**mark@langridgegroup.com**

**From:** Ray Cooper <[redacted]
**Sent:** 05 December 2023 14:48
**To:** mark@[redacted]
**Subject:** Groundwater Monitoring Winter Period 2022-2023 "Eastmere Stables" Eastergate Lane, Walberton
**Attachments:** GroundWater Second Development Eastmere Stables Eastergate Lane.pdf

Good afternoon Mark.

Here are the results of the second Groundwater Monitoring exercise for the winter period 2022-2023 as you requested. It should be noted that the monitoring exercise was carried out within the original 4 monitoring points, which were installed in late september 2021 for the 2021-2022 winter monitoring period. These monitoring points were left in situ in the event of any future monitoring requirement.

The pdf attachment, detailing the locations of the Groundwater Monitoring Points and the Percolation Testing Trial Pits, overlaid on a Google Earth image, with your original proposal itself overlaid onto the Google Earth image, was part of the original email.

Groundwater Monitoring

Over the monitoring period, groundwater was recorded in monitoring points GWP#1, GWP#2 & GWP#4, on only 2 occasions for a single reading each -- 21st January 2023 (highest) & 12th November 2022 (2nd highest) -- at the times of very heavy rainfall. This is consistent with groundwater monitoring exercises across other sites. These monitoring points were installed in undisturbed natural ground in late September 2021.
Only within GWP#3, which was installed in "made-up" ground consisting of brick pieces, general debris in a clay soil, was there any consistent water recorded and this is not considered, in the true sense, real groundwater levels, but rather 'run-off' from the adjacent area, pooling at the base of the installation pit and not quickly draining away at the base.
The highest recorded level in this monitoring point, GWP#3, was on 13th January 2023 & 2nd January 2023 (2nd highest), though this was not in general keeping with other peaks of groundwater levels recorded across other sites in the region.

| Groundwater Monitoring Point Number | Depth of Highest Groundwater (mm BGL) | Date of Highest Groundwater Level | Groundwater Level (metres AOD) | Depth of 2nd Highest Groundwater (mm BGL) | Date of 2nd Highest Groundwater Level |
|---|---|---|---|---|---|
| | Below Ground Level | Level | Above Ordnance Datum | Below Ground Level | Level Above Ordnance Datum |
| GWP#1 | 1711 | 21st January 2023 | 14.216 | 1748 | 12th November 2022 14.179 |
| GWP#2 | 1638 | 21st January 2023 | 13.730 | 1651 | 12th November 2022 13.717 |
| GWP#3 | 1429 | 13th January 2023 | 14.440 | 1450 | 2nd January 2023 14.419 |
| GWP#4 | 1765 | 21st January 2023 | 13.666 | 1773 | 12th November 2022 13658 |

Percolation Testing

This is a copy of the Percolation Testing summary which was part of my original email, for your information.
The testing was carried out to BRE365 principles within Trial Pits, of sizes larger than the minimum specifications, at locations & depths pertinent to the proposed soakaway / infiltration installations.
Two trial pits were deep ~1800mm (for soakaways) and one shallow ~800mm (for permeable parking & access roads).
In each of the 3 trial pits, 3 tests were performed as per BRE365 principles, so as to obtain the minimum Soil Infiltration Rate to be used in calculations.



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I have included the single test from 2015 from your previous planning application, at the location of GWP#2, as part of the overall soil investigations, as it is still relevant, since it too was carried out in a 'winter period' and nothing has changed there.

A pdf (13 pages) of the tabular and graphical Percolation Test results was attached with the original email. This includes a summary page for each Trial Pit, showing the 3 tests, for comparison.

It can be seen that the eastern side of the plot appears to have the fastest infiltrating soils, whereas the south western corner appears to be in "made-up" soils, though still giving an acceptable result, are of an indeterminate characteristic. It is considered, from investigations, that the bulk of the plot is of soils relevant to the infiltration rate obtained from Trial Pit TP#1 testing.

The results are as follows, with all results in metres / second :-

| Trial Pit Number | Location | Test #1 | Test#2 | Test#2 |
|---|---|---|---|---|
| TP#1 | North Paddock | 6.797 E-05 | 3.540 E-05 | 3.709 E-05 |
| TP#2 | N/W corner (2015) | 2.040 E-03 | | |
| TP#3 | S/W corner | 2.158 E-05 | 1.839 E-05 | 1.028 E-05 |
| TP#4 | Entrance | 1.329 E-03 | 5.587 E-04 | 3.069 E-04 |

I trust that this is satisfactory and, as normal, if you have any queries then please call me on my mobile.

