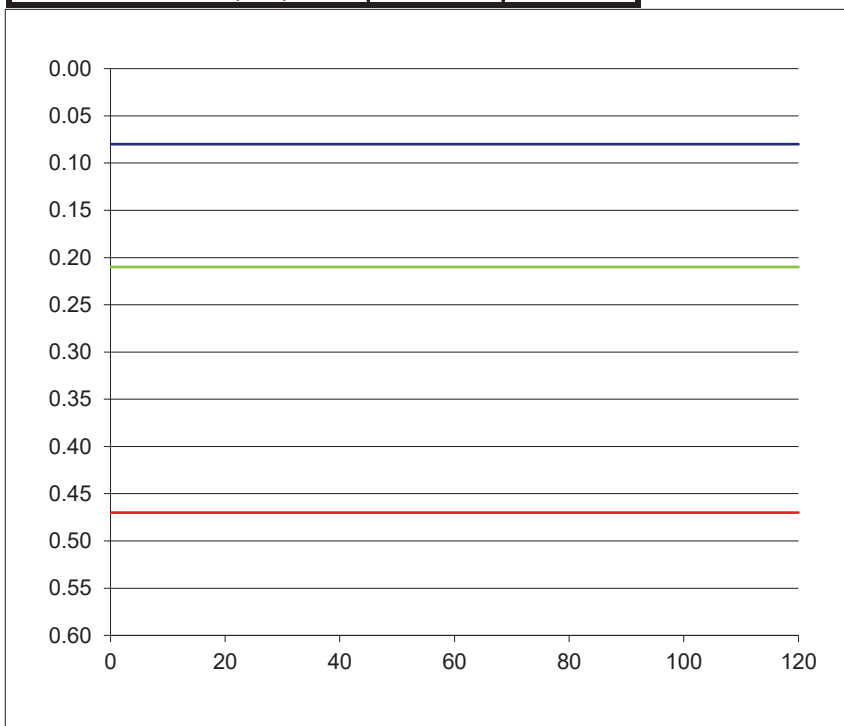
| | |
|---------------------------|--------------------|
| Project Reference: | 5588 |
| Contract name: | Hollybank |
| Location: | Swords, Co. Dublin |
| Test No: | SA03 |
| Date: | 15/04/2019 |

Ground Conditions

| From | To | |
|------|------|---|
| 0.00 | 0.10 | TOPSOIL. |
| 0.10 | 0.60 | Soft brown slightly sandy gravelly silty CLAY with medium cobble content. |

| Elapsed Time (mins) | Fall of Water (m) |
|---------------------|-------------------|
| 0 | 0.08 |
| 0.5 | 0.08 |
| 1 | 0.08 |
| 1.5 | 0.08 |
| 2 | 0.08 |
| 2.5 | 0.08 |
| 3 | 0.08 |
| 3.5 | 0.08 |
| 4 | 0.08 |
| 4.5 | 0.08 |
| 5 | 0.08 |
| 6 | 0.08 |
| 7 | 0.08 |
| 8 | 0.08 |
| 9 | 0.08 |
| 10 | 0.08 |
| 12 | 0.08 |
| 14 | 0.08 |
| 16 | 0.08 |
| 18 | 0.08 |
| 20 | 0.08 |
| 25 | 0.08 |
| 30 | 0.08 |
| 40 | 0.08 |
| 50 | 0.08 |
| 60 | 0.08 |
| 75 | 0.08 |
| 90 | 0.08 |
| 120 | 0.08 |

| Pit Dimensions (m) | | |
|----------------------------|--------------|----------------|
| Length (m) | 1.80 | m |
| Width (m) | 0.65 | m |
| Depth | 0.60 | m |
| Water | | |
| Start Depth of Water | 0.08 | m |
| Depth of Water | 0.52 | m |
| 75% Full | 0.210 | m |
| 25% Full | 0.470 | m |
| 75%-25% | 0.26 | m |
| Volume of water (75%-25%) | 0.304 | m ³ |
| Area of Drainage | 2.94 | m ² |
| Area of Drainage (75%-25%) | 2.444 | m ² |
| Time | | |
| 75% Full | N/A | min |
| 25% Full | N/A | min |
| Time 75% to 25% | N/A | min |
| Time 75% to 25% (sec) | N/A | sec |



f = **Fail** or
m/min

Fail
m/s

SOAKAWAY TEST



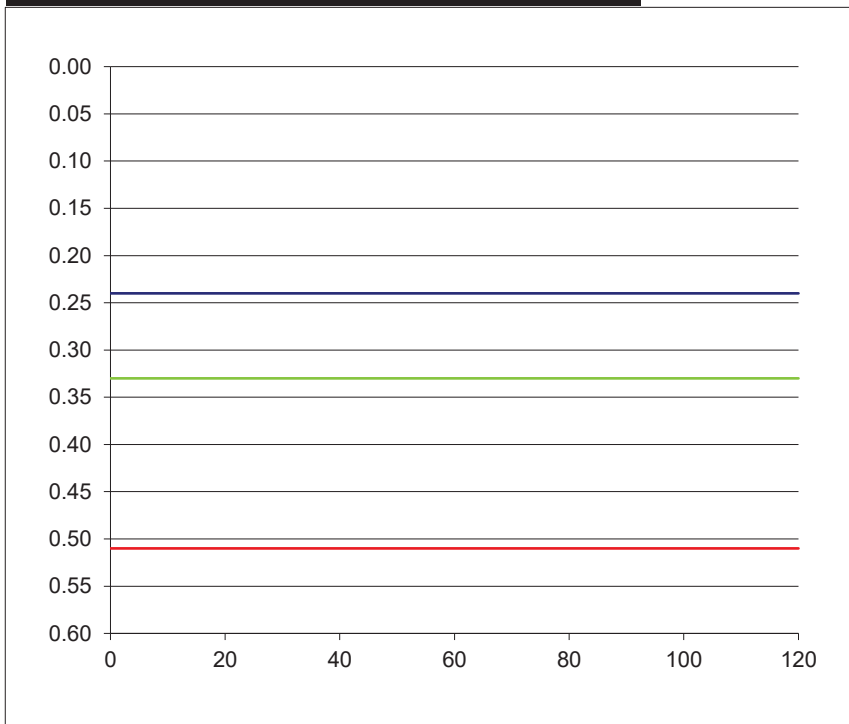
| | |
|---------------------------|--------------------|
| Project Reference: | 5588 |
| Contract name: | Hollybank |
| Location: | Swords, Co. Dublin |
| Test No: | SA04 |
| Date: | 15/04/2019 |

