

[illegible]

|                      |                              |                                                                                                                                                                                                                                                                            |
|----------------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DATE:</b>         | 21/02/2024                   | <div> <div> Card Geotechnics Limited,<br/> 4 Godalming Business Centre,<br/> Woolsack Way,<br/> Godalming,<br/> Surrey,<br/> GU7 1XW<br/> Tel: 01483 310600 </div> <div>  </div> </div> |
| <b>PROJECT No:</b>   | CG/10078A                    |                                                                                                                                                                                                                                                                            |
| <b>PROJECT NAME:</b> | Reading - ECMWF Headquarters |                                                                                                                                                                                                                                                                            |
| <b>CLIENT:</b>       | Mace Construct Ltd           |                                                                                                                                                                                                                                                                            |
| <b>TRIAL PIT ID:</b> | SW104                        |                                                                                                                                                                                                                                                                            |
| <b>TEST NUMBER:</b>  | 1                            |                                                                                                                                                                                                                                                                            |

## SOAKAWAY TEST - SOIL INFILTRATION RATE/PERMEABILITY

| Time Elapsed<br>(s) | Time Elapsed<br>(mins) | Distance to water surface from ground level (m) |
|---------------------|------------------------|-------------------------------------------------|
| 0                   | 0.00                   | 0.400                                           |
| 15                  | 0.25                   | 0.600                                           |
| 30                  | 0.50                   | 0.600                                           |
| 45                  | 0.75                   | 0.610                                           |
| 60                  | 1.00                   | 0.610                                           |
| 90                  | 1.50                   | 0.610                                           |
| 120                 | 2.00                   | 0.610                                           |
| 180                 | 3.00                   | 0.610                                           |
| 240                 | 4.00                   | 0.610                                           |
| 300                 | 5.00                   | 0.610                                           |
| 600                 | 10.00                  | 0.620                                           |
| 900                 | 15.00                  | 0.630                                           |
| 1200                | 20.00                  | 0.630                                           |
| 1800                | 30.00                  | 0.640                                           |
| 2700                | 45.00                  | 0.650                                           |
| 3600                | 60.00                  | 0.650                                           |
| 5400                | 90.00                  | 0.670                                           |
| 7200                | 120.00                 | 0.680                                           |
| 10800               | 180.00                 | 0.700                                           |
| 14400               | 240.00                 | 0.720                                           |
| 18000               | 300.00                 | 0.740                                           |

| Pit Construction Remarks                                                             |                                                               | PIT LENGTH (L): | 1.00 m      |
|--------------------------------------------------------------------------------------|---------------------------------------------------------------|-----------------|-------------|
|                                                                                      |                                                               | PIT WIDTH (W):  | 0.50 m      |
|                                                                                      |                                                               | PIT DEPTH (D):  | 1.10 m      |
| <b>INPUT PARAMETERS:</b>                                                             |                                                               |                 |             |
| Total volume of pit/Maximum potential volume of water (V)                            | (m <sup>3</sup> )                                             | 0.35            |             |
| Pit volume between 75% & 25% depths (PV <sub>25/75</sub> ) = L x W x ½D              | (m <sup>3</sup> )                                             | 0.18            |             |
| Maximum depth of water (MDW) = D - Water depth @ time 0                              | (m)                                                           | 0.70            |             |
| Surface area of pit up to 50% effective depth (AP <sub>50</sub> )                    | (m <sup>2</sup> )                                             | 1.55            |             |
| Level of water in pit at 75% effective depth (P <sub>75</sub> )                      | (m)                                                           | 0.18            |             |
| Level of water in pit at 25% effective depth (P <sub>25</sub> )                      | (m)                                                           | 0.53            |             |
| Time at 75% effective depth (T <sub>75</sub> )                                       | (s)                                                           | 13              |             |
| Time at 25% effective depth (T <sub>25</sub> )                                       | (s)                                                           | #N/A            |             |
| Time for outflow for 75% and 25% effective depth (T <sub>75</sub> -T <sub>25</sub> ) | (s)                                                           | #N/A            |             |
| <b>SOIL INFILTRATION RATE (f) =</b>                                                  | PV <sub>75-25</sub> /(AP <sub>50</sub> x T <sub>75-25</sub> ) | (m/s)           | #N/A        |
| WATER INPUT:                                                                         | 110L                                                          | in              | 2 minutes   |
| <b>Geology of test section/Test remarks</b>                                          |                                                               |                 |             |
| MADE GROUND from 0.00m to 0.40m, silty GRAVEL from 0.40m to 0.62m.                   |                                                               |                 |             |
| Compiled by:                                                                         | SJP                                                           | Checked by:     | JSB         |
| After BRE Digest 365, Soakaway Design, 2016                                          |                                                               |                 | Page 1 of 1 |