Regards
Ray



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Mats Geotechnical Services

Groundwater Monitoring at Second Development at "Eastmere Stables" Fastergate Lane Walberton

Data Monitoring Points Installed on Wednesday 28th September 2022 for a New 2022-2023 Winter Monitoring Period Commencing 4th October 2022

| LOCATION<br>"Eastmere Stables"<br>2nd Development<br>Fastergate Lane, WALBERTON<br>Wednesday 28th September 2021 | Pipe I.D. | Pipe Depth | Pipe Height | A.O.D. Level at ToP | DATE<br>Wednesday<br>28-Sep-21 | DATE<br>Saturday<br>09-Oct-22 | DATE<br>Saturday<br>15-Oct-22 | DATE<br>Sunday<br>23-Oct-22 | DATE<br>Saturday<br>29-Oct-22 | DATE<br>Saturday<br>05-Nov-22 | DATE<br>Saturday<br>12-Nov-22 | DATE<br>Sunday<br>20-Nov-22 | DATE<br>Saturday<br>26-Nov-22 | DATE<br>Dry<br>All Week<br>Sunday<br>04-Dec-22 | DATE<br>No Rain<br>Saturday<br>10-Dec-22 | DATE<br>Rained<br>Sun-Mon<br>Tuesday<br>20-Dec-22 | DATE<br>Rain in<br>Week<br>Saturday<br>24-Dec-22 | DATE<br>Rain in<br>Week<br>Monday<br>02-Jan-23 | DATE<br>Snow<br>Rain<br>Saturday<br>07-Jan-23 | DATE<br>Rain in<br>Week<br>Friday<br>13-Jan-23 | DATE<br>Dry (Cold)<br>Week<br>Saturday<br>21-Jan-23 | DATE<br>Dry Cold<br>Week<br>Saturday<br>28-Jan-23 | DATE<br>Dry Cold<br>Week<br>Saturday<br>04-Feb-23 | DATE<br>Dry Cold<br>Week<br>Saturday<br>11-Feb-23 | DATE<br>Light Rain<br>Thursday<br>16-Feb-23 | DATE<br>Light Rain<br>in Week<br>Saturday<br>25-Feb-23 | DATE<br>Dry Cold<br>Week<br>Friday<br>03-Mar-23 | DATE<br>Rain most<br>of Week<br>Saturday<br>11-Mar-23 | DATE<br>Some Rain<br>in Week<br>Saturday<br>18-Mar-23 | DATE<br>Some Rain<br>in Week<br>Saturday<br>25-Mar-23 | DATE<br>Some Rain<br>in Week<br>Monday<br>03-Apr-23 | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum Depth | 12WP #1 | 1831 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Measured Depth (metre-week) | n/a | 249 | | | -1761 | -2000 | -2002 | -2003 | -2003 | -2003 | -2003 | -2004 | -2004 | -2005 | -2003 | -2001 | -2001 | -2001 | -2003 | -2003 | -2003 | -2003 | -2003 | -2003 | -2003 | -2003 | -2003 | -2003 | -2003 | -2003 | -2003 | -2005 |
| Below Ground Level | -1760 | | | | -1761 | -1761 | -1761 | -1761 | -1761 | -1761 | -1748 | -1761 | -1761 | -1761 | -1761 | -1761 | -1761 | -1761 | -1761 | -1761 | -1761 | -1711 | -1761 | -1761 | -1761 | -1761 | -1761 | -1761 | -1761 | -1761 | -1761 | -1761 |
| Level Above O.D. | | | | 16.160 | 14.399 | 14.159 | 14.158 | 14.157 | 14.157 | 14.157 | 14.172 | 14.156 | 14.158 | 14.159 | 14.159 | 14.159 | 14.159 | 14.159 | 14.159 | 14.159 | 14.159 | 14.209 | 14.159 | 14.159 | 14.159 | 14.159 | 14.159 | 14.159 | 14.159 | 14.159 | 14.159 | 14.157 |
| Change from Previous | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maximum Depth | 12WP #2 | 1847 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Measured Depth (metre-week) | n/a | 278 | | | -1884 | -1936 | -1936 | -1936 | -1936 | -1936 | -1920 | -1936 | -1936 | -1936 | -1936 | -1936 | -1936 | -1936 | -1936 | -1936 | -1936 | -1812 | -1936 | -1936 | -1936 | -1936 | -1936 | -1936 | -1936 | -1936 | -1936 | -1936 |