Ground Conditions

| From | To | |
|------|------|---|
| 0.00 | 0.10 | TOPSOIL. |
| 0.10 | 0.60 | Soft brown slightly sandy slightly gravelly silty CLAY with low cobble content. |

| Elapsed Time (mins) | Fall of Water (m) |
|---------------------|-------------------|
| 0 | 0.24 |
| 0.5 | 0.24 |
| 1 | 0.24 |
| 1.5 | 0.24 |
| 2 | 0.24 |
| 2.5 | 0.24 |
| 3 | 0.24 |
| 3.5 | 0.24 |
| 4 | 0.24 |
| 4.5 | 0.24 |
| 5 | 0.24 |
| 6 | 0.24 |
| 7 | 0.24 |
| 8 | 0.24 |
| 9 | 0.24 |
| 10 | 0.24 |
| 12 | 0.24 |
| 14 | 0.24 |
| 16 | 0.24 |
| 18 | 0.24 |
| 20 | 0.24 |
| 25 | 0.24 |
| 30 | 0.24 |
| 40 | 0.24 |
| 50 | 0.24 |
| 60 | 0.24 |
| 75 | 0.24 |
| 90 | 0.24 |
| 120 | 0.24 |

| Pit Dimensions (m) | | |
|----------------------------|---------------|----------------|
| Length (m) | 1.95 | m |
| Width (m) | 0.65 | m |
| Depth | 0.60 | m |
| Water | | |
| Start Depth of Water | 0.24 | m |
| Depth of Water | 0.36 | m |
| 75% Full | 0.330 | m |
| 25% Full | 0.510 | m |
| 75%-25% | 0.18 | m |
| Volume of water (75%-25%) | 0.228 | m ³ |
| Area of Drainage | 3.12 | m ² |
| Area of Drainage (75%-25%) | 2.2035 | m ² |
| Time | | |
| 75% Full | N/A | min |
| 25% Full | N/A | min |
| Time 75% to 25% | N/A | min |
| Time 75% to 25% (sec) | N/A | sec |



f = **Fail** or
m/min

Fail
m/s

SOAKAWAY TEST



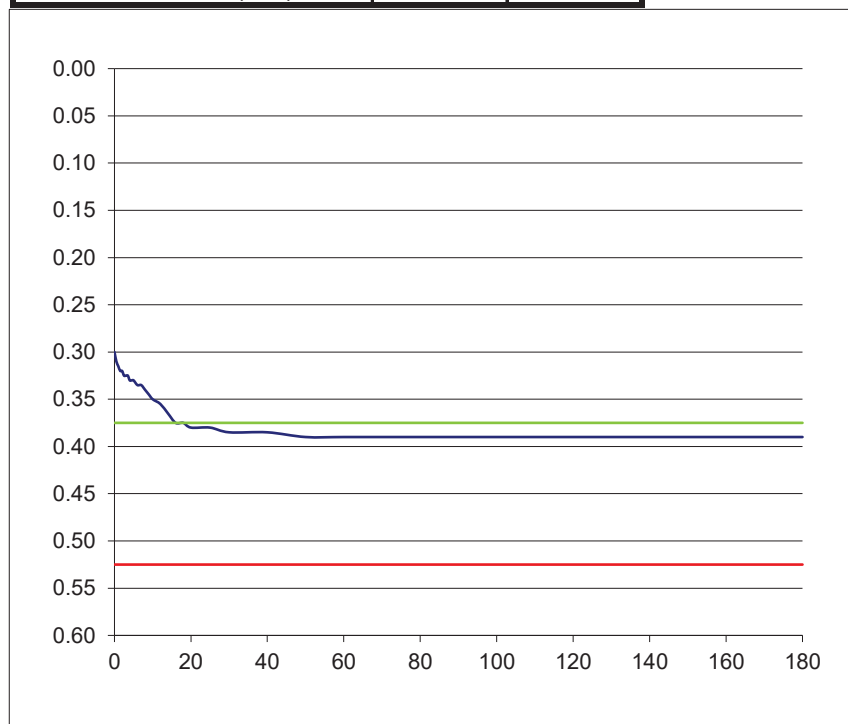
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|---------------------------|--------------------|
| Project Reference: | 5588 |
| Contract name: | Hollybank |
| Location: | Swords, Co. Dublin |
| Test No: | SA05 |
| Date: | 15/04/2019 |