The graph plots the depth of water below ground level in meters against the time taken for water to reach its maximum effective depth in seconds. The y-axis ranges from 0.00 to 1.00 m, and the x-axis ranges from 0 to 20000 seconds. Data points are plotted as diamonds connected by a solid blue line. A horizontal dashed red line is positioned at approximately 0.57m. The data shows a steady decrease in water depth over time, starting at 0.40m at 0 seconds and reaching approximately 0.74m after 18000 seconds.

| Time (seconds) | Depth (m) |
|----------------|-----------|
| 0              | 0.40      |
| 15             | 0.60      |
| 30             | 0.60      |
| 45             | 0.61      |
| 60             | 0.61      |
| 90             | 0.61      |
| 120            | 0.61      |
| 180            | 0.61      |
| 240            | 0.61      |
| 300            | 0.61      |
| 600            | 0.62      |
| 900            | 0.63      |
| 1200           | 0.63      |
| 1800           | 0.64      |
| 2700           | 0.65      |
| 3600           | 0.65      |
| 5400           | 0.67      |
| 7200           | 0.68      |
| 10800          | 0.70      |
| 14400          | 0.72      |
| 18000          | 0.74      |



| Time Elapsed<br>(s) | Time Elapsed<br>(mins) | Distance to<br>water surface<br>from ground<br>level (m) | Pit Construction Remarks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | PIT LENGTH (L):                                               |  | 1.00 m            |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|---------------------|------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------|--|-------------------|-----------|----------|-----------|---|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|------|-------|------|-------|------|
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | PIT WIDTH (W):                                                |  | 0.50 m            |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | PIT DEPTH (D):                                                |  | 1.00 m            |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 0                   | 0.00                   | 0.400                                                    | INPUT PARAMETERS:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 15                  | 0.25                   | 0.460                                                    | Total volume of pit/Maximum potential volume of water (V)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |                                                               |  | (m <sup>3</sup> ) | 0.30      |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 30                  | 0.50                   | 0.470                                                    | Pit volume between 75% & 25% depths (PV <sub>25/75</sub> ) = L x W x ½D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                                                               |  | (m <sup>3</sup> ) | 0.15      |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 45                  | 0.75                   | 0.480                                                    | Maximum depth of water (MDW) = D - Water depth @ time 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                                                               |  | (m)               | 0.60      |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 60                  | 1.00                   | 0.480                                                    | Surface area of pit up to 50% effective depth (AP <sub>50</sub> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                                                               |  | (m <sup>2</sup> ) | 1.40      |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 120                 | 2.00                   | 0.480                                                    | Level of water in pit at 75% effective depth (P <sub>75</sub> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  | (m)               | 0.15      |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 180                 | 3.00                   | 0.490                                                    | Level of water in pit at 25% effective depth (P <sub>25</sub> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  | (m)               | 0.45      |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 240                 | 4.00                   | 0.490                                                    | Time at 75% effective depth (T <sub>75</sub> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |                                                               |  | (s)               | 2252      |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 300                 | 5.00                   | 0.490                                                    | Time at 25% effective depth (T <sub>25</sub> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |                                                               |  | (s)               | #N/A      |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 600                 | 10.00                  | 0.500                                                    | Time for outflow for 75% and 25% effective depth (T <sub>75</sub> -T <sub>25</sub> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |                                                               |  | (s)               | #N/A      |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 900                 | 15.00                  | 0.510                                                    | SOIL INFILTRATION RATE (f) =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | PV <sub>75-25</sub> /(AP <sub>50</sub> x T <sub>75-25</sub> ) |  | (m/s)             | #N/A      |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 1200                | 20.00                  | 0.520                                                    | WATER INPUT:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | 110L                                                          |  | in                | 2 minutes |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 1800                | 30.00                  | 0.540                                                    | Geology of test section/Test remarks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 2700                | 45.00                  | 0.560                                                    | MADE GROUND from 0.00m to 0.40m, silty GRAVEL from 0.40m to 0.62m.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 3600                | 60.00                  | 0.570                                                    | Compiled by:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | SJP                                                           |  | Checked by: JSB   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 5400                | 90.00                  | 0.590                                                    | After BRE Digest 365, Soakaway Design, 2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 7200                | 120.00                 | 0.610                                                    | Page 1 of 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 10800               | 180.00                 | 0.640                                                    | <div><table><caption>Data points estimated from the graph</caption><tr><th>Time (s)</th><th>Depth (m)</th></tr><tr><td>0</td><td>0.40</td></tr><tr><td>100</td><td>0.48</td></tr><tr><td>200</td><td>0.49</td></tr><tr><td>300</td><td>0.50</td></tr><tr><td>400</td><td>0.51</td></tr><tr><td>500</td><td>0.52</td></tr><tr><td>600</td><td>0.53</td></tr><tr><td>700</td><td>0.54</td></tr><tr><td>800</td><td>0.55</td></tr><tr><td>1000</td><td>0.56</td></tr><tr><td>1500</td><td>0.58</td></tr><tr><td>2000</td><td>0.60</td></tr><tr><td>3000</td><td>0.62</td></tr><tr><td>4000</td><td>0.63</td></tr><tr><td>5500</td><td>0.64</td></tr><tr><td>7000</td><td>0.65</td></tr><tr><td>11000</td><td>0.67</td></tr><tr><td>14500</td><td>0.68</td></tr><tr><td>16500</td><td>0.68</td></tr></table></div> |  |                                                               |  |                   |           | Time (s) | Depth (m) | 0 | 0.40 | 100 | 0.48 | 200 | 0.49 | 300 | 0.50 | 400 | 0.51 | 500 | 0.52 | 600 | 0.53 | 700 | 0.54 | 800 | 0.55 | 1000 | 0.56 | 1500 | 0.58 | 2000 | 0.60 | 3000 | 0.62 | 4000 | 0.63 | 5500 | 0.64 | 7000 | 0.65 | 11000 | 0.67 | 14500 | 0.68 | 16500 | 0.68 |
| Time (s)            | Depth (m)              |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 0                   | 0.40                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 100                 | 0.48                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 200                 | 0.49                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 300                 | 0.50                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 400                 | 0.51                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 500                 | 0.52                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 600                 | 0.53                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 700                 | 0.54                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 800                 | 0.55                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 1000                | 0.56                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 1500                | 0.58                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 2000                | 0.60                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 3000                | 0.62                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 4000                | 0.63                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 5500                | 0.64                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 7000                | 0.65                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 11000               | 0.67                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 14500               | 0.68                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 16500               | 0.68                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 14400               | 240.00                 | 0.660                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
| 16200               | 270.00                 | 0.670                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
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|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |
|                     |                        | </                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                               |  |                   |           |          |           |   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |       |      |       |      |

