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| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH106 |
| Contract Ref: 764393 | Start: 09.01.18 End: 11.01.18 | Ground Level (m): -2.62 | National Grid Co-ordinate: E:333375.7 N:392522.9 | | Sheet: 4 of 20 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|------------------|--------------------------------------|----------|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 12.21-12.45 | 208 | C | | 100 | 91 | 62 | 40 100 200 | | | | | -15.31 | 12.69 | |
| 13.20-14.70 | | | | | | | 50 50 110 | | | | Medium strong to strong reddish brown fine to medium grained SANDSTONE with localised very closely to medium spaced very thin to thin beds of medium strong light yellowish grey fine to medium grained sandstone. Discontinuities: 1) closely to medium spaced locally very closely spaced 0-10° planar rough clean. ... from 12.69m to 12.80m, 1 No thin bed of medium strong light yellowish grey fine to medium grained sandstone. ... from 13.46m to 14.00m, with very closely to closely spaced thick laminations to thin beds of medium strong light yellowish grey fine to medium grained sandstone. | | (1.81) | |
| 14.10-14.55 | 209 | C | | 100 | 100 | 69 | | 90-100% return Water (Reddish brown) | | | | -17.12 | 14.50 | |
| 14.70-16.20 | | | | | | | 10 170 430 | | | | Medium strong locally weak reddish brown fine to medium locally coarse grained SANDSTONE. Discontinuities: 1) closely to medium spaced locally very closely spaced 0-10° planar rough clean. ... from 14.57m to 14.67m, 1 No thin bed of medium strong light grey siltstone thinly interbedded with medium strong light grey fine to medium grained sandstone. ... from 14.85m to 14.90m, very weak with extremely closely to closely spaced fractures. ... from 15.00m to 15.30m, 1 No medium bed of medium strong light grey fine to medium grained sandstone. ... from 15.05m to 15.35m, 1 No 70° fracture planar rough clean. | | | |
| 15.51-15.76 | 210 | C | | 100 | 95 | 49 | | | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | | | |
|--|------|----------------|--------------|------------------------|-------------|-----------------|--|--|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | | |
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| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH106 |
| Contract Ref: 764393 | Start: 09.01.18 End: 11.01.18 | Ground Level (m): -2.62 | National Grid Co-ordinate: E:333375.7 N:392522.9 | | Sheet: 5 of 20 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|------------------|--------------------------------------|----------|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 16.20-17.70 | | | | 100 | 95 | 49 | | | | | | | | |
| 16.73-17.07 | 211 | C | | 100 | 100 | 71 | | | | | ... from 16.50m to 16.60m, 1 No thin bed of medium strong light grey fine to medium grained sandstone. | | | |
| 17.70-19.20 | | | | | | | 10 170 430 | 90-100% return Water (Reddish brown) | | | | | (5.68) | |
| 18.40-18.84 | 212 | C | | 100 | 100 | 85 | | | | | ... from 18.31m to 18.48m, 1 No thin bed of medium strong light grey siltstone thinly interbedded with medium strong light grey fine to medium grained sandstone. | | | |
| 19.20-20.70 | | | | | | | | | | | | | | |
| 19.63-19.91 | 213 | C | | 100 | 100 | 91 | | | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | | | |
|---|------|----------------|--------------------------------------|------------------------|-------------|-----------------------------------|------------------------------------|--------------------|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | | |
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| Method Used: Dynamic sampling + Rotary Cored | | | Plant Used: Comacchio GEO 205 | | | All dimensions in metres | | Scale: 1:22 | |
| | | | | | | Drilled By: Ashley Everill | Logged By: MGalan + TBeeson | Checked By: | |





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| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH106 |
| Contract Ref: 764393 | Start: 09.01.18 End: 11.01.18 | Ground Level (m): -2.62 | National Grid Co-ordinate: E:333375.7 N:392522.9 | | Sheet: 6 of 20 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|----------------------------|-------------------|------|---------|----------------|---------|---------|---------|--------------------------------------|----------|-------|--|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 20.70-22.20 20.77-21.04 | 214 | C | | 100 | 100 | 91 | | | | | Medium strong to strong reddish brown fine to medium grained SANDSTONE with very closely to medium spaced very thin and thin beds of medium strong light yellowish grey fine grained sandstone. Discontinuities: 1) closely to medium spaced locally very closely spaced 0-10° planar rough clean. | -22.80 | 20.18 | |
| 22.20-23.70 | | | | 100 | 87 | 63 | | | | | Medium strong to strong reddish brown fine to medium grained SANDSTONE. Discontinuities: 1) closely to medium spaced locally very closely spaced 0-15° planar rough clean. | | | |
| | | | | | | | | 90-100% return Water (Reddish brown) | | | ... from 21.77m to 22.02m, recovered as non-intact core (angular medium to coarse gravel and cobble sized fragments). | | | |
| | | | | | | | | | | | ... at 22.14m, 1 No thick lamination of light grey fine grained sandstone. | | | |
| 23.70-25.20 23.70-24.15 | 215 | C | | 100 | 100 | 97 | | | | | Medium strong to strong reddish brown fine to medium grained SANDSTONE with closely to medium spaced very thin to thin beds of medium strong light grey to light yellowish grey fine to coarse grained sandstone. Discontinuities: 1) closely to medium spaced 0-10° planar rough clean. | -25.44 | 22.82 | |
| | | | | | | | | | | | ... at 23.11m, 1 No lense of grey fine grained sandstone. | | | |
| | | | | | | | | | | | ... from 23.28m to 23.62m, with very closely to closely spaced very thin beds of light yellowish grey fine to medium grained | | | |
| | | | | 100 | 93 | 84 | | | | | | | (1.85) | |

| Boring Progress and Water Observations | | | | | | General Remarks |
|--|------|----------------|--------------|------------------------|-------------|-----------------|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | |
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| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thick ness) | Material Graphic Legend |
|--------------|-------------------|------|---------|----------------|------------|------------|------------------|--|----------|-------|--|------------------|--------------------------|-------------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| | | | | | | | 60 290 530 | | | | sandstone. | | | |
| | | | | 100 | 93 | 84 | Ni 20 50 | | | | ... from 24.27m to 24.40m, 2 No 30-50° fractures very closely spaced undulating rough clay smeared. ... from 24.56m to 24.67m, locally very weak and recovered predominantly as non-intact core (angular fine to coarse gravel sized fragments). | -27.29 | 24.67 | |
| 25.20-26.70 | | | | | | | | | | | Medium strong to strong reddish brown fine to medium grained SANDSTONE. Discontinuities: 1) closely to medium spaced locally very closely spaced 0-10° planar rough clean. | | | |
| 25.42-25.77 | 216 | C | | | | | 40 190 430 | | | | ... from 24.67m to 24.79m, very weak and recovered predominantly as non-intact core (angular fine to coarse gravel sized fragments). | | | |
| | | | | 100 | 100 | 65 | | 90-100% return Water (Reddish brown) | | | | | (2.31) | |
| | | | | | | | | | | | ... from 26.30m to 26.40m, with abundant thin laminations of dark reddish brown fine grained sandstone. ... from 26.46m to 26.53m, 1 No thin bed of medium strong light brownish grey fine to medium grained sandstone. | | | |
| 26.70-28.20 | | | | | | | | | | | | | | |
| | | | | | | | Ni 100 170 | | | | Medium strong light grey SILTSTONE with very closely to closely spaced very thin beds of light grey medium to coarse grained sandstone and reddish brown fine to medium grained sandstone. Discontinuities: 1) very closely to closely spaced 0-10° planar smooth locally rough clean. | -29.60 | 26.98 | |
| | | | | 89 | 73 | 53 | | | | | | | (0.35) | |
| | | | | | | | | | | | | | | |
| 27.58-27.78 | 217 | C | | | | | | | | | | | | |
| | | | | | | | | | | | Medium strong reddish brown medium to coarse grained SANDSTONE. Discontinuities: 1) very closely to closely spaced | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | | | | | | |
|--|---------------------------------|----------------|--------------|------------------------|-------------|--------------------------|----------------|-------------|------------------|-------------|---|---|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | All dimensions in metres | | Scale: 1:22 | | | | |
| Method Used: | Dynamic sampling + Rotary Cored | | Plant Used: | Comacchio GEO 205 | | Drilled By: | Ashley Everill | Logged By: | MGalan + TBeeson | Checked By: |  |  |





| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thick- ness) | Material Graphic Legend |
|--------------|-------------------|------|---------|----------------|------------|------------|-----------------------|--|----------|-------|--|------------------|---------------------------|-------------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 28.20-29.70 | | | | 89 ↓ | 73 ↓ | 53 ↓ | NI 100 170 ↓ | | | | 10-25° planar rough clean. ... from 27.75m to 27.85m and 28.00m to 28.10m, very weak to weak and recovered as non-intact core (gravelly fine to medium sand. Gravel is angular to subrounded and fine to medium). Assumed zones of core loss. ... from 28.20m, locally very weak. | -31.32 | 28.70 | |
| | | | | 100 ↓ | 100 ↓ | 75 ↓ | 20 80 240 ↓ | | | | Medium strong light yellowish grey fine grained SANDSTONE with localised very closely to closely spaced thin and thick laminations of grey medium grained sandstone. Discontinuities: 1) closely spaced 0-10° planar smooth clean. | -31.76 | 29.14 | |
| 29.70-31.20 | | | | ↓ | ↓ | ↓ | ↓ | | | | Weak to medium strong reddish brown fine to medium grained SANDSTONE. Discontinuities: 1) closely to medium spaced locally very closely spaced 0-15° planar rough clean. ... from 29.14m to 29.20m, 1 No very thin bed of firm reddish brown sandy clay. ... from 29.40m to 29.70m, 1 No 80-90° fracture undulating rough clean. | | | |
| 29.70-29.97 | 218 | C | | 100 ↓ | 100 ↓ | 89 ↓ | NI 210 350 ↓ | 90-100% return Water (Reddish brown) | | | ... from 30.24m to 30.26m, 1 No very thin bed of medium strong grey fine to coarse grained sandstone. | | | |
| 31.20-32.70 | | | | ↓ | ↓ | ↓ | ↓ | | | | | | (3.56) | |
| 31.41-31.76 | 219 | C | | 100 ↓ | 99 ↓ | 92 ↓ | ↓ | | | | ... from 31.35m to 31.45m, extremely weak and recovered as non-intact core (angular medium to coarse gravel sized fragments). | | | |
| | | | | | | | ↓ | | | | Description on next sheet | | | |

| Boring Progress and Water Observations | | | | | | General Remarks |
|--|------|----------------|--------------|------------------------|-------------|-----------------|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | |
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| Contract: Project Blue | | | Client: Buro Happold | | | Borehole: BH106 |
| Contract Ref: 764393 | | Start: 09.01.18 | Ground Level (m): -2.62 | | National Grid Co-ordinate: E:333375.7 N:392522.9 | Sheet: 9 of 20 |
| | | End: 11.01.18 | | | | |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-----------|-------------------|------|---------|----------------|---------|---------|-------------------|-------------------------|----------|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| | | | | 100 | 99 | 92 | 120 170 220 | | | | ... from 31.90m to 32.10m, 1 No thin bed of greyish green fine to medium grained sandstone with frequent thin and thick laminations of grey siltstone. ... at 32.10m, gradational boundary between grey and reddish brown sandstone. ... at 32.20m, 1 No 35° fracture undulating rough clean. Borehole terminated at 32.70m depth. | -35.32 | 32.70 | |

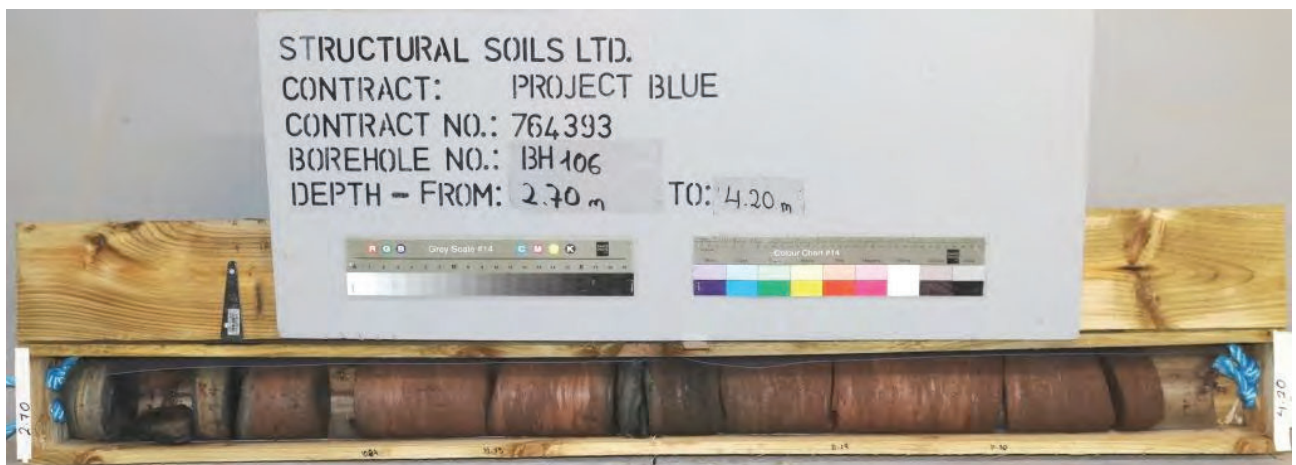
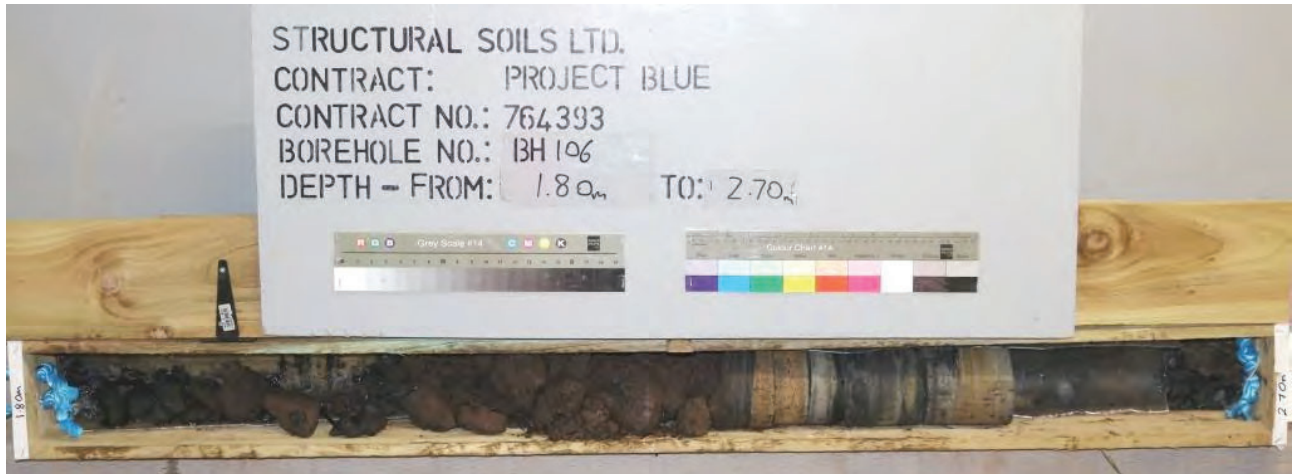
| Boring Progress and Water Observations | | | | | | General Remarks | |
|--|--|----------------|--------------|--------------------------|-------------|--------------------------|---|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | |
| | | | | | | | |
| | | | | | | All dimensions in metres | |
| | | | | | | Scale: | 1:22 |
| Method Used: | Dynamic sampling + Rotary Cored | | Plant Used: | Comacchio GEO 205 | | Drilled By: | Ashley Everill |
| | | | | | | Logged By: | MGalan + TBeeson |
| | | | | | | Checked By: |  |
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GINT LIBRARY V8 06.GLB LibVersion: v8.06.018 ProjVersion: v8.06 - Core+Full Castelford SI - 008 | Log COMPOSITE LOG - A4P | 764393 - PROJECT BLUE.GPJ - v8.06. Structural Soils Ltd, Branch Office - Castelford: The Potteries, Pottery Street, Castelford, West Yorkshire, WF10 1NJ. Tel: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk | 31/05/18 - 16:37 | AJ4 |