Ground Conditions

| From | To | |
|------|------|---------------------------------------|
| 0.00 | 0.20 | TOPSOIL. |
| 0.20 | 0.60 | Soft brown sandy gravelly silty CLAY. |

| Elapsed Time (mins) | Fall of Water (m) |
|---------------------|-------------------|
| 0 | 0.30 |
| 0.5 | 0.31 |
| 1 | 0.32 |
| 1.5 | 0.32 |
| 2 | 0.32 |
| 2.5 | 0.33 |
| 3 | 0.33 |
| 3.5 | 0.33 |
| 4 | 0.33 |
| 4.5 | 0.33 |
| 5 | 0.33 |
| 6 | 0.34 |
| 7 | 0.34 |
| 8 | 0.34 |
| 9 | 0.35 |
| 10 | 0.35 |
| 12 | 0.36 |
| 14 | 0.37 |
| 16 | 0.38 |
| 18 | 0.38 |
| 20 | 0.38 |
| 25 | 0.38 |
| 30 | 0.39 |
| 40 | 0.39 |
| 50 | 0.39 |
| 60 | 0.39 |
| 75 | 0.39 |
| 90 | 0.39 |
| 120 | 0.39 |
| 150 | 0.39 |
| 180 | 0.39 |

| Pit Dimensions (m) | | |
|----------------------------|--------------|----------------|
| Length (m) | 1.80 | m |
| Width (m) | 0.65 | m |
| Depth | 0.60 | m |
| Water | | |
| Start Depth of Water | 0.30 | m |
| Depth of Water | 0.30 | m |
| 75% Full | 0.375 | m |
| 25% Full | 0.525 | m |
| 75%-25% | 0.15 | m |
| Volume of water (75%-25%) | 0.176 | m ³ |
| Area of Drainage | 2.94 | m ² |
| Area of Drainage (75%-25%) | 1.905 | m ² |
| Time | | |
| 75% Full | N/A | min |
| 25% Full | N/A | min |
| Time 75% to 25% | N/A | min |
| Time 75% to 25% (sec) | N/A | sec |



f = **Fail** or
m/min

Fail
m/s

SOAKAWAY TEST



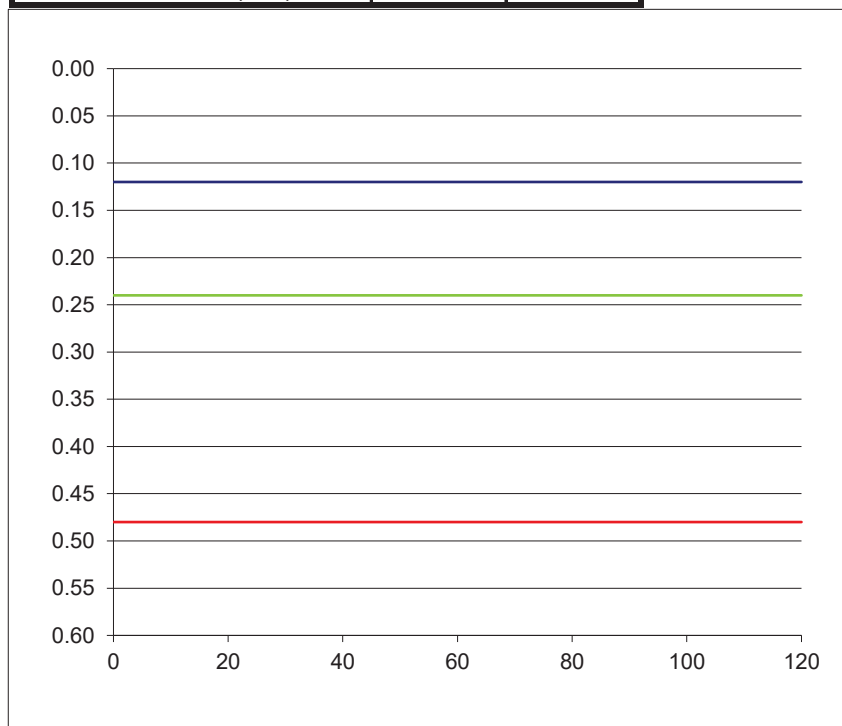
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|---------------------------|--------------------|
| Project Reference: | 5588 |
| Contract name: | Hollybank |
| Location: | Swords, Co. Dublin |
| Test No: | SA06 |
| Date: | 15/04/2019 |

Ground Conditions

| From | To | |
|------|------|--|
| 0.00 | 0.10 | TOPSOIL. |
| 0.10 | 0.60 | Soft dark brown sandy gravelly silty CLAY with low cobble content. |

| Elapsed Time (mins) | Fall of Water (m) |
|---------------------|-------------------|
| 0 | 0.12 |
| 0.5 | 0.12 |
| 1 | 0.12 |
| 1.5 | 0.12 |
| 2 | 0.12 |
| 2.5 | 0.12 |
| 3 | 0.12 |
| 3.5 | 0.12 |
| 4 | 0.12 |
| 4.5 | 0.12 |
| 5 | 0.12 |
| 6 | 0.12 |
| 7 | 0.12 |
| 8 | 0.12 |
| 9 | 0.12 |
| 10 | 0.12 |
| 12 | 0.12 |
| 14 | 0.12 |
| 16 | 0.12 |
| 18 | 0.12 |
| 20 | 0.12 |
| 25 | 0.12 |
| 30 | 0.12 |
| 40 | 0.12 |
| 50 | 0.12 |
| 60 | 0.12 |
| 75 | 0.12 |
| 90 | 0.12 |
| 120 | 0.12 |

| Pit Dimensions (m) | | |
|----------------------------|---------------|----------------|
| Length (m) | 1.75 | m |
| Width (m) | 0.65 | m |
| Depth | 0.60 | m |
| Water | | |
| Start Depth of Water | 0.12 | m |
| Depth of Water | 0.48 | m |
| 75% Full | 0.24 | m |
| 25% Full | 0.48 | m |
| 75%-25% | 0.24 | m |
| Volume of water (75%-25%) | 0.273 | m ³ |
| Area of Drainage | 2.88 | m ² |
| Area of Drainage (75%-25%) | 2.2895 | m ² |
| Time | | |
| 75% Full | N/A | min |
| 25% Full | N/A | min |
| Time 75% to 25% | N/A | min |
| Time 75% to 25% (sec) | N/A | sec |