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Figure 10 is a line graph showing the relationship between Time from filling to maximum effective depth (seconds) on the x-axis and Depth of water below ground level (m) on the y-axis. The x-axis ranges from 0 to 12,000 seconds, and the y-axis ranges from 0.00 to 0.90 meters. A solid blue line with diamond markers shows the data points, which start at approximately (0, 0.50) and decrease to about (10,800, 0.83). Two horizontal dashed red lines are drawn at y = 0.61 and y = 0.83.

| Time from filling to maximum effective depth (seconds) | Depth of water below ground level (m) |
|--------------------------------------------------------|---------------------------------------|
| 0                                                      | 0.50                                  |
| 200                                                    | 0.51                                  |
| 400                                                    | 0.52                                  |
| 600                                                    | 0.53                                  |
| 800                                                    | 0.54                                  |
| 1000                                                   | 0.55                                  |
| 1200                                                   | 0.56                                  |
| 1400                                                   | 0.57                                  |
| 1600                                                   | 0.58                                  |
| 1800                                                   | 0.59                                  |
| 2600                                                   | 0.64                                  |
| 3600                                                   | 0.67                                  |
| 5400                                                   | 0.72                                  |
| 7200                                                   | 0.76                                  |
| 9000                                                   | 0.80                                  |
| 10800                                                  | 0.83                                  |