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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH106 |
| Contract Ref: 764393 | Start: 09.01.18 End: 11.01.18 | Ground Level (m): -2.62 | National Grid Co-ordinate: E:333375.7 N:392522.9 | Sheet: 10 of 20 |

BH106 - Box 1



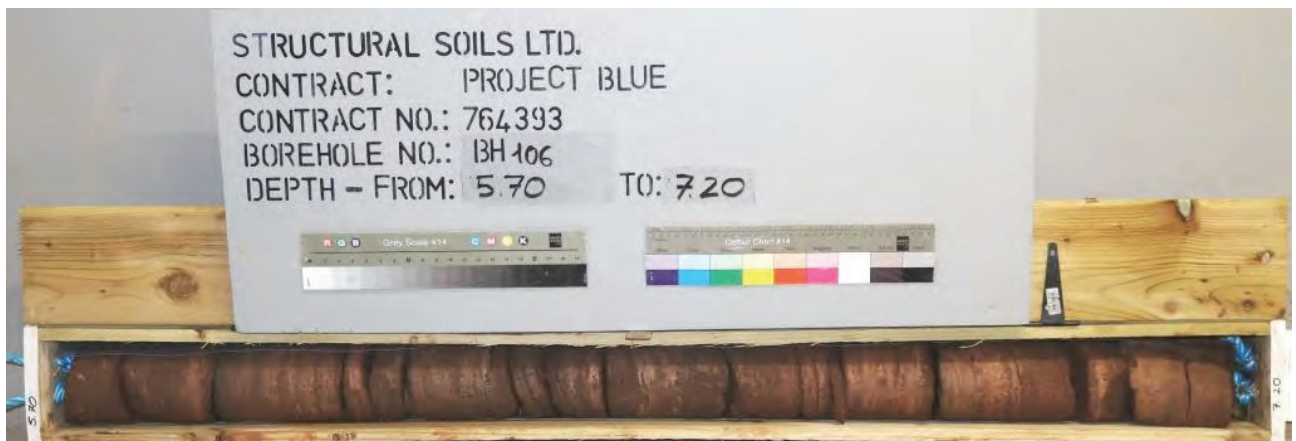
BH106 - Box 2

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| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Ashley Everill | Logged By: MGalan + TBeeson | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH106 |
| Contract Ref: 764393 | Start: 09.01.18 End: 11.01.18 | Ground Level (m): -2.62 | National Grid Co-ordinate: E:333375.7 N:392522.9 | Sheet: 11 of 20 |

BH106 - Box 3



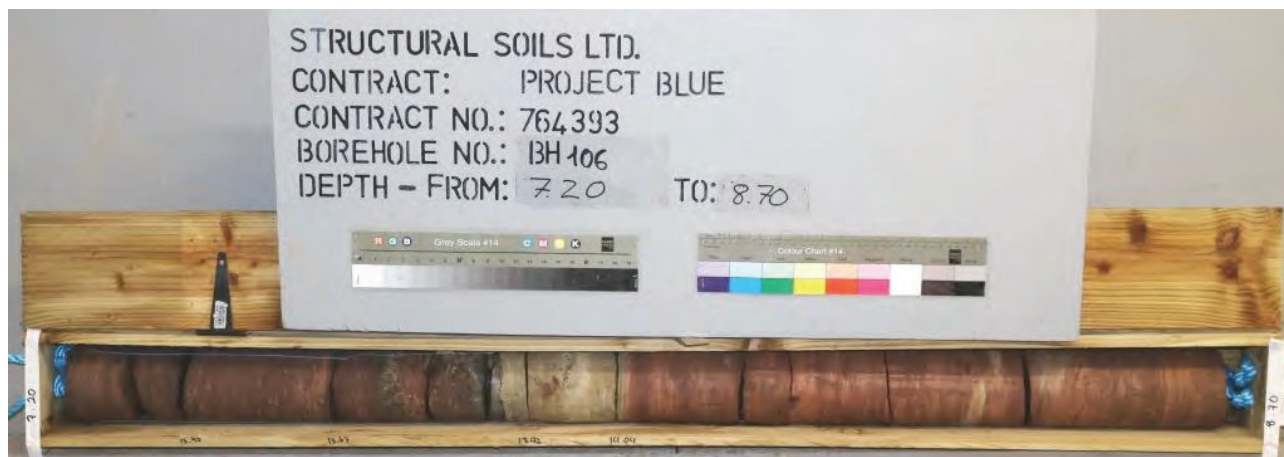
BH106 - Box 4

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| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Ashley Everill | Logged By: MGalan + TBeeson | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH106 |
| Contract Ref: 764393 | Start: 09.01.18 End: 11.01.18 | Ground Level (m): -2.62 | National Grid Co-ordinate: E:333375.7 N:392522.9 | Sheet: 12 of 20 |

BH106 - Box 5



BH106 - Box 6

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| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Ashley Everill | Logged By: MGalan + TBeeson | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH106 |
| Contract Ref: 764393 | Start: 09.01.18 End: 11.01.18 | Ground Level (m): -2.62 | National Grid Co-ordinate: E:333375.7 N:392522.9 | Sheet: 13 of 20 |

BH106 - Box 7



BH106 - Box 8

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| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Ashley Everill | Logged By: MGalan + TBeeson | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH106 |
| Contract Ref: 764393 | Start: 09.01.18 End: 11.01.18 | Ground Level (m): -2.62 | National Grid Co-ordinate: E:333375.7 N:392522.9 | Sheet: 14 of 20 |

BH106 - Box 9



BH106 - Box 10

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| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Ashley Everill | Logged By: MGalan + TBeeson | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH106 |
| Contract Ref: 764393 | Start: 09.01.18 End: 11.01.18 | Ground Level (m): -2.62 | National Grid Co-ordinate: E:333375.7 N:392522.9 | Sheet: 15 of 20 |

BH106 - Box 11



BH106 - Box 12

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| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Ashley Everill | Logged By: MGalan + TBeeson | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH106 |
| Contract Ref: 764393 | Start: 09.01.18 End: 11.01.18 | Ground Level (m): -2.62 | National Grid Co-ordinate: E:333375.7 N:392522.9 | Sheet: 16 of 20 |

BH106 - Box 13



BH106 - Box 14

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| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Ashley Everill | Logged By: MGalan + TBeeson | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH106 |
| Contract Ref: 764393 | Start: 09.01.18 End: 11.01.18 | Ground Level (m): -2.62 | National Grid Co-ordinate: E:333375.7 N:392522.9 | Sheet: 17 of 20 |

BH106 - Box 15



BH106 - Box 16

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| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Ashley Everill | Logged By: MGalan + TBeeson | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH106 |
| Contract Ref: 764393 | Start: 09.01.18 End: 11.01.18 | Ground Level (m): -2.62 | National Grid Co-ordinate: E:333375.7 N:392522.9 | Sheet: 18 of 20 |

BH106 - Box 17



BH106 - Box 18

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| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Ashley Everill | Logged By: MGalan + TBeeson | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH106 |
| Contract Ref: 764393 | Start: 09.01.18 End: 11.01.18 | Ground Level (m): -2.62 | National Grid Co-ordinate: E:333375.7 N:392522.9 | Sheet: 19 of 20 |

BH106 - Box 19



BH106 - Box 20

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|---|--------------------------------------|-----------------------------------|------------------------------------|-----------------------|------------|
| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Ashley Everill | Logged By: MGalan + TBeeson | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH106 |
| Contract Ref: 764393 | Start: 09.01.18 End: 11.01.18 | Ground Level (m): -2.62 | National Grid Co-ordinate: E:333375.7 N:392522.9 | Sheet: 20 of 20 |

BH106 - Box 21



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|---|--------------------------------------|-----------------------------------|------------------------------------|-----------------------|------------|
| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Ashley Everill | Logged By: MGalan + TBeeson | Checked By: AS | AGS |
|---|--------------------------------------|-----------------------------------|------------------------------------|-----------------------|------------|



| Boring Progress and Water Observations | | | | | | General Remarks | | | |
|--|---------------------------------|----------------|--------------|------------------------|-------------|---------------------------|----------------------------|---|---|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | | |
| 22/01/18 | 16:00 | 7.50 | 2.25 | 146 | 1.20 | | | | |
| 23/01/18 | 08:00 | 7.50 | 2.25 | 146 | 1.90 | | | | |
| 23/01/18 | 14:00 | 16.50 | 2.25 | 146 | 4.90 | | | | |
| All dimensions in metres | | | | | Scale: | 1:22 | | | |
| Method Used: | Dynamic sampling + Rotary Cored | | Plant Used: | Comacchio GEO 205 | | Drilled By: Joseph Taylor | Logged By: AJones + MGalan | Checked By:  |  |

GINT LIBRARY v8 06.GLB LibVersion: v8 06 018 PrVersion: v8 06 - Core+Full Castleford SI - 008 | Log COMPOSITE LOG - A4P | 764393 - PROJECT BLUE.GPJ - v8 06.



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|-------------------------------|--|--------------------------------|---|--|------------------------|
| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH107 |
| Contract Ref: 764393 | Start: 22.01.18 End: 23.01.18 | Ground Level (m): -2.88 | National Grid Co-ordinate: E:333381.5 N:392452.6 | | Sheet: 2 of 11 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-----------|-------------------|------|---------|----------------|---------|---------|------------------|-----------------------------------|----------|-------|--|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 4.50-6.00 | 204 | C | | 100 | 100 | 63 | | | | | ... from 4.25m to 4.32m, 1 No thin bed of medium strong light grey and dark grey fine grained sandstone. | | (2.55) | |
| 5.78-6.00 | | | | | | | 30 80 300 | | | | | | | |
| 6.00-7.50 | | | | 100 | 99 | 66 | | | | | | -8.88 | 6.00 | |
| 6.00-7.50 | 205 | C | | | | | | 100% return Water (Reddish Brown) | | | Weak to medium strong reddish brown fine to medium grained SANDSTONE. Discontinuities 1) very closely to closely spaced planar locally undulating rough clean ... from 6.00m to 6.08m, recovered as non-intact core (angular to subangular medium to coarse gravel sized fragments) ... from 6.12m to 6.25m, with rare fine to medium gravel sized clasts of light grey fine grained sandstone. ... from 6.86m to 6.90m, 1 No very thin bed of strong grey fine to medium grained sandstone with extremely closely spaced thin laminations of dark grey siltstone. ... from 6.90m to 7.37m, very weak to weak and recovered locally as non-intact core (sandy angular to subangular fine to coarse gravel sized fragments). ... from 7.50m to 7.70m, assumed zone of core loss. ... from 7.79m to 7.82m, 1 No very thin bed of medium strong | | (1.90) | |
| 7.50-9.00 | | | | 100 | 80 | 39 | NI 70 180 | | | | | | | |
| 7.75-8.04 | | | | 87 | 87 | 73 | 50 200 310 | | | | | -10.78 | 7.90 | |