f = **Fail** or
m/min

Fail
m/s

SOAKAWAY TEST



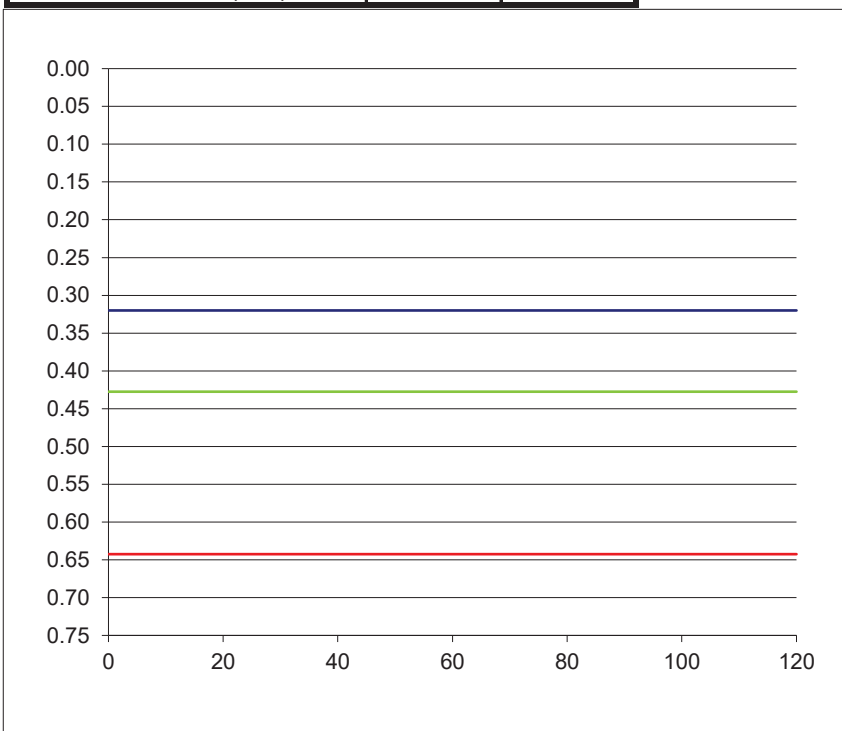
| | |
|---------------------------|--------------------|
| Project Reference: | 5588 |
| Contract name: | Hollybank |
| Location: | Swords, Co. Dublin |
| Test No: | SA07 |
| Date: | 15/04/2019 |

Ground Conditions

| From | To | |
|------|------|--|
| 0.00 | 0.20 | TOPSOIL. |
| 0.20 | 0.75 | Soft dark brown sandy gravelly silty CLAY with low cobble content. |

| Elapsed Time (mins) | Fall of Water (m) |
|---------------------|-------------------|
| 0 | 0.32 |
| 0.5 | 0.32 |
| 1 | 0.32 |
| 1.5 | 0.32 |
| 2 | 0.32 |
| 2.5 | 0.32 |
| 3 | 0.32 |
| 3.5 | 0.32 |
| 4 | 0.32 |
| 4.5 | 0.32 |
| 5 | 0.32 |
| 6 | 0.32 |
| 7 | 0.32 |
| 8 | 0.32 |
| 9 | 0.32 |
| 10 | 0.32 |
| 12 | 0.32 |
| 14 | 0.32 |
| 16 | 0.32 |
| 18 | 0.32 |
| 20 | 0.32 |
| 25 | 0.32 |
| 30 | 0.32 |
| 40 | 0.32 |
| 50 | 0.32 |
| 60 | 0.32 |
| 75 | 0.32 |
| 90 | 0.32 |
| 120 | 0.32 |

| Pit Dimensions (m) | | |
|----------------------------|---------------|----------------|
| Length (m) | 2.00 | m |
| Width (m) | 0.65 | m |
| Depth | 0.75 | m |
| Water | | |
| Start Depth of Water | 0.32 | m |
| Depth of Water | 0.43 | m |
| 75% Full | 0.43 | m |
| 25% Full | 0.64 | m |
| 75%-25% | 0.22 | m |
| Volume of water (75%-25%) | 0.280 | m ³ |
| Area of Drainage | 3.975 | m ² |
| Area of Drainage (75%-25%) | 2.4395 | m ² |
| Time | | |
| 75% Full | N/A | min |
| 25% Full | N/A | min |
| Time 75% to 25% | N/A | min |
| Time 75% to 25% (sec) | N/A | sec |