| Below Ground Level | -1970 | | | | -1884 | -1884 | -1884 | -1884 | -1884 | -1884 | -1901 | -1884 | -1884 | -1884 | -1884 | -1884 | -1884 | -1884 | -1884 | -1884 | -1884 | -1838 | -1884 | -1884 | -1884 | -1884 | -1884 | -1884 | -1884 | -1884 | -1884 | -1884 |
| Level Above O.D. | | | | 16.682 | 13.704 | 13.704 | 13.704 | 13.704 | 13.704 | 13.704 | 13.717 | 13.704 | 13.704 | 13.704 | 13.704 | 13.704 | 13.704 | 13.704 | 13.704 | 13.704 | 13.704 | 13.858 | 13.704 | 13.704 | 13.704 | 13.704 | 13.704 | 13.704 | 13.704 | 13.704 | 13.704 | 13.704 |
| Change from Previous | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 154 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maximum Depth | 12WP #3 | 1870 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Measured Depth (metre-week) | n/a | 455 | | | -1949 | -1970 | -1970 | -1970 | -1970 | -1949 | -1906 | -1911 | -1961 | -1970 | -1970 | -1933 | -1932 | -1876 | -1910 | -1897 | -1909 | -1892 | -1970 | -1970 | -1970 | -1970 | -1912 | -1970 | -1970 | -1970 | -1970 | -1970 |
| Below Ground Level | -1542 | | | | -1542 | -1542 | -1542 | -1542 | -1542 | -1591 | -1497 | -1496 | -1512 | -1542 | -1542 | -1505 | -1474 | -1590 | -1482 | -1489 | -1489 | -1467 | -1542 | -1542 | -1542 | -1542 | -1454 | -1542 | -1542 | -1542 | -1542 | -1542 |
| Level Above O.D. | | | | 19.297 | 14.327 | 14.327 | 14.327 | 14.327 | 14.327 | 14.308 | 14.402 | 14.386 | 14.307 | 14.327 | 14.327 | 14.264 | 14.095 | 14.495 | 14.327 | 14.495 | 14.327 | 14.469 | 14.327 | 14.327 | 14.327 | 14.327 | 14.565 | 14.327 | 14.327 | 14.327 | 14.327 | 14.327 |
| Change from Previous | | | | | 0 | 0 | 0 | 0 | 0 | 21 | 94 | 16 | 25 | 20 | 0 | 37 | 31 | 99 | 30 | 63 | 0 | 31 | 0 | 0 | 0 | 0 | 96 | 0 | 0 | 0 | 0 | 0 |
| Maximum Depth | 12WP #4 | 1874 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Measured Depth (metre-week) | n/a | 195 | | | -1795 | -1970 | -1973 | -1973 | -1973 | -1973 | -1961 | -1973 | -1974 | -1973 | -1973 | -1973 | -1973 | -1973 | -1973 | -1973 | -1973 | -1943 | -1973 | -1973 | -1973 | -1973 | -1929 | -1973 | -1973 | -1973 | -1973 | -1974 |
| Below Ground Level | -1769 | | | | -1795 | -1795 | -1795 | -1795 | -1795 | -1795 | -1773 | -1795 | -1795 | -1795 | -1795 | -1795 | -1795 | -1795 | -1795 | -1795 | -1795 | -1786 | -1795 | -1795 | -1795 | -1795 | -1795 | -1795 | -1795 | -1795 | -1795 | -1795 |
| Level Above O.D. | | | | 19.669 | 14.132 | 13.936 | 13.936 | 13.936 | 13.936 | 13.936 | 14.096 | 13.936 | 13.936 | 13.936 | 13.936 | 13.936 | 13.936 | 13.936 | 13.936 | 13.936 | 13.936 | 13.886 | 13.936 | 13.936 | 13.936 | 13.936 | 13.936 | 13.936 | 13.936 | 13.936 | 13.936 | 13.936 |
| Change from Previous | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Measured Depth is probe reading to underside tip of sensor

Back Level On Pipe Installation 28.09.2021

Dry to Base

Dry to Base

Dry to Base