| Boring Progress and Water Observations | | | | | | General Remarks | | |
|--|------|----------------|--------------|------------------------|-------------|-----------------|--|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | |
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| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH107 |
| Contract Ref: 764393 | Start: 22.01.18 End: 23.01.18 | Ground Level (m): -2.88 | National Grid Co-ordinate: E:333381.5 N:392452.6 | | Sheet: 3 of 11 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thick- ness) | Material Graphic Legend | |
|--------------|-------------------|------|---------|----------------|------------|------------|------------------|-------------------------------|---|-----------------|---|------------------|---------------------------|-------------------------------|--|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | | |
| 9.00-10.50 | 206 | C | | 87 | 87 | 73 | 50 200 310 | | 100% return Water (Reddish Brown) | | dark grey fine to medium grained sandstone. Medium strong reddish brown fine to medium grained SANDSTONE. With medium to widely spaced thin beds of medium strong light grey fine to medium grained sandstone. Discontinuities: 1) closely to medium locally very closely spaced 0-10° planar smooth clean. . . . from 7.95m to 8.05m, and 8.68m to 8.80m, medium strong light grey fine grained sandstone with extremely closely spaced thin and thick laminations of dark grey siltstone. . . . from 8.40m to 8.45m, 1 No 30° fracture planar rough clay smeared. . . . at 9.05m, 1 No 65° fracture planar rough clean. . . . at 9.10m, 1 No thick lamination of light grey fine grained sandstone. . . . from 9.48m to 9.67m, 2 No. 75-80° fractures undulating rough clean. . . . at 9.92m, 1 No thin lamination of light grey fine grained sandstone. | -13.20 | 10.32 | (2.42) | |
| 9.68-9.86 | | | | | | 100 | 92 | 59 | | 30 90 120 | | | | | |
| 10.50-12.00 | 207 | C | | | | | NI 125 370 | | | | Medium strong locally weak reddish brown fine to medium grained SANDSTONE with medium to widely spaced thick laminations to very thin beds of medium strong light grey fine to medium grained sandstone. Discontinuities 1) closely to medium locally very closely spaced planar smooth clean. . . . from 10.50m to 10.56m, recovered as non-intact core (angular medium to coarse gravel sized fragments). . . . from 10.99m to 11.13m, with frequent irregular thin lenses of light grey fine grained sandstone. . . . from 11.70m to 11.74m, very weak. 1 No 90° fracture planar rough clean. <i>Description on next sheet</i> | -14.78 | 11.90 | (1.58) | |
| 11.30-11.57 | | | | | | 100 | 96 | 64 | | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | |
|--|------|----------------|--------------|------------------------|-------------|-----------------|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | |
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|-------------------------------|--|--------------------------------|---|--|------------------------|
| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH107 |
| Contract Ref: 764393 | Start: 22.01.18 End: 23.01.18 | Ground Level (m): -2.88 | National Grid Co-ordinate: E:333381.5 N:392452.6 | | Sheet: 4 of 11 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|------------|-------------------------|----------|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 12.00-13.50 | | | | | | | | | | | ... from 11.79m to 11.80m, with irregular thin lenses of light grey fine grained sandstone. | | | |
| 12.50-12.84 | 208 | C | | 100 | 97 | 64 | NI 80 330 | | | | Medium strong locally weak reddish brown fine to medium grained SANDSTONE. With widely spaced thin to medium beds of medium strong light grey and yellowish grey fine to medium grained sandstone. Discontinuities 1) closely to medium spaced locally very closely spaced 0-15° planar smooth locally rough clean. | | | |
| 13.50-15.00 | | | | | | | | | | | ... from 12.00m to 12.08m, 1 No. 85° fracture planar rough clean. | | | |
| 13.63-13.78 | 209 | C | | 100 | 98 | 73 | | 0% return Water (NA) | | | ... from 12.98m to 13.03m, very weak and recovered as non-intact core (angular to subangular medium to coarse gravel sized fragments). | | | |
| | | | | | | | 30 130 250 | | | | ... from 14.10m to 14.25m, 1 No. 58-60° fracture undulating rough clean. | | (4.60) | |
| | | | | | | | | | | | ... from 14.60m to 14.62m, 1 No thick lamination of light grey fine grained sandstone. | | | |
| | | | | | | | | | | | ... at 14.75m, 1 No. 35° fracture planar rough clean. | | | |
| 15.00-16.50 | | | | | | | | | | | ... from 14.98m to 15.04m, 1 No thick lamination of light grey siltstone. | | | |
| | | | | 100 | 100 | 73 | | | | | ... from 15.22m to 15.27m, 1 No. 40° fracture undulating rough clean. | | | |
| | | | | | | | | | | | ... at 15.54m, 1 No thin lamination of light grey fine grained sandstone. | | | |
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| Boring Progress and Water Observations | | | | | | General Remarks |
|--|------|----------------|--------------|------------------------|-------------|-----------------|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | |
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| Contract: Project Blue | | | Client: Buro Happold | | | Borehole: BH107 | | | |
| Contract Ref: 764393 | | Start: 22.01.18 | Ground Level (m): -2.88 | | National Grid Co-ordinate: E:333381.5 N:392452.6 | | Sheet: 5 of 11 | | |
| End: 23.01.18 | | | | | | | | | |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|------------------|-------------------------|----------|-------|--|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 15.95-16.19 | 210 | C | | 100 | 100 | 73 | 30 130 250 | | | | ... from 15.91m to 15.96m, 1 No very thin bed of medium strong light grey medium grained sandstone. ... from 15.96m to 16.02m, 1 No very thin bed of medium strong light grey fine grained sandstone with extremely closely spaced thin laminations of dark grey and black siltstone. ... from 16.23m to 16.33m, 1 No. 60-70° fracture undulating rough clean. Borehole terminated at 16.50m depth. | -19.38 | 16.50 | |

| Boring Progress and Water Observations | | | | | | General Remarks | | |
|--|------|----------------|--------------|------------------------|-------------|-----------------|--|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH107 |
| Contract Ref: 764393 | Start: 22.01.18 End: 23.01.18 | Ground Level (m): -2.88 | National Grid Co-ordinate: E:333381.5 N:392452.6 | Sheet: 6 of 11 |

BH107- Box 1



BH107- Box 2

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|---|--------------------------------------|----------------------------------|-----------------------------------|-----------------------|------------|
| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Joseph Taylor | Logged By: AJones + MGalan | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH107 |
| Contract Ref: 764393 | Start: 22.01.18 End: 23.01.18 | Ground Level (m): -2.88 | National Grid Co-ordinate: E:333381.5 N:392452.6 | Sheet: 7 of 11 |

BH107- Box 3



BH107- Box 4

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| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Joseph Taylor | Logged By: AJones + MGalan | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH107 |
| Contract Ref: 764393 | Start: 22.01.18 End: 23.01.18 | Ground Level (m): -2.88 | National Grid Co-ordinate: E:333381.5 N:392452.6 | Sheet: 8 of 11 |

BH107- Box 5



BH107- Box 6

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| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Joseph Taylor | Logged By: AJones + MGalan | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH107 |
| Contract Ref: 764393 | Start: 22.01.18 End: 23.01.18 | Ground Level (m): -2.88 | National Grid Co-ordinate: E:333381.5 N:392452.6 | Sheet: 9 of 11 |

BH107- Box 7



BH107- Box 8

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| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Joseph Taylor | Logged By: AJones + MGalan | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH107 |
| Contract Ref: 764393 | Start: 22.01.18 End: 23.01.18 | Ground Level (m): -2.88 | National Grid Co-ordinate: E:333381.5 N:392452.6 | Sheet: 10 of 11 |

BH107- Box 9



BH107- Box 10

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| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Joseph Taylor | Logged By: AJones + MGalan | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH107 |
| Contract Ref: 764393 | Start: 22.01.18 End: 23.01.18 | Ground Level (m): -2.88 | National Grid Co-ordinate: E:333381.5 N:392452.6 | Sheet: 11 of 11 |

BH107- Box 11



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|---|--------------------------------------|----------------------------------|-----------------------------------|-----------------------|------------|
| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Joseph Taylor | Logged By: AJones + MGalan | Checked By: AS | AGS |
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STRUCTURAL SOILS

BOREHOLE LOG

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|-------------------------------|--|-------------------------------|---|--|------------------------|
| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | | Sheet: 1 of 21 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill & Instrumentation | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|---|--------------------|----------------------------|----------------------|----------------|---------|---------|---------|-------------------------|----------------------------|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 0.70-1.20 0.70 0.70 | 1 101 | B ES PID | x6 0.2ppm | | | | | | | | MADE GROUND: ASPHALT. | 6.76 | 0.05 | |
| | | | | | | | | | | | MADE GROUND: CONCRETE. Clast to matrix ratio: 75:25. 10% voids. Clasts are generally subangular to subrounded fine to coarse gravel sized. | 6.46 | 0.35 | |
| | | | | | | | | | | | MADE GROUND: Brick (Possible substructure). | 6.11 | 0.70 | |
| 1.00 1.00 | 102 | ES PID | x6 0.1ppm | | | | | | | | MADE GROUND: Dark brown gravelly slightly clayey medium to coarse SAND with low cobble content. Gravel is subangular fine to coarse of brick, sandstone and concrete. | 5.61 | 1.20 | |
| 1.20-1.65 1.20-1.65 | 2 3 | SPT D | N=5 | | | | | | | | MADE GROUND: Dark brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine. Gravel is subangular fine to medium of concrete, sandstone and brick. Cobbles are subangular of sandstone. | | (0.70) | |
| 1.50 1.50-2.00 1.50 | 103 4 | ES B PID | x6 0.3ppm | | | | | | | | | 4.91 | 1.90 | |
| 2.00-2.45 2.00 2.00-2.45 2.00 2.10-2.60 | 5 104 6 7 | SPT ES D PID B | N=7 x6 0.4ppm | | | | | | | | MADE GROUND: Dark brown gravelly clayey fine to medium SAND. Gravel is subangular medium to coarse of brick, concrete and sandstone. | | (1.20) | |
| 2.70 | 8 | D | | | | | | | | | | | | |
| 3.00-3.45 3.00-3.45 3.00 3.00 | 9 10 105 | SPT D ES PID | N=16 x6 0.5ppm | | | | | | | | MADE GROUND: Dark brown gravelly fine to medium SAND. Gravel is subangular medium to coarse of sandstone and brick. | 3.71 | 3.10 | |
| | | | | | | | | | | | | | (1.10) | |

| Boring Progress and Water Observations | | | | | | General Remarks | | | |
|---|-------|----------------|--------------|------------------------|-------------|--|--|--|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | | |
| 04/12/17 | 16:00 | 0.70 | None | 300 | Dry | 1. CAT scan undertaken at exploratory hole location. 2. Concrete core from GL to 0.70m. 3. Inspection pit hand excavated to 1.20m. 4. On completion, 19mm diameter piezometer installed with tip at 14.00m and response zone from 12.00m to 15.00m. 5. SPT hammer JT.01 2017 ($E_r = 72.00\%$) used. | | | |
| 18/12/17 | 08:00 | 0.70 | None | 300 | Dry | | | | |
| 18/12/17 | 16:00 | 4.00 | 4.00 | 150 | 1.80 | | | | |
| 19/12/17 | 08:00 | 4.00 | 4.00 | 150 | 1.80 | | | | |
| 19/12/17 | 16:00 | 18.60 | 8.10 | 146 | 2.70 | | | | |
| 20/12/17 | 08:00 | 18.60 | 8.10 | 146 | 2.10 | | | | |
| 20/12/17 | 16:00 | 38.10 | 8.10 | 146 | 4.80 | | | | |
| 21/12/17 | 08:00 | 38.10 | 8.10 | 146 | 2.90 | | | | |
| Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | | | | | | All dimensions in metres | | | |
| Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305 | | | | | | Scale: 1:22 | | | |
| Drilled By: Lee Evans | | | | | | Logged By: TBeeson | | | |
| Checked By: | | | | | | AGS | | | |





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| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | | Sheet: 3 of 21 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill & Instrumentation | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|-----------|---|----------------------------|-------|--|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 8.10-9.60 | 202 | C | | 100 | 71 | 59 | | | | | Weak, locally moderately strong, thinly bedded reddish brown medium grained SANDSTONE. With closely spaced very thin to thin beds of medium strong light grey fine and medium grained sandstone. Discontinuities: 1) very closely to closely spaced 5-10° planar rough clean locally infilled with soft reddish brown clay (<10mm). ... from 8.44m to 8.46m and 8.85m to 8.87m, with bluish black staining. | -2.07 | 8.88 | |
| 8.23-8.43 | | | | 100 | 89 | 46 | NI 40 140 | | | | | | | |
| 9.34-9.48 | 203 | C | | | | | | | | | Medium strong locally weak thinly bedded reddish brown locally stained orangish brown fine to medium grained SANDSTONE. With medium to widely spaced very thin to thin beds of medium strong light grey fine and medium grained sandstone. Discontinuities: 1) closely to medium spaced, locally very closely spaced, 5-20° planar rough clean locally infilled with soft reddish brown clay (<2mm) ... from 9.55m to 9.60m, very weak and recovered as non-intact core (angular fine coarse gravel sized fragments). ... from 10.29m to 10.41m, 1 No thin bed of medium strong light grey and orangish brown fine grained sandstone. ... at 10.39m, dark bluish black staining. ... from 10.41m to 11.20m, locally thinly interbedded with weak to medium strong reddish brown siltstone. | | | |
| 9.60-11.10 | | | | | | | | | | | | | | |
| 9.91-10.29 | 204 | C | | 100 | 100 | 68 | | 90-100% return Air+Mist (Reddish Brown) | | | | | | |
| | | | | | | | 30 80 380 | | | | | | | |
| 11.10-12.60 | 205 | C | | | | | | | | | | | | |
| 11.31-11.62 | | | | 100 | 97 | 68 | | | | | | | (4.82) | |

| Boring Progress and Water Observations | | | | | | General Remarks |
|--|------|----------------|--------------|------------------------|-------------|-----------------|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | |
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| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | | Sheet: 4 of 21 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill & Instrumentation | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|---------------------------|-------------------|------|---------|----------------|---------|---------|-----------------|---|----------------------------|-------|--|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 12.60-14.10 | | | | 100 | 97 | 68 | | | | | ... from 12.07m to 12.13m, 1 No very thin bed of medium strong light grey fine grained sandstone with rare siltstone inclusions. | | | |
| 13.49-13.70 | 206 | C | | 100 | 100 | 62 | 30 80 380 | | | | ... at 12.97m, dark bluish black. ... from 12.98m to 13.05m, 1 No thin bed of weak light brownish grey fine grained sandstone. | -6.89 | 13.70 | |
| 14.10-15.60 | | | | | | | | 90-100% return Air+Mist (Reddish Brown) | | | Weak, locally moderately strong, thinly bedded reddish brown medium grained SANDSTONE. Discontinuities: 1) closely, locally very closely, spaced 5-20° planar rough clean, locally infilled with soft reddish brown clay (<10mm). 2) closely spaced 85-90° undulating rough clean. ... from 14.28m to 14.55m, 2 No 40 to 60° fractures undulating rough clean. Very weak and recovered as non-intact core (sandy angular fine to coarse gravel sized fragments). ... from 14.66m to 14.97m, locally interbedded with medium strong light brown fine grained sandstone. 1 No 90° fracture undulating rough clean. | | | |
| 14.55-14.66 | 207 | C | | 100 | 67 | 25 | NI 75 130 | | | | ... from 15.30m to 15.64m, 3 No closely spaced very thin beds of weak and medium strong light grey stained orange fine grained sandstone. | | (2.21) | |
| 15.60-17.10 | | | | 100 | 98 | 67 | | | | | | -9.10 | 15.91 | |
| Description on next sheet | | | | | | | | | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | |
|--|------|----------------|--------------|------------------------|-------------|-----------------|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | |
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|-------------------------------|--|--|-------------------------------|--|---|------------------------|
| Contract: Project Blue | | | Client: Buro Happold | | | Borehole: BH108 |
| Contract Ref: 764393 | | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | | National Grid Co-ordinate: E:333401.2 N:392408.7 | Sheet: 5 of 21 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill & Instrumentation | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|---------|-------------------------|----------------------------|-------|--|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 16.56-16.92 | 208 | C | | 100 | 98 | 67 | | | | | Moderately strong, locally weak, thinly bedded reddish brown SANDSTONE. With medium to widely spaced very thin to thin beds of medium strong light grey fine and medium grained sandstone. Discontinuities: 1) closely to medium spaced locally very closely spaced 5-15° planar rough clean locally clay smeared. | | | |
| 17.10-18.60 | | | | | | | | | | | | | | |
| 18.27-18.60 | 209 | C | | 100 | 87 | 67 | | | | | ... from 17.50m to 17.73m, extremely weak with disturbed bedding. With localised clay infilling of fractures (<5mm) | | | |
| 18.60-20.10 | | | | | | | | | | | | | | |
| 19.08-19.36 | 210 | C | | 100 | 93 | 65 | | | | | | | | |
| | | | | | | | | | | | ... from 19.59m to 19.95m, 1 No medium bed of medium strong light grey and orangish brown fine grained sandstone. | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | | | |
|---|------|----------------|---|------------------------|-----------------------|--------------------|--|-------------|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | | |
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| Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | | | Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305 | | Drilled By: Lee Evans | Logged By: TBeeson | | Checked By: | |