f = Fail m/min or Fail m/s

SOAKAWAY TEST



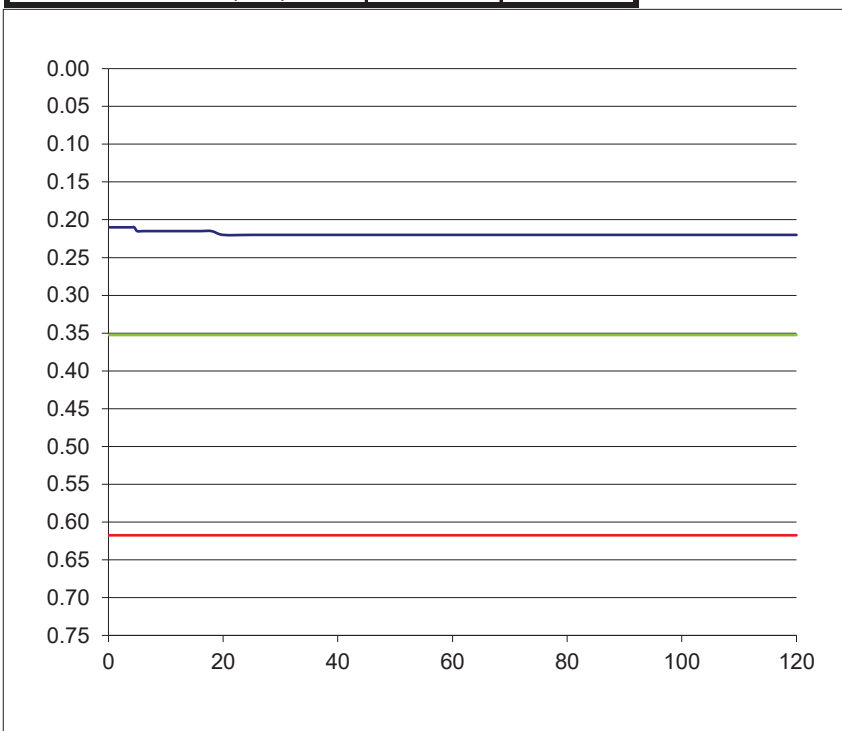
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|---------------------------|--------------------|
| Project Reference: | 5588 |
| Contract name: | Hollybank |
| Location: | Swords, Co. Dublin |
| Test No: | SA08 |
| Date: | 15/04/2019 |

Ground Conditions

| From | To | |
|------|------|--|
| 0.00 | 0.20 | TOPSOIL. |
| 0.20 | 0.75 | Soft dark brown sandy gravelly silty CLAY with low cobble content. |

| Elapsed Time (mins) | Fall of Water (m) |
|---------------------|-------------------|
| 0 | 0.21 |
| 0.5 | 0.21 |
| 1 | 0.21 |
| 1.5 | 0.21 |
| 2 | 0.21 |
| 2.5 | 0.21 |
| 3 | 0.21 |
| 3.5 | 0.21 |
| 4 | 0.21 |
| 4.5 | 0.21 |
| 5 | 0.22 |
| 6 | 0.22 |
| 7 | 0.22 |
| 8 | 0.22 |
| 9 | 0.22 |
| 10 | 0.22 |
| 12 | 0.22 |
| 14 | 0.22 |
| 16 | 0.22 |
| 18 | 0.22 |
| 20 | 0.22 |
| 25 | 0.22 |
| 30 | 0.22 |
| 40 | 0.22 |
| 50 | 0.22 |
| 60 | 0.22 |
| 75 | 0.22 |
| 90 | 0.22 |
| 120 | 0.22 |

| Pit Dimensions (m) | | | |
|----------------------------|---------------|----------------|--|
| Length (m) | 2.00 | m | |
| Width (m) | 0.65 | m | |
| Depth | 0.75 | m | |
| Water | | | |
| Start Depth of Water | 0.22 | m | |
| Depth of Water | 0.53 | m | |
| 75% Full | 0.35 | m | |
| 25% Full | 0.62 | m | |
| 75%-25% | 0.27 | m | |
| Volume of water (75%-25%) | 0.345 | m ³ | |
| Area of Drainage | 3.975 | m ² | |
| Area of Drainage (75%-25%) | 2.7045 | m ² | |
| Time | | | |
| 75% Full | N/A | min | |
| 25% Full | N/A | min | |
| Time 75% to 25% | N/A | min | |
| Time 75% to 25% (sec) | N/A | sec | |



f = **Fail** or **Fail**
m/min m/s

SOAKAWAY TEST

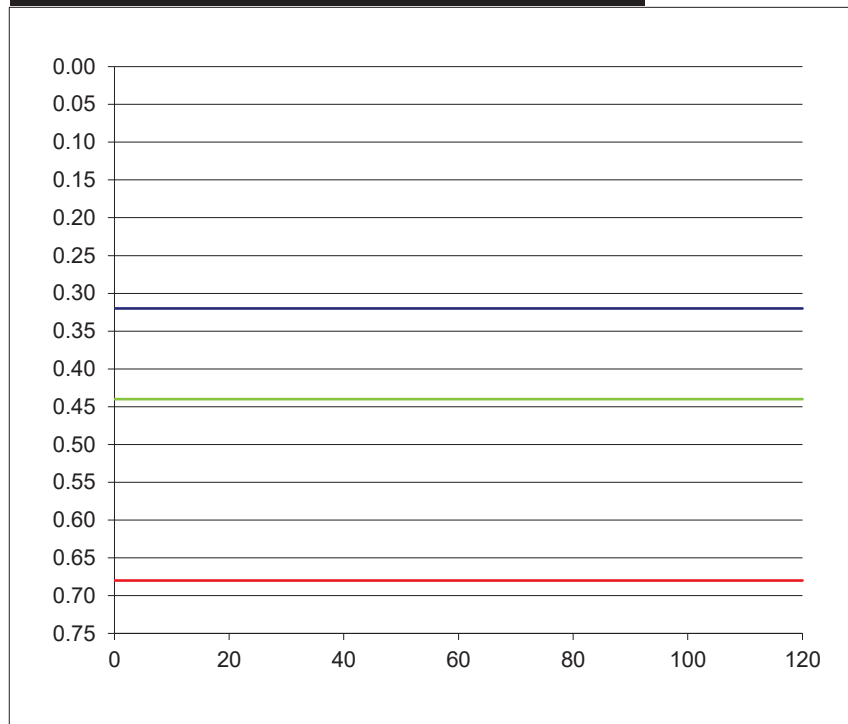


| | |
|---------------------------|--------------------|
| Project Reference: | 5588 |
| Contract name: | Hollybank |
| Location: | Swords, Co. Dublin |
| Test No: | SA09 |
| Date: | 15/04/2019 |