| Time Elapsed (s) | Time Elapsed (mins) | Distance to water surface from ground level (m) | Pit Construction Remarks                                                                                                                                                                                                        |  | PIT LENGTH (L):                                                      | 1.00 m    |
|------------------|---------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------|-----------|
|                  |                     |                                                 |                                                                                                                                                                                                                                 |  | PIT WIDTH (W):                                                       | 0.50 m    |
|                  |                     |                                                 |                                                                                                                                                                                                                                 |  | PIT DEPTH (D):                                                       | 0.94 m    |
|                  |                     |                                                 | INPUT PARAMETERS:                                                                                                                                                                                                               |  | EFFECTIVE DEPTH (ED) * :                                             | 0.18 m    |
| 0                | 0.00                | 0.500                                           | Maximum potential volume of water (V) (m <sup>3</sup> ) 0.09                                                                                                                                                                    |  |                                                                      |           |
| 15               | 0.25                | 0.500                                           | Pit volume between 75% & 25% depths (PV <sub>25/75</sub> ) = L x W x ½ ED (m <sup>3</sup> ) 0.05                                                                                                                                |  |                                                                      |           |
| 30               | 0.50                | 0.500                                           | Maximum head of water lost during test = D - Water depth @ time 0 (m) 0.18                                                                                                                                                      |  |                                                                      |           |
| 45               | 0.75                | 0.500                                           | Surface area of pit up to 50% effective depth (AP <sub>50</sub> ) (m <sup>2</sup> ) 1.55                                                                                                                                        |  |                                                                      |           |
| 60               | 1.00                | 0.500                                           | Level of water in pit at 75% effective depth (P <sub>75</sub> ) (m) 0.55                                                                                                                                                        |  |                                                                      |           |
| 90               | 1.50                | 0.500                                           | Level of water in pit at 25% effective depth (P <sub>25</sub> ) (m) 0.64                                                                                                                                                        |  |                                                                      |           |
| 120              | 2.00                | 0.500                                           | Time at 75% effective depth (T <sub>75</sub> ) (s) 1050                                                                                                                                                                         |  |                                                                      |           |
| 180              | 3.00                | 0.510                                           | Time at 25% effective depth (T <sub>25</sub> ) (s) 4860                                                                                                                                                                         |  |                                                                      |           |
| 240              | 4.00                | 0.510                                           | Time for outflow for 75% and 25% effective depth (T <sub>75</sub> -T <sub>25</sub> ) (s) 3810                                                                                                                                   |  |                                                                      |           |
| 300              | 5.00                | 0.520                                           | SOIL INFILTRATION RATE (f) =                                                                                                                                                                                                    |  | PV <sub>75-25</sub> / (AP <sub>50</sub> x T <sub>75-25</sub> ) (m/s) | 7.62E-06  |
| 360              | 6.00                | 0.520                                           | WATER INPUT:                                                                                                                                                                                                                    |  | 220L                                                                 | in        |
| 420              | 7.00                | 0.520                                           |                                                                                                                                                                                                                                 |  |                                                                      | 2 minutes |
| 480              | 8.00                | 0.530                                           | Geology of test section/Test remarks                                                                                                                                                                                            |  |                                                                      |           |
| 540              | 9.00                | 0.530                                           | Infiltration rate is indicative and is calculated only from readings recorded during testing. Not all of the water fully drained from the initial head of water to the full pit depth during the period readings were recorded. |  |                                                                      |           |
| 600              | 10.00               | 0.530                                           | Compiled by: SJP                                                                                                                                                                                                                |  | Checked by: JSB                                                      |           |
| 660              | 11.00               | 0.540                                           | After BRE Digest 365, Soakaway Design, 2016                                                                                                                                                                                     |  |                                                                      |           |
| 720              | 12.00               | 0.540                                           | Page 1 of 1                                                                                                                                                                                                                     |  |                                                                      |           |
| 780              | 13.00               | 0.540                                           | * Effective Depth (ED) = Total drop in water level over test period                                                                                                                                                             |  |                                                                      |           |
| 840              |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 900              |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 960              |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 1020             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 1080             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 1140             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 1200             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 1260             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 1320             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 1380             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 1440             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 1500             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 1560             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 1620             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 1680             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 1740             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 1800             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 1860             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 1920             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 1980             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 2040             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 2100             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 2160             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 2220             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 2280             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 2340             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 2400             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 2460             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 2520             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 2580             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 2640             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 2700             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 2760             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 2820             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 2880             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 2940             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 3000             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 3060             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 3120             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 3180             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 3240             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 3300             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 3360             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 3420             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 3480             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 3540             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 3600             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 3660             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 3720             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 3780             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 3840             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 3900             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 3960             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 4020             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 4080             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 4140             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 4200             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 4260             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 4320             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 4380             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 4440             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 4500             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 4560             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 4620             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 4680             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 4740             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 4800             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 4860             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 4920             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 4980             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 5040             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |
| 5100             |                     |                                                 |                                                                                                                                                                                                                                 |  |                                                                      |           |

## **APPENDIX D**

*CBR testing results*