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|-------------------------------|--|--|-------------------------------|---|--|------------------------|
| Contract: Project Blue | | | Client: Buro Happold | | | Borehole: BH108 |
| Contract Ref: 764393 | | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | | Sheet: 6 of 21 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill & Instrumentation | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|---------|-------------------------|----------------------------|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 20.10-21.60 | | | | 100 | 93 | 65 | | | | | ... from 19.95m to 20.08m, extremely weak and recovered as non-intact core (very sandy medium gravel sized fragments). | | | |
| 20.65-21.05 | 211 | C | | 100 | 100 | 89 | | | | | | | | |
| 21.60-23.10 | | | | | | | | | | | ... from 21.42m to 21.60m, 1 No 85-90° fracture undulating rough clean. | | | |
| 22.10-22.50 | 212 | C | | 100 | 98 | 97 | | | | | ... from 22.04m to 22.14m, 2 No very thin beds of light grey fine grained sandstone with thick laminations of reddish brown medium to coarse grained sandstone. | | | |
| 23.10-24.60 | | | | 100 | 99 | 92 | | | | | ... from 22.50m to 23.10m, locally interbedded with medium strong reddish brown fine grained sandstone. | | | |
| | | | | | | | | | | | ... from 23.10m to 23.86m, locally interbedded with medium strong light grey fine grained sandstone. | | | |
| | | | | | | | | | | | ... at 23.78m, bluish black staining. | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | | | |
|--|------|----------------|---|------------------------|-------------|-----------------|------------|--|-------------|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | | |
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| Method Used: | | | Plant Used: | | Drilled By: | | Logged By: | | Checked By: |
| Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | | | Hilti Concrete Corer + Hand tools + Comacchio GEO 305 | | Lee Evans | | TBeeson | | AGS |

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|-------------------------------|--|-------------------------------|---|--|------------------------|
| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | | Sheet: 7 of 21 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill & Instrumentation | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|---------|-------------------------|----------------------------|-------|--|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 24.06-24.40 | 213 | C | | 100 | 99 | 92 | | | | | | | | |
| 24.60-26.10 | | | | | | | | | | | | | | |
| 24.86-25.15 | 214 | C | | 100 | 71 | 62 | | | | | ... from 24.72m to 24.83m, very weak and recovered as non-intact core (sandy angular fine to medium gravel sized fragments). | | | |
| 26.10-27.60 | | | | | | | | | | | | | | |
| 26.43-26.88 | 215 | C | | 100 | 100 | 100 | | | | | | | | |
| 27.60-29.10 | | | | | | | | | | | | | | |
| 27.73-28.09 | 216 | C | | 93 | 66 | 61 | | | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | | |
|--|------|----------------|--------------|------------------------|-------------|-----------------|--|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | |
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| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | | Sheet: 8 of 21 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill & Instrumentation | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|------------|---|----------------------------|-------|--|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 29.10-30.60 | | | | 93 | 66 | 61 | NI 140 462 | | | | ... from 28.17m to 28.56m, with very closely spaced very thin to thin beds of weak to medium strong light grey fine grained sandstone. ... at 28.27m, slight yellowish staining. ... from 28.56m to 28.81m, locally very weak to weak. | | | |
| 29.95-30.44 | 217 | C | | 100 | 100 | 93 | | 90-100% return Air+Mist (Reddish Brown) | | | | | | |
| 30.60-32.10 | | | | | | | 50 200 550 | | | | | | | |
| 31.58-32.10 | 218 | C | | 100 | 99 | 97 | | | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | | |
|---|------|----------------|---|------------------------|-----------------------|--------------------|-------------|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | |
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| Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | | | Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305 | | Drilled By: Lee Evans | Logged By: TBeeson | Checked By: | |

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| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | | Sheet: 9 of 21 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details Backfill & Instrumentation | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|------------------|--|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | |
| 32.10-33.60 | | | | 100 | 99 | 97 | | | | . . . from 32.10m with widely spaced very thin to thin beds of medium strong light grey fine grained sandstone. | | | |
| 32.70-33.10 | 219 | C | | 100 | 100 | 96 | | | | | | | |
| 33.60-35.10 | | | | | | | 50 200 550 | 90-100% return Air+Mist (Reddish Brown) | | | | | |
| 35.10-36.60 | | | | 100 | 99 | 80 | | | | | | | |
| 35.30-35.60 | 220 | C | | 100 | 100 | 73 | | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | |
|---|------|---|--------------|------------------------|-------------|-----------------|-------------|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | |
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| Method Used: | | Plant Used: | | Drilled By: | | Logged By: | Checked By: |
| Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | | Hilti Concrete Corer + Hand tools + Comacchio GEO 305 | | Lee Evans | | TBeeson | AGS |

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| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | | Sheet: 10 of 21 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details Backfill & Instrumentation | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|--------------------------------------|-------------------|------|---------|----------------|---------|---------|------------------|--|-------|-----------------------|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | |
| 36.60-38.10 | | | | 100 | 100 | 73 | | | | | | | |
| 36.88-37.21 | 221 | C | | 100 | 100 | 97 | 50 200 550 | 90-100% return Air+Mist (Reddish Brown) | | | | | |
| | | | | | | | | | | | -31.29 | 38.10 | |
| Borehole terminated at 38.10m depth. | | | | | | | | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks |
|--|------|----------------|--------------|------------------------|-------------|-----------------|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | Sheet: 11 of 21 |

BH108 - Concrete Core



BH108 - Box 1

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|---|---|-----------------------|--------------------|------------------|
| Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305 | Drilled By: Lee Evans | Logged By: TBeeson | Checked By: AGS |
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|-------------------------------|--|-------------------------------|---|------------------------|
| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | Sheet: 12 of 21 |

BH108 - Box 2



BH108 - Box 3

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|---|---|-----------------------|--------------------|-------------|--|
| Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305 | Drilled By: Lee Evans | Logged By: TBeeson | Checked By: | |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | Sheet: 13 of 21 |

BH108 - Box 4



BH108 - Box 5

| | | | | |
|---|---|-----------------------|--------------------|------------------|
| Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305 | Drilled By: Lee Evans | Logged By: TBeeson | Checked By: AGS |
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|-------------------------------|--|-------------------------------|---|------------------------|
| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | Sheet: 14 of 21 |

BH108 - Box 6



BH108 - Box 7

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|---|---|-----------------------|--------------------|------------------|
| Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305 | Drilled By: Lee Evans | Logged By: TBeeson | Checked By: AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | Sheet: 15 of 21 |

BH108 - Box 8



BH108 - Box 9

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| Method Used: | Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | Plant Used: | Hilti Concrete Corer + Hand tools + Comacchio GEO 305 | Drilled By: | Lee Evans | Logged By: | TBeeson | Checked By: | AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | Sheet: 16 of 21 |

BH108 - Box 10



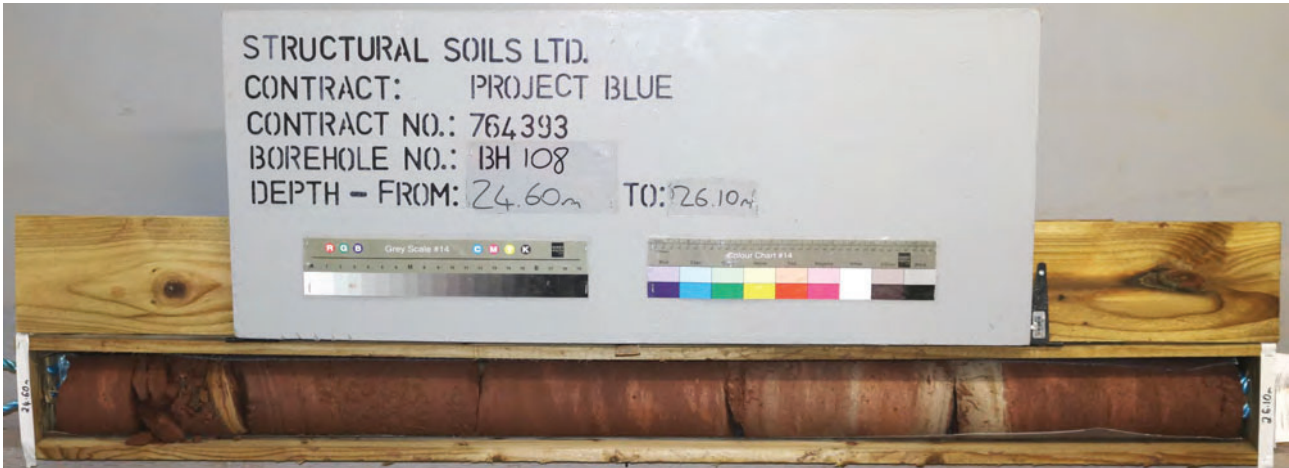
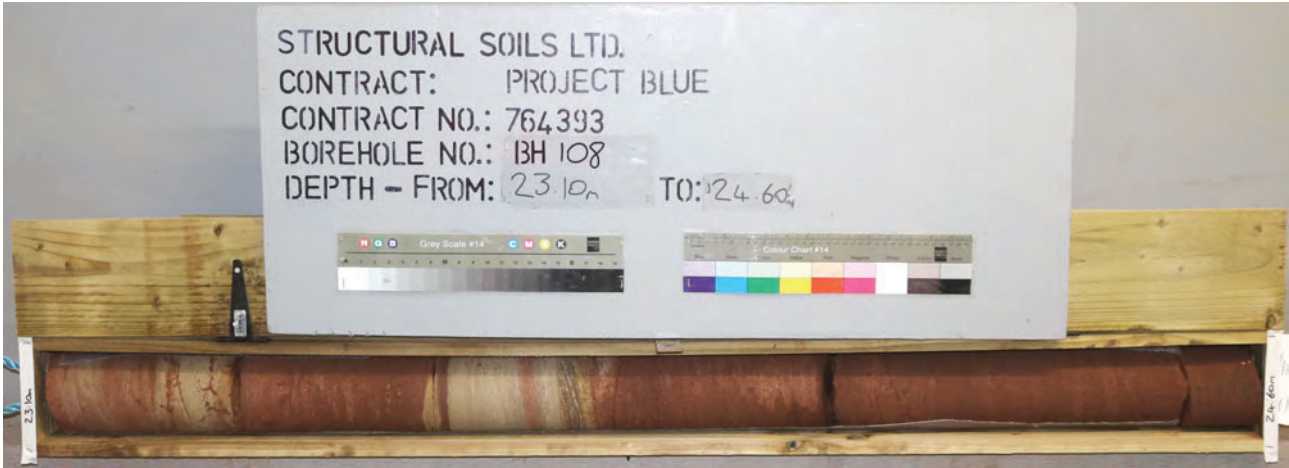
BH108 - Box 11

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|---|---|-----------------------|--------------------|------------------|
| Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305 | Drilled By: Lee Evans | Logged By: TBeeson | Checked By: AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | Sheet: 17 of 21 |

BH108 - Box 12



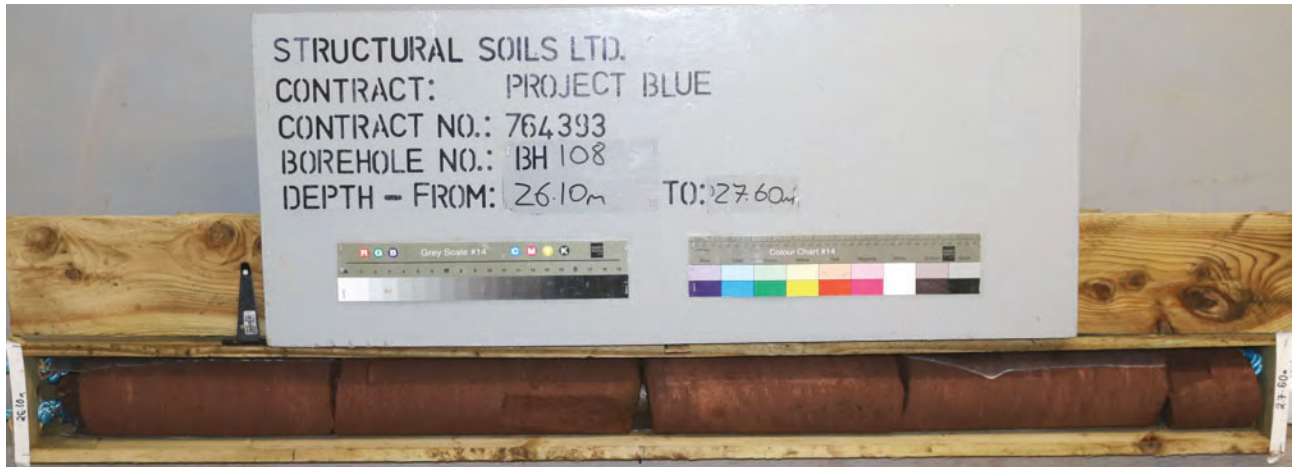
BH108 - Box 13

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| Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305 | Drilled By: Lee Evans | Logged By: TBeeson | Checked By: AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | Sheet: 18 of 21 |

BH108 - Box 14



BH108 - Box 15

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|---|---|-----------------------|--------------------|-------------|--|
| Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305 | Drilled By: Lee Evans | Logged By: TBeeson | Checked By: | |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | Sheet: 19 of 21 |