Ground Conditions

| From | To | |
|------|------|--|
| 0.00 | 0.30 | TOPSOIL. |
| 0.30 | 0.80 | Soft dark brown sandy gravelly silty CLAY with low cobble content. |

| Elapsed Time (mins) | Fall of Water (m) | Pit Dimensions (m) | |
|---------------------|-------------------|----------------------------|-----------------------------|
| 0 | 0.32 | Length (m) | 1.90 m |
| 0.5 | 0.32 | Width (m) | 0.65 m |
| 1 | 0.32 | Depth | 0.80 m |
| 1.5 | 0.32 | Water | |
| 2 | 0.32 | Start Depth of Water | 0.32 m |
| 2.5 | 0.32 | Depth of Water | 0.48 m |
| 3 | 0.32 | 75% Full | 0.44 m |
| 3.5 | 0.32 | 25% Full | 0.68 m |
| 4 | 0.32 | 75%-25% | 0.24 m |
| 4.5 | 0.32 | Volume of water (75%-25%) | 0.296 m ³ |
| 5 | 0.32 | Area of Drainage | 4.08 m ² |
| 6 | 0.32 | Area of Drainage (75%-25%) | 2.459 m ² |
| 7 | 0.32 | Time | |
| 8 | 0.32 | 75% Full | N/A min |
| 9 | 0.32 | 25% Full | N/A min |
| 10 | 0.32 | Time 75% to 25% | N/A min |
| 12 | 0.32 | Time 75% to 25% (sec) | N/A sec |
| 14 | 0.32 | | |
| 16 | 0.32 | | |
| 18 | 0.32 | | |
| 20 | 0.32 | | |
| 25 | 0.32 | | |
| 30 | 0.32 | | |
| 40 | 0.32 | | |
| 50 | 0.32 | | |
| 60 | 0.32 | | |
| 75 | 0.32 | | |
| 90 | 0.32 | | |
| 120 | 0.32 | | |



f = **Fail** m/min or **Fail** m/s

SOAKAWAY TEST



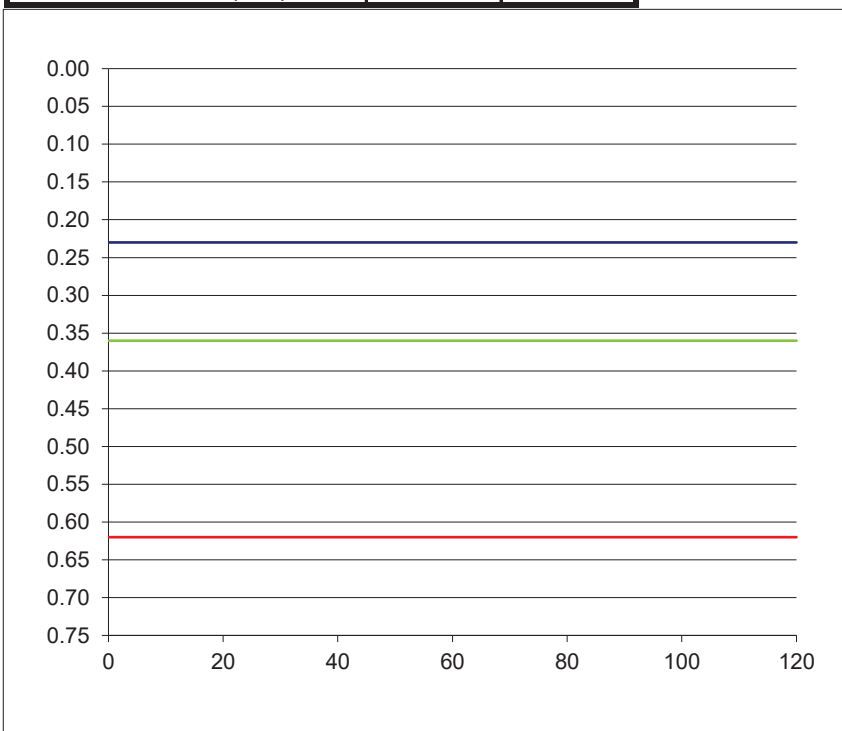
| | |
|---------------------------|--------------------|
| Project Reference: | 5588 |
| Contract name: | Hollybank |
| Location: | Swords, Co. Dublin |
| Test No: | SA10 |
| Date: | 15/04/2019 |

Ground Conditions

| From | To | |
|------|------|--|
| 0.00 | 0.30 | TOPSOIL. |
| 0.30 | 0.75 | Soft dark brown sandy gravelly silty CLAY with low cobble content. |

| Elapsed Time (mins) | Fall of Water (m) |
|---------------------|-------------------|
| 0 | 0.23 |
| 0.5 | 0.23 |
| 1 | 0.23 |
| 1.5 | 0.23 |
| 2 | 0.23 |
| 2.5 | 0.23 |
| 3 | 0.23 |
| 3.5 | 0.23 |
| 4 | 0.23 |
| 4.5 | 0.23 |
| 5 | 0.23 |
| 6 | 0.23 |
| 7 | 0.23 |
| 8 | 0.23 |
| 9 | 0.23 |
| 10 | 0.23 |
| 12 | 0.23 |
| 14 | 0.23 |
| 16 | 0.23 |
| 18 | 0.23 |
| 20 | 0.23 |
| 25 | 0.23 |
| 30 | 0.23 |
| 40 | 0.23 |
| 50 | 0.23 |
| 60 | 0.23 |
| 75 | 0.23 |
| 90 | 0.23 |
| 120 | 0.23 |

| Pit Dimensions (m) | | | |
|----------------------------|--------------|----------------|--|
| Length (m) | 1.70 | m | |
| Width (m) | 0.65 | m | |
| Depth | 0.75 | m | |
| Water | | | |
| Start Depth of Water | 0.23 | m | |
| Depth of Water | 0.52 | m | |
| 75% Full | 0.36 | m | |
| 25% Full | 0.62 | m | |
| 75%-25% | 0.26 | m | |
| Volume of water (75%-25%) | 0.287 | m ³ | |
| Area of Drainage | 3.525 | m ² | |
| Area of Drainage (75%-25%) | 2.327 | m ² | |
| Time | | | |
| 75% Full | N/A | min | |
| 25% Full | N/A | min | |
| Time 75% to 25% | N/A | min | |
| Time 75% to 25% (sec) | N/A | sec | |



f = **Fail** m/min or **Fail** m/s

SOAKAWAY TEST



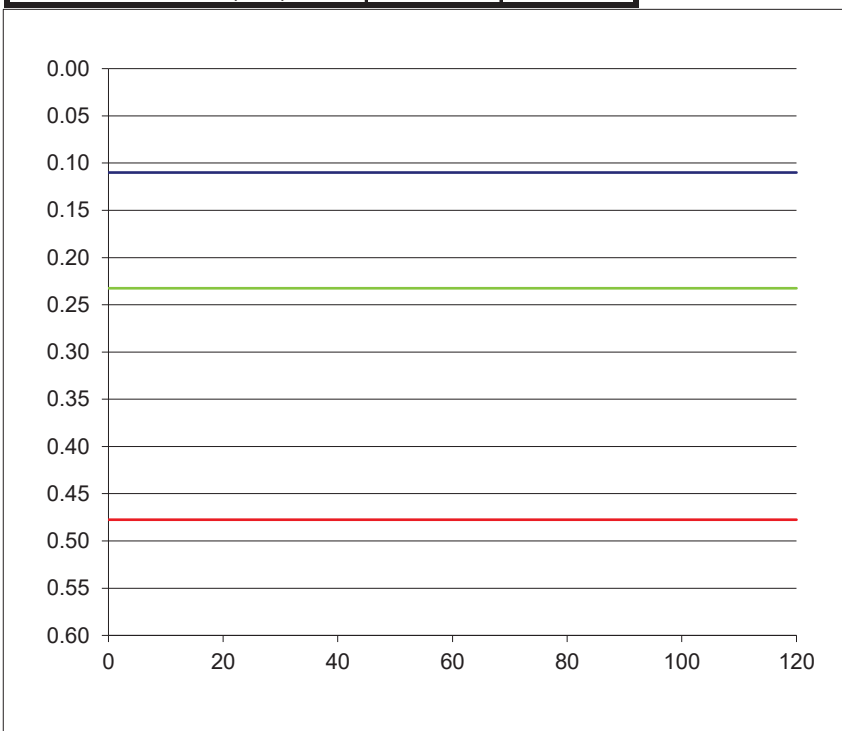
| | |
|---------------------------|--------------------|
| Project Reference: | 5588 |
| Contract name: | Hollybank |
| Location: | Swords, Co. Dublin |
| Test No: | SA11 |
| Date: | 15/04/2019 |

Ground Conditions

| From | To | |
|------|------|---|
| 0.00 | 0.20 | TOPSOIL. |
| 0.20 | 0.60 | Soft brown slightly sandy slightly gravelly silty CLAY. |

| Elapsed Time (mins) | Fall of Water (m) |
|---------------------|-------------------|
| 0 | 0.11 |
| 0.5 | 0.11 |
| 1 | 0.11 |
| 1.5 | 0.11 |
| 2 | 0.11 |
| 2.5 | 0.11 |
| 3 | 0.11 |
| 3.5 | 0.11 |
| 4 | 0.11 |
| 4.5 | 0.11 |
| 5 | 0.11 |
| 6 | 0.11 |
| 7 | 0.11 |
| 8 | 0.11 |
| 9 | 0.11 |
| 10 | 0.11 |
| 12 | 0.11 |
| 14 | 0.11 |
| 16 | 0.11 |
| 18 | 0.11 |
| 20 | 0.11 |
| 25 | 0.11 |
| 30 | 0.11 |
| 40 | 0.11 |
| 50 | 0.11 |
| 60 | 0.11 |
| 75 | 0.11 |
| 90 | 0.11 |
| 120 | 0.11 |

| Pit Dimensions (m) | |
|----------------------------|------------------------------|
| Length (m) | 1.80 m |
| Width (m) | 0.65 m |
| Depth | 0.60 m |
| Water | |
| Start Depth of Water | 0.11 m |
| Depth of Water | 0.49 m |
| 75% Full | 0.233 m |
| 25% Full | 0.478 m |
| 75%-25% | 0.25 m |
| Volume of water (75%-25%) | 0.287 m ³ |
| Area of Drainage | 2.94 m ² |
| Area of Drainage (75%-25%) | 2.3705 m ² |
| Time | |
| 75% Full | N/A min |
| 25% Full | N/A min |
| Time 75% to 25% | N/A min |
| Time 75% to 25% (sec) | N/A sec |