BH108 - Box 16



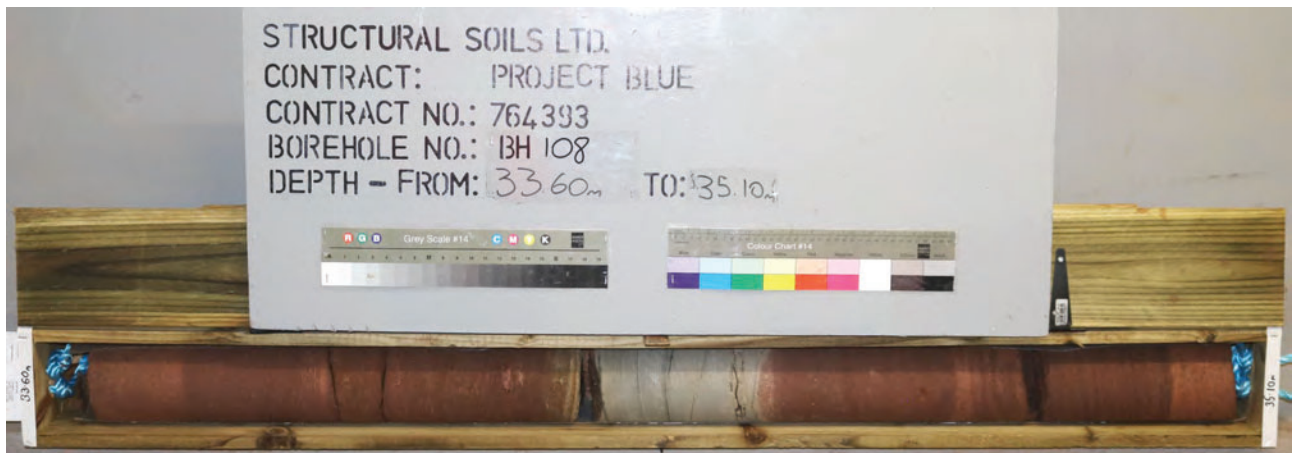
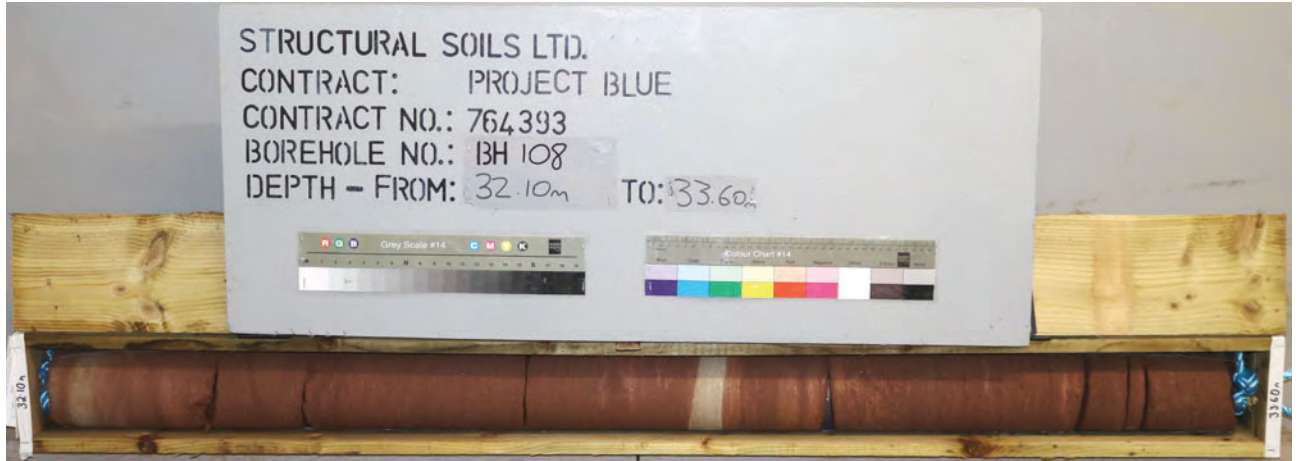
BH108 - Box 17

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| Method Used: | Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | Plant Used: | Hilti Concrete Corer + Hand tools + Comacchio GEO 305 | Drilled By: | Lee Evans | Logged By: | TBeeson | Checked By: | AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | Sheet: 20 of 21 |

BH108 - Box 18



BH108 - Box 19

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|---|---|-----------------------|--------------------|------------------|
| Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305 | Drilled By: Lee Evans | Logged By: TBeeson | Checked By: AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH108 |
| Contract Ref: 764393 | Start: 04.12.17 End: 21.12.17 | Ground Level (m): 6.81 | National Grid Co-ordinate: E:333401.2 N:392408.7 | Sheet: 21 of 21 |

BH108 - Box 20



BH108 - Box 21

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| Method Used: | Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | Plant Used: | Hilti Concrete Corer + Hand tools + Comacchio GEO 305 | Drilled By: | Lee Evans | Logged By: | TBeeson | Checked By: | AS | AGS |
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|-------------------------------|--|------------------------|-------------------------------|--|---|-------------------------|----------------------|--|
| Contract: Project Blue | | | Client: Buro Happold | | | Borehole: BH108A | | |
| Contract Ref: 764393 | | Start: 26.01.18 | Ground Level (m): 6.80 | | National Grid Co-ordinate: E:333402.2 N:392408.9 | | Sheet: 1 of 4 | |
| | | End: 26.01.18 | | | | | | |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill & Instrumentation | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-----------|-------------------|------|---------|----------------|---------|---------|---------|-------------------------|----------------------------|-------|--|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| | | | | | | | | | | | MADE GROUND: Dark grey ASPHALT. (Driller's Description) | 6.75 | 0.05 | |
| | | | | | | | | | | | MADE GROUND: CONCRETE. (Driller's description) | | (0.65) | |
| | | | | | | | | | | | MADE GROUND: COBBLES of brick and sandstone. (Driller's description) | 6.10 | 0.70 | |
| | | | | | | | | | | | MADE GROUND: Bands of CLAY fill and SAND (Driller's description) | 5.70 | 1.10 | |
| | | | | | | | | | | | | | (3.70) | |

| Boring Progress and Water Observations | | | | | | General Remarks | | |
|--|-------|-------------------------------|--------------|------------------------|-------------|---|--|---------------------|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | |
| 26/01/18 | 16:00 | 15.00 | 7.20 | 100 | - | 1. Hand dug inspection pit to 1.20m. 2. Openhole borehole for installation of standpipe. 3. Drilled using air-mist flush. 4. 35mm ID standpipe installed on completion, response zone 12.00m to 15.00m. Data logger (diver) installed at 14.50m. | | |
| | | | | | | | | |
| | | | | | | All dimensions in metres | | Scale: 1:22 |
| Method Used: Inspection pit + Rotary open hole | | Plant Used: Comacchio GEO 205 | | Drilled By: Lee Smith | | Logged By: AJones | | Checked By: PMR AGS |



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|-------------------------------|--|------------------------|-------------------------------|--|---|-------------------------|----------------------|--|
| Contract: Project Blue | | | Client: Buro Happold | | | Borehole: BH108A | | |
| Contract Ref: 764393 | | Start: 26.01.18 | Ground Level (m): 6.80 | | National Grid Co-ordinate: E:333402.2 N:392408.9 | | Sheet: 2 of 4 | |
| | | End: 26.01.18 | | | | | | |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details Backfill & Instrumentation | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-----------|-------------------|------|---------|----------------|---------|---------|---------|--|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | |
| 7.50 | | EW | | | | | | 100% return Air+Mist (Red/Brown) | | | 2.00 | 4.80 | |
| | | | | | | | | | | Soft dark grey SILT. (Driller's description) | | (1.80) | |
| | | | | | | | | | | Red brown SANDSTONE. (Driller's description). | 0.20 | 6.60 | |

| Boring Progress and Water Observations | | | | | | General Remarks | |
|--|------|----------------|--------------|------------------------|-------------|-----------------|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | |
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| Contract: Project Blue | | | Client: Buro Happold | | | Borehole: BH108A | | |
| Contract Ref: 764393 | | Start: 26.01.18 | Ground Level (m): 6.80 | | National Grid Co-ordinate: E:333402.2 N:392408.9 | | Sheet: 3 of 4 | |
| | | End: 26.01.18 | | | | | | |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill & Instrumentation | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-----------|-------------------|------|---------|----------------|---------|---------|---------|----------------------------------|----------------------------|-------|-----------------------|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| | | | | | | | | 100% return Air+Mist (Red/Brown) | | | | | (8.40) | |

| Boring Progress and Water Observations | | | | | | General Remarks |
|--|------|----------------|--------------|------------------------|-------------|-----------------|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | |
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| Contract: | | Client: | | Borehole: |
| Project Blue | | Buro Happold | | BH108A |
| Contract Ref: | Start: 26.01.18 | Ground Level (m): | National Grid Co-ordinate: | Sheet: |
| 764393 | End: 26.01.18 | 6.80 | E:333402.2 N:392408.9 | 4 of 4 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details Backfill & Instru- mentation | Water | Description of Strata | Reduced Level | Depth (Thick- ness) | Material Graphic Legend |
|--------------|-------------------|------|---------|----------------|------------|------------|------------|---|-------|---|------------------|---------------------------|-------------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | |
| | | | | | | | | 100% return Air+Mist (Red/Brown) | | | | | |
| | | | | | | | | | | Borehole terminated at 15.00m depth. | -8.20 | 15.00 | |

| Boring Progress and Water Observations | | | | | | General Remarks |
|--|-----------------------------------|----------------|--------------|------------------------|-------------|-----------------------|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | |
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| All dimensions in metres | | | | | | Scale: 1:22 |
| Method Used: | Inspection pit + Rotary open hole | | Plant Used: | Comacchio GEO 205 | | Drilled By: Lee Smith |
| | | | | | | Logged By: A.Jones |
| | | | | | | Checked By: PMR AGS |



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|-------------------------------|--|-------------------------------|---|--|------------------------|
| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH109 |
| Contract Ref: 764393 | Start: 20.12.17 End: 21.12.17 | Ground Level (m): 6.63 | National Grid Co-ordinate: E:333457.1 N:392569.5 | | Sheet: 1 of 12 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|------------------------------|-------------------|---------------------|--------------|----------------|---------|---------|---------|-------------------------|----------|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 0.50 0.50 0.50 0.70 | 1 101 2 | B ES PID B | x6 0.4ppm | | | | | | | | MADE GROUND: CONCRETE. | 6.43 | 0.20 | |
| | | | | | | | | | | | MADE GROUND: Dark brown gravelly slightly clayey medium to coarse SAND. Gravel is angular to subangular fine to coarse of brick, sandstone, siltstone and concrete. | 5.93 | 0.70 | |
| | | | | | | | | | | | Rotary open hole drilling. MADE GROUND. Brick Wall. (Driller's description). | | (2.00) | |
| 2.70-3.15 | 3 | SPT _(NR) | N=25 | | | | | | | | | 3.93 | 2.70 | |
| 3.00 3.00 | 102 | ES PID | x6 0.3ppm | | | | | | | | MADE GROUND: Dark brown gravelly slightly clayey medium SAND with low cobble content. Gravel is subangular medium to coarse of concrete, brick, sandstone, siltstone and metal fragments. Cobbles are angular to subangular of brick and sandstone. | | (1.70) | |
| 3.70-4.15 3.70-4.15 | 4 5 | SPT D | N=22 | | | | | | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | | |
|---|-------|--|--------------|------------------------|--------------------|--|------|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | |
| 20/12/17 | 16:00 | 9.15 | 8.20 | 150 | 5.50 | 1. CAT scan undertaken at exploratory hole location. 2. Inspection pit hand excavated to 1.20m. 3. Core run undertaken from 7.20m to 8.20m due to SPT refusal and considered by Drilling Foreman as possibly approaching rockhead. Rock not encountered during run and so dynamic sampling resumed. 4. Core loss from 19.20m to 20.70m: Rock noted to be extremely weak below zone of loss. Loss possibly due to fragemnt of competent rock | | |
| 21/12/17 | 08:00 | 9.15 | 8.20 | 150 | 5.90 | | | |
| 21/12/17 | 16:00 | 26.70 | 10.20 | 146 | - | | | |
| All dimensions in metres | | | | | | Scale: | 1:22 | |
| Method Used: Inspection pit + Dynamic sampling + Rotary Cored | | Plant Used: Hand tools + Comacchio GEO 205 | | Drilled By: Lee Evans | Logged By: TBeeson | Checked By: | | |



STRUCTURAL SOILS

BOREHOLE LOG

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|-------------------------------|--|-------------------------------|---|--|------------------------|
| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH109 |
| Contract Ref: 764393 | Start: 20.12.17 End: 21.12.17 | Ground Level (m): 6.63 | National Grid Co-ordinate: E:333457.1 N:392569.5 | | Sheet: 2 of 12 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|--|-------------------|-----------------------|--|--------------------------------|---------|---------|---------|------------------------------------|----------|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 4.00 4.00 | 103 | ES PID | x6 0.5ppm | | | | | | | | | | | |
| | | | | Window run 115mm dia (45% rec) | | | | | | | | 2.23 | 4.40 | |
| 4.50 | 6 | D | | | | | | | | | MADE GROUND: Dark bluish grey slightly sandy slightly gravelly SILT. Sand is fine. Gravel is subrounded fine to coarse of sandstone and clinker. | | (0.50) | |
| 4.70-5.15 4.70-5.15 | 7 8 | SPT D | N=31 | | | | | | | | | 1.73 | 4.90 | |
| 5.00 5.00 | 104 | ES PID | x6 0.4ppm | | | | | | | | MADE GROUND: Light yellowish brown gravelly slightly clayey fine to medium SAND. Gravel is subangular fine to coarse of sandstone and brick. | 1.43 | 5.20 | |
| 5.25-5.70 | 9 | B | | | | | | | | | MADE GROUND: Dark bluish grey slightly sandy slightly gravelly SILT. Sand is fine. Gravel is subangular fine to medium of sandstone siltstone and clinker. Moderate hydrocarbon odour. | | (0.60) | |
| 5.70-6.15 | 10 | SPT _(NR) | N=15 | | | | | | | | | 0.83 | 5.80 | |
| 6.00 6.00 6.10-6.70 | 105 11 | ES PID B | x6 0.4ppm | | | | | | | | | | (0.90) | |
| 6.30 | 12 | D | | | | | | | | | | | | |
| 6.70-7.15 6.70-7.15 | 13 13 | SPT D | N=29 | | | | | | | | Dark grey medium SAND. | -0.07 | 6.70 | |
| 7.00 7.00 7.10 7.20-8.20 7.20-7.60 | 106 15 16 | ES PID D SPT | x6 1.1ppm 2,2/9,13,20,8 for 25mm | | | | | | | | Stiff to very stiff brown slightly sandy slightly gravelly silty CLAY. Sand is fine to medium. Gravel is subangular fine of sandstone. Occasional fine to medium gravel sized shell fragments. Occasional lenses (<5mm) of fine sand. | | | |
| 7.20-7.60 7.20-8.20 | 17 18 | D B | | | | | | | | | | | | |
| | | | | 70 | | | NA | 100% return Air+Mist (Brown) | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | |
|--|--|----------------|--------------|--------------------------------|-------------|--|-----------|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | |
| | | | | | | disintegrating the weak core material. 5. SPT hammer JN.01 2017 ($E_r = 75.00\%$) used. | |
| All dimensions in metres | | | | | | Scale: | 1:22 |
| Method Used: | Inspection pit + Dynamic sampling + Rotary Cored | | Plant Used: | Hand tools + Comacchio GEO 205 | | Drilled By: | Lee Evans |
| | | | | | | Logged By: | TBeeson |
| | | | | | | Checked By: | AS |
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STRUCTURAL SOILS

BOREHOLE LOG

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|-------------------------------|--|-------------------------------|---|--|------------------------|
| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH109 |
| Contract Ref: 764393 | Start: 20.12.17 End: 21.12.17 | Ground Level (m): 6.63 | National Grid Co-ordinate: E:333457.1 N:392569.5 | | Sheet: 3 of 12 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|-----------------------|---------------------------|----------------|---------|---------|-----------|--|----------|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 8.00 | 107 | ES PID | x6 0.3ppm | 70 | | | NA | | | | | | | |
| 8.00 | | | | | | | | | | | | | | |
| 8.20-8.65 | 19 | UT _(UT100) | 40 blows 100% recovery | | | | | | | | | | (3.30) | |
| 8.65-8.70 | 20 | D | | | | | | | | | | | | |
| 8.70-9.15 | 21 | SPT | N=28 | | | | | | | | | | | |
| 8.70-9.15 | 22 | D | | | | | | | | | | | | |
| 9.20-9.65 | 23 | UT _(UT100) | 60 blows 100% recovery | | | | | | | | | | | |
| 9.70-9.93 | 24 | SPT | 12,13/27,23 for 20mm | | | | | | | | | | | |
| 9.70-9.93 | 25 | D | | | | | | | | | | | | |
| 10.20-11.70 | | | | | | | | | | | | | | |
| | | | | 93 | 73 | 15 | NI 65 140 | 100% return Air+Mist (Reddish Brown) | | | Very weak very thinly bedded dark reddish brown medium grained SANDSTONE. Discontinuities: 1) very closely to closely spaced 10-20° planar and undulating rough stained dark brown. ... from 10.20m to 10.70m, recovered locally as non-intact core (angular medium to coarse gravel sized fragments). | | (0.94) | |
| | | | | | | | | | | | ... from 11.04m to 11.12m, 1 No 65° fracture undulating rough stained brown. | -4.51 | 11.14 | |
| 11.33-11.44 | 201 | C | | | | | | | | | Weak locally very weak reddish brown medium grained SANDSTONE. Discontinuities: 1) very closely locally closely spaced 5-10° planar rough clean locally infilled with soft reddish brown clay (<10mm). ... from 11.18m to 11.46m, with very closely spaced thin and thick laminations of light grey fine | | (1.22) | |
| 11.70-13.20 | | | | 100 | 95 | 60 | | | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | | | | |
|--|--|----------------|--------------|------------------------|--------------------------------|--------------------------|-----------------------|--------------------|---|---|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | | | |
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| | | | | | | All dimensions in metres | | Scale: 1:22 | | |
| Method Used: | Inspection pit + Dynamic sampling + Rotary Cored | | | Plant Used: | Hand tools + Comacchio GEO 205 | | Drilled By: Lee Evans | Logged By: TBeeson | Checked By:  |  |



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|-------------------------------|--|-------------------------------|-----------------------------|---|------------------------|
| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH109 |
| Contract Ref: 764393 | Start: 20.12.17 End: 21.12.17 | Ground Level (m): 6.63 | | National Grid Co-ordinate: E:333457.1 N:392569.5 | Sheet: 4 of 12 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|------------|--------------------------------------|----------|-------|--|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 12.54-12.76 | 202 | C | | 100 | 95 | 60 | NI 65 140 | | | | grained sandstone. . . . from 11.46m to 11.72m, 1 No thin bed of weak to medium strong light grey fine grained sandstone. | -5.73 | 12.36 | |
| 13.20-14.70 | | | | | | | | | | | Medium strong locally weak reddish brown medium grained SANDSTONE. Discontinuities: 1) closely to medium spaced locally very closely spaced 5-20° planar and undulating rough clean locally clay smeared. | | (1.76) | |
| 14.12-14.32 | 203 | C | | 100 | 97 | 73 | NI 50 210 | 100% return Air+Mist (Reddish Brown) | | | . . . from 13.76m - 13.83m, 1 No thin bed of medium strong light grey fine grained sandstone. | -7.49 | 14.12 | |
| 14.70-16.20 | | | | | | | | | | | Medium strong reddish brown medium grained SANDSTONE. Discontinuities: 1) closely locally very closely and medium spaced 5-10° planar rough clean, locally infilled with soft reddish brown clay (<2mm). | | | |
| 15.17-15.43 | 204 | C | | 100 | 91 | 80 | NI 100 260 | | | | . . . from 15.16m to 15.43m, with very closely spaced very thin and thin beds of medium strong light grey fine grained sandstone. . . . from 15.43m to 15.47m, very weak and recovered locally as non-intact core (sandy angular fine to medium gravel sized fragments). . . . from 15.47m to 15.55m, 1 No thin bed of medium strong light brown fine grained sandstone. | | | |

| Boring Progress and Water Observations | | | | | | General Remarks |
|--|------|----------------|--------------|------------------------|-------------|-----------------|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | |
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| Contract: Project Blue | | | Client: Buro Happold | | | Borehole: BH109 | | |
| Contract Ref: 764393 | | Start: 20.12.17 | Ground Level (m): 6.63 | | National Grid Co-ordinate: E:333457.1 N:392569.5 | | Sheet: 5 of 12 | |
| | | End: 21.12.17 | | | | | | |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|------------|--------------------------------------|----------|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 16.20-17.70 | | | | 100 | 91 | 80 | | | | | ... from 16.20m to 16.45m, assumed zone of core loss. | | | |
| 17.02-17.16 | 205 | C | | 83 | 73 | 50 | | | | | ... from 16.50m to 16.80m, 1 No medium bed of medium strong light brownish grey fine grained sandstone. | | (5.08) | |
| 17.70-19.20 | | | | | | | NI 100 260 | | | | ... from 16.60m to 16.80m, 1 No 65° fracture planar rough clean. | | | |
| 17.95-18.21 | 206 | C | | | | | | 100% return Air+Mist (Reddish Brown) | | | | | | |
| | | | | 100 | 91 | 57 | | | | | ... at 18.46m, 1 No 0° fracture undulating rough infilled with soft reddish brown gravelly clay (<50mm) | | | |
| | | | | | | | | | | | ... from 18.46m to 18.55, 1 No 50° fracture planar rough clay smeared. | | | |
| | | | | | | | | | | | ... from 18.69m to 19.96m, locally thickly interlaminated with dark reddish brown siltstone. | | | |
| 19.20-20.70 | | | | | | | | | | | ... from 18.95m to 18.96m and 19.08m to 19.13m, very weak and recovered as non-intact core (sandy angular fine to medium gravel sized fragments). | -12.57 | 19.20 | |
| | | | | 0 | 0 | 0 | NR | | | | No recovery. Strata assumed to be weathered SANDSTONE. | | (1.50) | |

| Boring Progress and Water Observations | | | | | | General Remarks |
|--|------|----------------|--------------|------------------------|-------------|-----------------|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | |
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|-------------------------------|--|-------------------------------|---|--|------------------------|
| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH109 |
| Contract Ref: 764393 | Start: 20.12.17 End: 21.12.17 | Ground Level (m): 6.63 | National Grid Co-ordinate: E:333457.1 N:392569.5 | | Sheet: 6 of 12 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|-----------------|--|----------|-------|--|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 20.70-22.20 | | | | 0 | 0 | 0 | NR | | | | | -14.07 | 20.70 | |
| 21.00-21.12 | 207 | C | | | | | NI NI 120 | | | | Extremely weak to very weak reddish brown medium grained SANDSTONE. Recovered predominantly as silty fine to medium sand. | | (0.80) | |
| 21.83-21.98 | 208 | C | | 100 | 78 | 30 | | 100% return Air+Mist (Reddish Brown) | | | Medium strong reddish brown medium grained SANDSTONE. Discontinuities are 1) closely spaced 5-15° planar rough clean locally infilled with soft reddish brown clay (10mm) ... from 22.00m to 22.39m, 1 No thin bed of medium strong light grey fine grained sandstone with very closely spaced thin laminations of dark grey siltstone. | -14.87 | 21.50 | |
| 22.20-23.70 | | | | | | | 30 95 160 | | | | ... from 22.68m to 22.70m, 1 No very thin bed of light brownish grey fine grained sandstone. | | | |
| 22.89-23.04 | 209 | C | | 93 | 93 | 47 | | | | | ... from 23.79m to 23.88m, recovered as non-intact core (sandy angular fine to coarse | | | |
| 23.70-25.20 | | | | 100 | 95 | 44 | | | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | | |
|---|------|----------------|--------------|------------------------|-------------|--------------------------|--|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | |
| | | | | | | | | |
| Method Used: Inspection pit + Dynamic sampling + Rotary Cored | | | | | | All dimensions in metres | | |
| Plant Used: Hand tools + Comacchio GEO 205 | | | | | | Scale: 1:22 | | |
| Drilled By: Lee Evans | | | | | | Logged By: TBeeson | | |
| | | | | | | Checked By: AGS | | |

GINT LIBRARY V8 06.GLB LibVersion: v8.06 - Core+Full Castleford SI - 008 | Log COMPOSITE LOG - A4P | 764393 - PROJECT BLUE.GPJ - v8.06.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk, | 01/06/18 - 09:56 | AJ4 |



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| Contract: Project Blue | | | Client: Buro Happold | | | Borehole: BH109 | |
| Contract Ref: 764393 | | Start: 20.12.17 End: 21.12.17 | Ground Level (m): 6.63 | | National Grid Co-ordinate: E:333457.1 N:392569.5 | | Sheet: 7 of 12 |

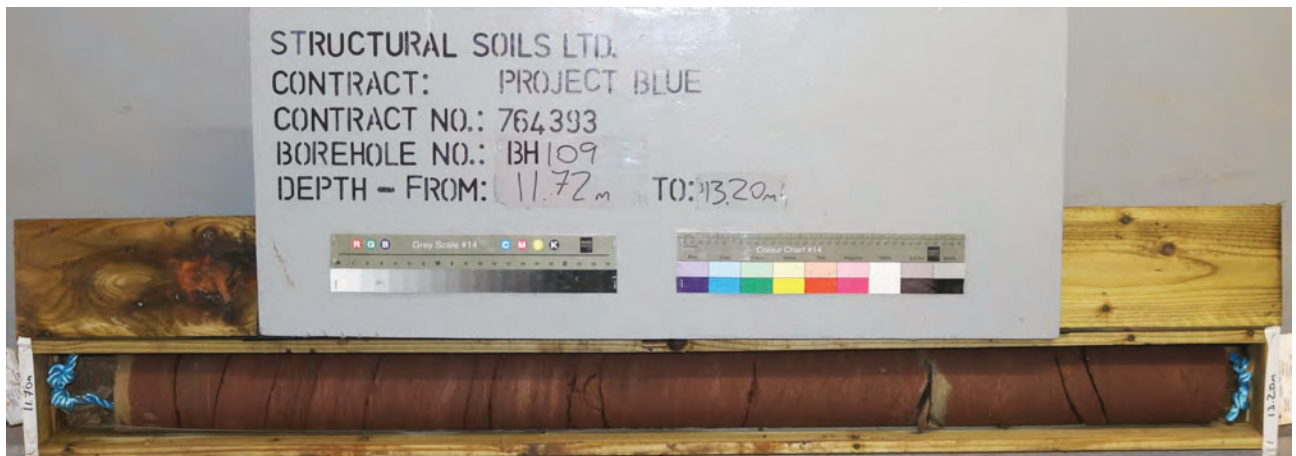
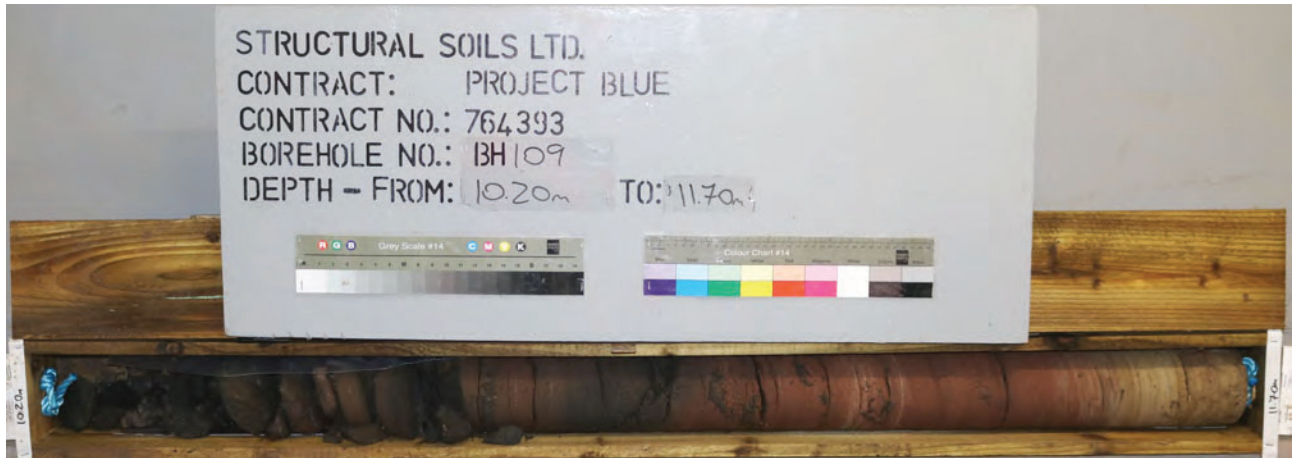
| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|------------------|--------------------------------------|----------|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 24.26-24.36 | 210 | C | | 100 | 95 | 44 | 30 95 160 | | | | gravel sized fragments). ... from 24.27m to 24.52m, 1 No thin bed of medium strong light grey fine grained sandstone. | | (5.20) | |
| 25.20-26.70 | 211 | C | | | | | | 100% return Air+Mist (Reddish Brown) | | | | | | |
| 25.20-25.80 | | | | | | | | | | | | | | |
| 25.56-25.69 | 212 | C | | 100 | 99 | 97 | NI 170 610 | | | | ... at 25.78m, 1 No thick lamination of light grey fine grained sandstone. ... at 26.34m, 1 No 0-10° fracture, undulating rough infilled with gravelly silty fine to medium sand (50mm). Localised weakening to very weak. | | | |
| | | | | | | | | | | | | -20.07 | 26.70 | |
| | | | | | | | | | | | Borehole terminated at 26.70m depth. | | | |

| Boring Progress and Water Observations | | | | | | General Remarks |
|--|------|----------------|--------------|------------------------|-------------|-----------------|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH109 |
| Contract Ref: 764393 | Start: 20.12.17 End: 21.12.17 | Ground Level (m): 6.63 | National Grid Co-ordinate: E:333457.1 N:392569.5 | Sheet: 8 of 12 |

BH109 - Box 1



BH109 - Box 2

| | | | | |
|---|--|-----------------------|--------------------|------------------|
| Method Used: Inspection pit + Dynamic sampling + Rotary Cored | Plant Used: Hand tools + Comacchio GEO 205 | Drilled By: Lee Evans | Logged By: TBeeson | Checked By: AGS |
|---|--|-----------------------|--------------------|------------------|



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|-------------------------------|--|-------------------------------|---|------------------------|
| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH109 |
| Contract Ref: 764393 | Start: 20.12.17 End: 21.12.17 | Ground Level (m): 6.63 | National Grid Co-ordinate: E:333457.1 N:392569.5 | Sheet: 9 of 12 |