f = **Fail** m/min or **Fail** m/s

SA01 Pit



SA01 Sidewall



SA01 Spoil



SA02 Pit



SA02 Sidewall



SA02 Spoil



SA03 Pit



SA03 Sidewall



SA03 Spoil



SA04 Pit



SA04 Sidewall



SA04 Spoil



SA05 Pit



SA05 Sidewall



SA05 Spoil



SA06 Pit



SA06 Sidewall



SA06 Spoil



SA07 Pit



SA07 Sidewall



SA07 Spoil



SA08 Pit



SA08 Sidewall



SA08 Spoil



SA09 Pit



SA09 Sidewall



SA09 Spoil



SA10 Pit



SA10 Sidewall



SA10 Spoil



SA11 Pit



SA11 Sidewall



SA11 Spoil



Appendix 2

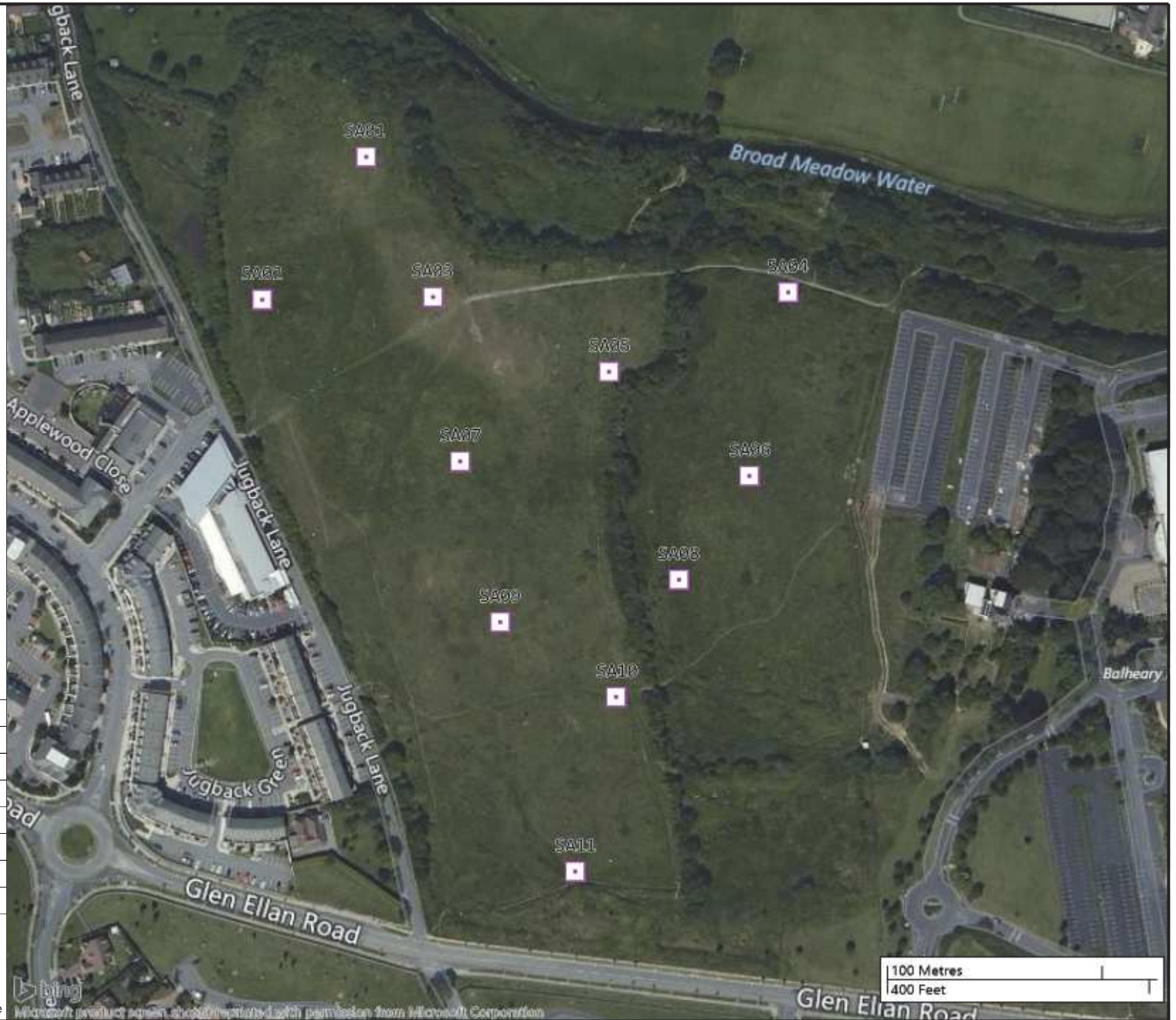
Survey Data

Survey Data

| Location | Irish Transverse Mercator | | Elevation | Irish National Grid | |
|------------------|---------------------------|------------|-----------|---------------------|------------|
| | Easting | Northing | | Easting | Northing |
| Boreholes | | | | | |
| SA01 | 717645.358 | 748329.515 | 8.09 | 317719.984 | 248306.326 |
| SA02 | 717598.842 | 748261.667 | 9.17 | 317673.459 | 248238.463 |
| SA03 | 717678.758 | 748264.889 | 9.58 | 317753.392 | 248241.686 |
| SA04 | 717844.870 | 748271.232 | 5.69 | 317919.539 | 248248.031 |
| SA05 | 717762.467 | 748232.056 | 8.41 | 317837.119 | 248208.846 |
| SA06 | 717829.356 | 748185.099 | 8.86 | 317904.023 | 248161.880 |
| SA07 | 717693.851 | 748188.483 | 9.35 | 317768.489 | 248165.263 |
| SA08 | 717797.173 | 748135.760 | 12.69 | 317871.833 | 248112.530 |
| SA09 | 717714.120 | 748113.908 | 13.52 | 317788.763 | 248090.672 |
| SA10 | 717769.604 | 748080.324 | 14.25 | 317844.259 | 248057.082 |
| SA11 | 717752.296 | 747998.336 | 13.27 | 317826.948 | 247975.076 |

Legend Key

□ Locations By Type - IP



| | |
|----------------|--------------------|
| Contract No: | 5588 |
| Contract Name: | Hollybank |
| Location: | Swords, Co. Dublin |
| Client: | Cairn Homes |
| Engineer: | Waterman Moylan |
| Title: | Site Plan |
| Scale: | 1:2500 |
| Drawn By: | SL |



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