BH109 - Box 3



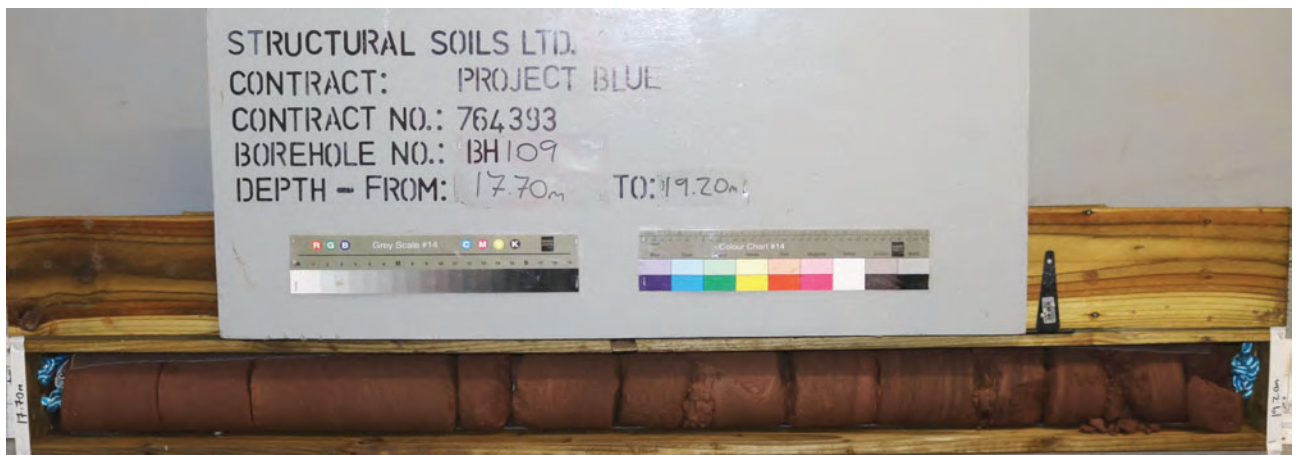
BH109 - Box 4

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|---|---|------------------------------|---------------------------|-----------------------|------------|
| Method Used: Inspection pit + Dynamic sampling + Rotary Cored | Plant Used: Hand tools + Comacchio GEO 205 | Drilled By: Lee Evans | Logged By: TBeeson | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH109 |
| Contract Ref: 764393 | Start: 20.12.17 End: 21.12.17 | Ground Level (m): 6.63 | National Grid Co-ordinate: E:333457.1 N:392569.5 | Sheet: 10 of 12 |

BH109 - Box 5



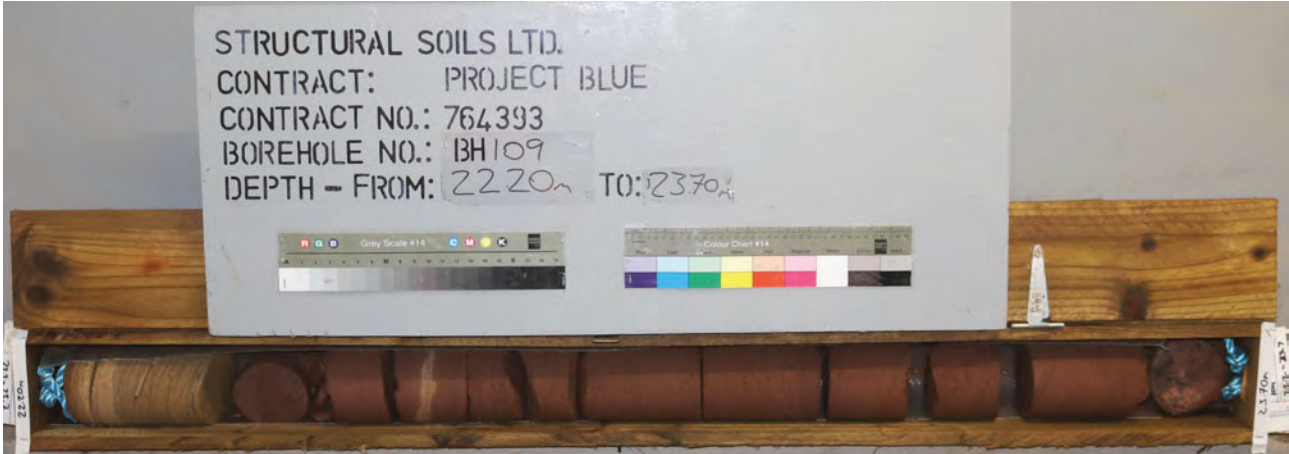
BH109 - Box 6

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|---|---|------------------------------|---------------------------|-----------------------|------------|
| Method Used: Inspection pit + Dynamic sampling + Rotary Cored | Plant Used: Hand tools + Comacchio GEO 205 | Drilled By: Lee Evans | Logged By: TBeeson | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH109 |
| Contract Ref: 764393 | Start: 20.12.17 End: 21.12.17 | Ground Level (m): 6.63 | National Grid Co-ordinate: E:333457.1 N:392569.5 | Sheet: 11 of 12 |

BH109 - Box 7



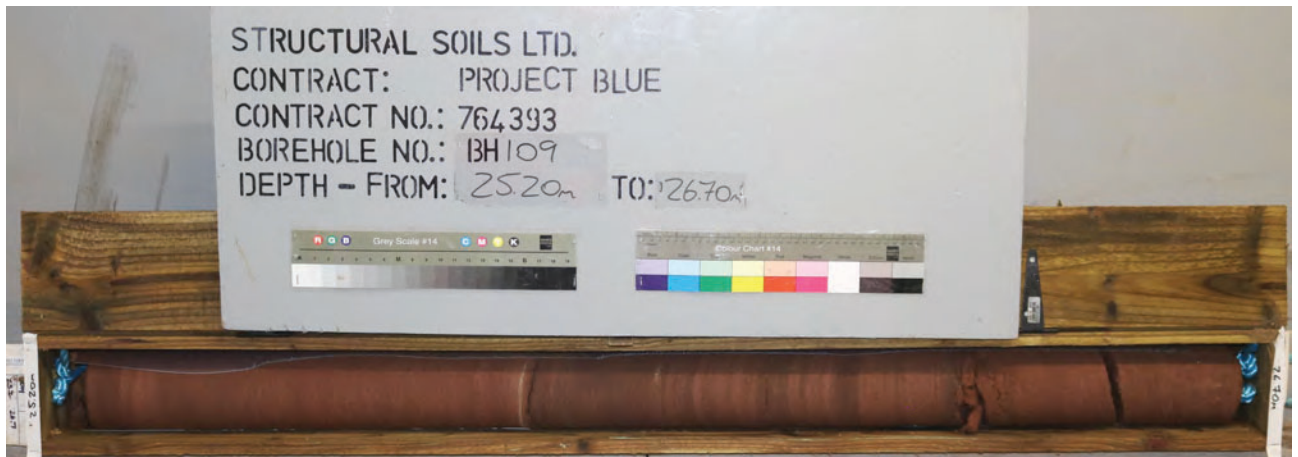
BH109 - Box 8

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|---|--|-----------------------|--------------------|-------------|--|
| Method Used: Inspection pit + Dynamic sampling + Rotary Cored | Plant Used: Hand tools + Comacchio GEO 205 | Drilled By: Lee Evans | Logged By: TBeeson | Checked By: | |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH109 |
| Contract Ref: 764393 | Start: 20.12.17 End: 21.12.17 | Ground Level (m): 6.63 | National Grid Co-ordinate: E:333457.1 N:392569.5 | Sheet: 12 of 12 |



BH109 - Box 9



BH109 - Box 10

| | | | | | |
|---|---|------------------------------|---------------------------|-----------------------|------------|
| Method Used: Inspection pit + Dynamic sampling + Rotary Cored | Plant Used: Hand tools + Comacchio GEO 205 | Drilled By: Lee Evans | Logged By: TBeeson | Checked By: AS | AGS |
|---|---|------------------------------|---------------------------|-----------------------|------------|



| Boring Progress and Water Observations | | | | | | General Remarks | | | | | | |
|--|---------------------------------|----------------|--------------|------------------------|-------------|-----------------|---------------|------------|------------------|-------------|---|---|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | | | | | |
| 15/01/18 | 16:00 | 1.40 | 1.40 | 150 | -8.00 | | | | | | | |
| 16/01/18 | 08:00 | 1.40 | 1.40 | 150 | -8.00 | | | | | | | |
| 16/01/18 | 16:00 | 16.50 | 2.40 | 146 | -6.90 | | | | | | | |
| All dimensions in metres | | | | | Scale: | 1:22 | | | | | | |
| Method Used: | Dynamic sampling + Rotary Cored | | Plant Used: | Comacchio GEO 205 | | Drilled By: | Joseph Taylor | Logged By: | MGalan + TBeeson | Checked By: |  |  |

GINT LIBRARY V8 06.GLB LibVersion: v8 06 018 PrIVersion: v8 06 - Core+Full Castleford SI - 008 | Log COMPOSITE LOG - A4P | 764393 - PROJECT BLUE.GPJ - v8 06.



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|-------------------------------|--|--------------------------------|---|--|------------------------|
| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH110 |
| Contract Ref: 764393 | Start: 15.01.18 End: 16.01.18 | Ground Level (m): -2.65 | National Grid Co-ordinate: E:333458.7 N:392487.8 | | Sheet: 2 of 11 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-----------|-------------------|------|---------|----------------|---------|---------|------------|-----------------------------------|----------|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 4.66-4.84 | 203 | C | | 93 | 89 | 48 | NI 90 180 | | | | Medium strong locally weak light greyish grey SANDSTONE with occasional thin to thick laminations of light grey siltstone. Discontinuities: 1) closely spaced 0-10° planar smooth clean. ... from 4.40m to 4.65m, with localised thin laminations of reddish brown fine grained sandstone and localised orange staining. | -7.02 | 4.37 | |
| 5.10-6.60 | | | | | | | | | | | ... from 4.80m to 5.06m, 1 No medium bed of extremely weak reddish brown fine to medium grained sandstone. Assumed zone of core loss from 4.80m to 4.90m. ... from 4.90m to 5.06m, recovered as non-intact core (gravelly fine to medium sand). ... from 5.03m to 5.10m, with occasional irregular lenses of reddish brown sandstone. ... from 5.10m, strata transition, with occasional very thin to thin beds of reddish brown fine to medium grained sandstone. | -7.99 | 5.34 | |
| 6.08-6.33 | 204 | C | | 99 | 96 | 53 | NI 50 350 | 100% return Water (Reddish Brown) | | | Medium strong reddish brown fine to medium grained SANDSTONE. Discontinuities: 1) very closely to medium spaced 5-15° planar rough clean. ... from 5.42m to 5.45m, 1 No very thin bed of weak light grey fine grained sandstone. ... from 6.00m to 6.08m, 1 No. 90° fracture undulating rough clean. ... from 6.70m to 6.80m, recovered as non-intact core (angular to subangular fine to coarse gravel sized fragments). ... from 7.14m to 7.33m, 1 No. 85° fracture planar rough clean. | | | |
| 6.60-8.00 | | | | | | | NI 60 135 | | | | | | (2.66) | |
| 7.60-8.00 | 205 | C | | 100 | 76 | 48 | 90 140 400 | | | | | -10.65 | 8.00 | |

| Boring Progress and Water Observations | | | | | | General Remarks | |
|--|------|----------------|--------------|------------------------|-------------|-----------------|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | |
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| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH110 |
| Contract Ref: 764393 | Start: 15.01.18 End: 16.01.18 | Ground Level (m): -2.65 | National Grid Co-ordinate: E:333458.7 N:392487.8 | | Sheet: 3 of 11 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|-----------------|-----------------------------------|----------|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 8.00-9.50 | 206 | C | | ↑ | ↑ | ↑ | ↑ | | | | Medium strong locally strong light grey fine locally medium grained SANDSTONE with localised thin laminations to very thin beds of reddish brown fine to medium grained sandstone. Discontinuities: 1) closely spaced 0-10° planar smooth locally rough clean. | -11.37 | (0.72) | |
| 8.27-8.46 | | | | 100 | 77 | 51 | 50 95 200 | | | | | | | |
| 9.50-11.00 | | | | ↑ | ↑ | ↑ | ↑ | | | | Very weak to medium strong yellowish grey fine to coarse grained SANDSTONE with localised thin beds of medium strong reddish brown fine to medium grained sandstone. . . . from 8.87m to 8.91m, with extremely closely spaced thin and thick laminae of black fine grained sandstone. . . . from 9.06m to 9.33m, extremely weak to weak and recovered as non-intact core (sandy angular to subangular fine to coarse gravel sized fragments). | -12.15 | 9.50 | |
| | | | | 100 | 76 | 22 | NI NI 80 | | | | | | | |
| 10.44-10.75 | 207 | C | | ↑ | ↑ | ↑ | ↑ | 100% return Water (Reddish Brown) | | | Very weak to weak reddish brown fine to medium grained SANDSTONE. Discontinuities: 1) very closely to closely spaced 0-20° planar and undulating rough clean. . . . from 9.68m to 10.04m, recovered as non-intact core (very angular to angular fine to coarse gravel sized fragments). . . . from 9.80m to 10.40m, 4 No. 40-60° fractures planar rough clean. . . . from 10.27m to 10.36m, 1 No thin bed of medium strong light grey fine grained sandstone. | | (1.89) | |
| 11.00-12.50 | | | | ↑ | ↑ | ↑ | ↑ | | | | | | | |
| 11.88-12.16 | 208 | C | | ↑ | ↑ | ↑ | ↑ | | | | from 11.07m to 11.20m, recovered as non-intact core (angular to subangular fine to coarse gravel sized fragments). | -14.04 | 11.39 | |
| | | | | 100 | 77 | 61 | | | | | Medium strong locally weak reddish brown fine to medium grained SANDSTONE with closely to medium spaced very thin to thin beds of of medium strong locally weak light yellowish grey fine to medium grained sandstone. Discontinuities: 1) | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | | | |
|--|------|----------------|--------------|------------------------|-------------|-----------------|--|--|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | | |
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| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH110 |
| Contract Ref: 764393 | Start: 15.01.18 End: 16.01.18 | Ground Level (m): -2.65 | National Grid Co-ordinate: E:333458.7 N:392487.8 | | Sheet: 4 of 11 |



| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|------------|-----------------------------------|----------|-------|--|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 12.50-14.00 | 211 | C | | 100 | 77 | 61 | | | | | very closely to medium spaced 0-15° planar and undulating rough clean. | | | |
| 12.68-13.32 | | | | | | | | | | | . . . from 12.39m to 12.41m, irregular thick lamination of light yellowish grey fine grained sandstone. . . . from 12.50m to 12.60m, medium strong locally strong. | | (2.13) | |
| | | | | 100 | 87 | 80 | NI 200 700 | | | | . . . from 13.30m to 13.50m, 1 No. 65° fracture undulating rough clean . . . from 13.32m to 13.52m, 1 No thin bed of light grey medium grained sandstone with localised thin laminations of dark grey siltstone. | -16.17 | 13.52 | |
| 14.00-15.30 | 212 | C | | | | | | 100% return Water (Reddish Brown) | | | Medium strong reddish brown fine locally medium grained SANDSTONE. Discontinuities: 1) very closely to closely spaced 0-10° planar rough clean. . . . from 13.77m to 13.90m, 1 No. 65° fracture undulating rough clean. . . . from 14.00m, fractures locally clay smeared. . . . from 14.24m to 14.27m, with thin and thick laminations of light grey fine grained sandstone. | | (1.42) | |
| 14.42-14.56 | | | | 100 | 95 | 40 | NI 100 140 | | | | . . . from 14.90m to 14.94m, 1 No. 65-70° fracture planar rough clean. Medium strong to strong reddish brown fine to medium grained SANDSTONE. Discontinuities: 1) closely to medium spaced 0-10° planar rough clean. | -17.59 | 14.94 | |
| 15.30-16.50 | 213 | C | | | | | | | | | . . . from 15.55m to 15.85m, 1 No medium bed of weak to medium strong light grey fine grained sandstone. . . . from 15.67m to 15.84m, 1 No. 70° fracture undulating rough | | (1.56) | |
| 15.89-16.41 | | | | 100 | 98 | 98 | 20 210 520 | | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | |
|--|------|----------------|--------------|------------------------|-------------|-----------------|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | |
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| Contract: Project Blue | | | Client: Buro Happold | | | Borehole: BH110 |
| Contract Ref: 764393 | | Start: 15.01.18 End: 16.01.18 | Ground Level (m): -2.65 | | National Grid Co-ordinate: E:333458.7 N:392487.8 | Sheet: 5 of 11 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-----------|-------------------|------|---------|----------------|---------|---------|------------------|-------------------------|----------|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| | | | | 100 | 98 | 98 | 20 210 520 | | | | clean. | | | |
| | | | | | | | | | | | ... from 16.41m to 16.50m, light grey fine to medium grained sandstone with localised thin laminations of dark grey fine grained sandstone. | -19.15 | 16.50 | |
| | | | | | | | | | | | Borehole terminated at 16.50m depth. | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | |
|--|--|----------------|--------------|--------------------------|-------------|--------------------------|---|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | |
| | | | | | | | |
| | | | | | | All dimensions in metres | |
| | | | | | | Scale: | 1:22 |
| Method Used: | Dynamic sampling + Rotary Cored | | Plant Used: | Comacchio GEO 205 | | Drilled By: | Joseph Taylor |
| | | | | | | Logged By: | MGalan + TBeeson |
| | | | | | | Checked By: |  |
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GINT LIBRARY V8 06.GLB LibVersion: v8.06 - Core+Full Castleford SI - 008 | Log COMPOSITE LOG - A4P | 764393 - PROJECT BLUE.GPJ - v8.06.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk, | 01/06/18 - 09:59 | A/J4 |



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|-------------------------------|--|--------------------------------|---|------------------------|
| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH110 |
| Contract Ref: 764393 | Start: 15.01.18 End: 16.01.18 | Ground Level (m): -2.65 | National Grid Co-ordinate: E:333458.7 N:392487.8 | Sheet: 6 of 11 |

BH110 - Box 1



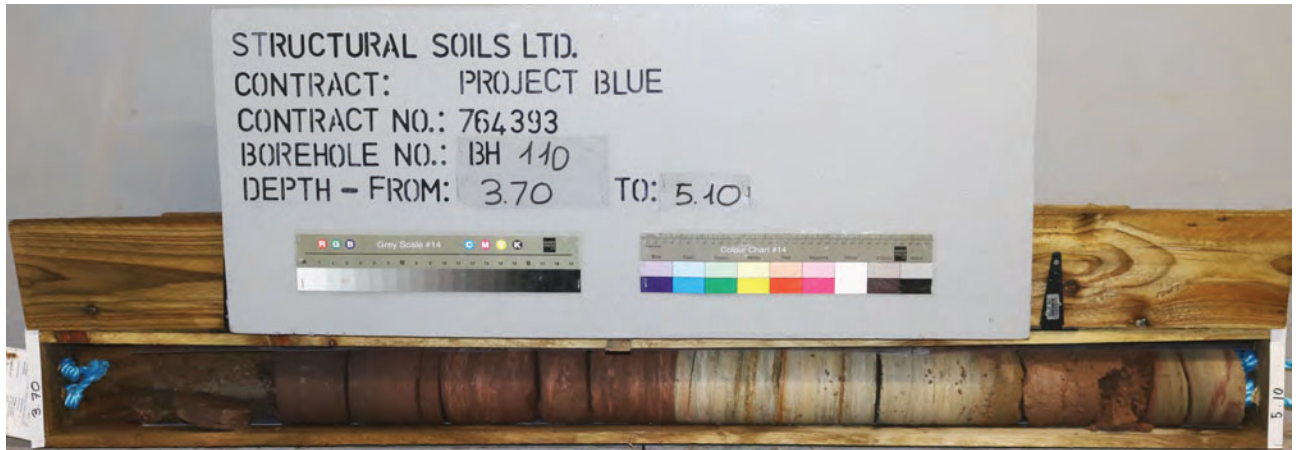
BH110 - Box 2

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|---|--------------------------------------|----------------------------------|------------------------------------|-----------------------|------------|
| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Joseph Taylor | Logged By: MGalan + TBeeson | Checked By: AS | AGS |
|---|--------------------------------------|----------------------------------|------------------------------------|-----------------------|------------|



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|-------------------------------|--|--------------------------------|---|------------------------|
| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH110 |
| Contract Ref: 764393 | Start: 15.01.18 End: 16.01.18 | Ground Level (m): -2.65 | National Grid Co-ordinate: E:333458.7 N:392487.8 | Sheet: 7 of 11 |

BH110 - Box 3



BH110 - Box 4

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|---|--------------------------------------|----------------------------------|------------------------------------|-----------------------|------------|
| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Joseph Taylor | Logged By: MGalan + TBeeson | Checked By: AS | AGS |
|---|--------------------------------------|----------------------------------|------------------------------------|-----------------------|------------|



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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH110 |
| Contract Ref: 764393 | Start: 15.01.18 End: 16.01.18 | Ground Level (m): -2.65 | National Grid Co-ordinate: E:333458.7 N:392487.8 | Sheet: 8 of 11 |

BH110 - Box 5



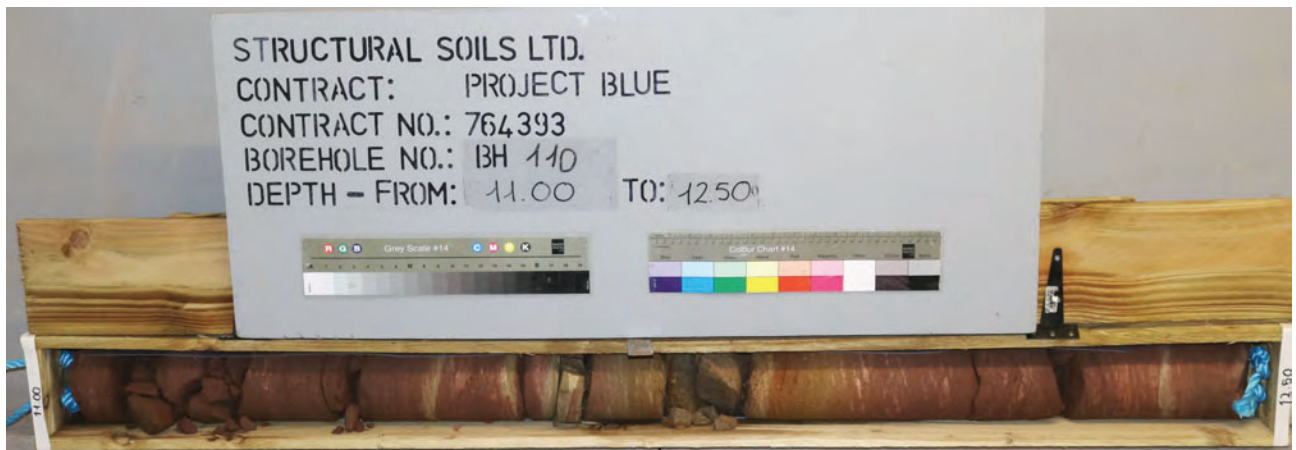
BH110 - Box 6

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|---|--------------------------------------|----------------------------------|------------------------------------|-----------------------|------------|
| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Joseph Taylor | Logged By: MGalan + TBeeson | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH110 |
| Contract Ref: 764393 | Start: 15.01.18 End: 16.01.18 | Ground Level (m): -2.65 | National Grid Co-ordinate: E:333458.7 N:392487.8 | Sheet: 9 of 11 |

BH110 - Box 7



BH110 - Box 8

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|---|--------------------------------------|----------------------------------|------------------------------------|-----------------------|------------|
| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Joseph Taylor | Logged By: MGalan + TBeeson | Checked By: AS | AGS |
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| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH110 |
| Contract Ref: 764393 | Start: 15.01.18 End: 16.01.18 | Ground Level (m): -2.65 | National Grid Co-ordinate: E:333458.7 N:392487.8 | Sheet: 10 of 11 |

BH110 - Box 9



BH110 - Box 10

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|---|--------------------------------------|----------------------------------|------------------------------------|-----------------------|------------|
| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Joseph Taylor | Logged By: MGalan + TBeeson | Checked By: AS | AGS |
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|-------------------------------|--|--------------------------------|---|------------------------|
| Contract: Project Blue | | Client: Buro Happold | | Borehole: BH110 |
| Contract Ref: 764393 | Start: 15.01.18 End: 16.01.18 | Ground Level (m): -2.65 | National Grid Co-ordinate: E:333458.7 N:392487.8 | Sheet: 11 of 11 |

BH110 - Box 11



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|---|--------------------------------------|----------------------------------|------------------------------------|-----------------------|--|
| Method Used: Dynamic sampling + Rotary Cored | Plant Used: Comacchio GEO 205 | Drilled By: Joseph Taylor | Logged By: MGalan + TBeeson | Checked By: AS | |
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|-------------------------------|--|-------------------------------|---|--|------------------------|
| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH111 |
| Contract Ref: 764393 | Start: 11.12.17 End: 15.12.17 | Ground Level (m): 6.70 | National Grid Co-ordinate: E:333528.5 N:392567.7 | | Sheet: 1 of 21 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|---|-------------------------|---------------------------------|---------------------|----------------|---------|---------|---------|-------------------------|----------|-------|--|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 0.50 0.50 0.50 | 1 101 | B ES PID | x6 0.5ppm | | | | | | | | MADE GROUND: CONCRETE. | 6.40 | (0.30) | |
| 1.00 1.00 1.00 1.20-1.65 1.20-1.65 | 102 2 3 4 | ES B PID SPT D | x6 0.4ppm N=7 | | | | | | | | MADE GROUND: Dark grey gravelly slightly clayey fine to medium SAND. Gravel is subangular fine to medium of brick, clinker and sandstone. | 5.70 | (0.70) | |
| 1.50 1.50 | 103 | ES PID | x6 0.6ppm | | | | | | | | MADE GROUND: Dark grey gravelly clayey fine to medium SAND. Gravel is subrounded fine to medium of siltstone and sandstone. Occasional fine to medium gravel sized shell fragments. | 5.10 | 1.60 | |
| 1.80 | 5 | D | | | | | | | | | MADE GROUND: Grey and brown slightly gravelly clayey fine SAND with low cobble content. Gravel is subangular fine to medium of sandstone. Cobbles are subangular of sandstone and brick. Some fine to coarse gravel sized shell fragments. | | (0.70) | |
| 2.00-2.45 2.00 2.00-2.45 2.00 2.20 2.30-2.75 | 6 104 7 8 9 | SPT ES D PID D B | N=8 x6 0.4ppm | | | | | | | | MADE GROUND: Brownish grey sandy angular to subangular fine to medium GRAVEL of sandstone and brick. Sand is medium. | 4.40 | 2.30 | |
| 3.00-3.45 3.00 3.00-3.45 3.00 | 10 105 11 | SPT ES D PID | N=8 x6 0.7ppm | | | | | | | | MADE GROUND: Dark grey very clayey fine SAND. | 3.60 | (0.30) | |
| 3.40 | 12 | D | | | | | | | | | MADE GROUND: Orangish brown sandy slightly clayey subangular fine to coarse GRAVEL of sandstone, brick and siltstone. Sand is medium. Some fine to coarse gravel sized shell fragments. | 3.10 | (0.50) | |
| | | | | | | | | | | | MADE GROUND: Dark grey slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is subangular fine to medium of brick. | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | |
|---|-------|----------------|--------------|------------------------|-------------|--|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | |
| 11/12/17 | 16:00 | 4.60 | 4.00 | 150 | 0.90 | 1. CAT scan undertaken at exploratory hole location. 2. Concrete core from GL to 0.30m. Disintegrated. 3. Inspection pit hand excavated to 1.20m 4. Variable Head Test performed during borehole formation with test section between 4.12m and 4.60m. 5. SPT hammer JN.01 2017 ($E_r = 75.00\%$) used. | |
| 12/12/17 | 08:00 | 4.60 | 4.00 | 150 | 0.90 | | |
| 12/12/17 | 16:00 | 10.30 | 9.25 | 150 | - | | |
| 13/12/17 | 08:00 | 10.30 | 9.25 | 150 | - | | |
| 13/12/17 | 16:00 | 19.20 | 12.20 | 146 | - | | |
| 14/12/17 | 08:00 | 19.20 | 12.20 | 146 | 3.60 | | |
| 14/12/17 | 16:00 | 34.20 | 12.20 | 146 | 7.60 | | |
| 15/12/17 | 08:00 | 34.20 | 12.20 | 146 | 7.80 | | |
| Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | | | | | | All dimensions in metres | |
| Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 205 | | | | | | Scale: 1:22 | |
| Drilled By: Jonathan Newby | | | | | | Logged By: TBeeson | |
| Checked By: | | | | | | AGS | |







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|-------------------------------|--|-------------------------------|---|--|------------------------|
| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH111 |
| Contract Ref: 764393 | Start: 11.12.17 End: 15.12.17 | Ground Level (m): 6.70 | National Grid Co-ordinate: E:333528.5 N:392567.7 | | Sheet: 4 of 21 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|------------------------|-------------------------------|---------|---------|-----------|-------------------------|----------|-------|--|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 12.20-13.20 | | | | Window run 89mm dia (85% rec) | | | | | | | weathered sandstone | -5.50 | 12.20 | |
| 12.20-12.54 | 47 | SPT | 7,18/30,45,25 for 55mm | | | | | | | | ... at 12.00m, with black staining. | | | |
| 12.20-12.54 | 48 | D | | | | | | | | | Extremely weak reddish brown medium grained SANDSTONE. Recovered as non-intact core (very sandy clayey fine to coarse gravel sized fragments) ... from 12.20m to 12.90m, assumed zone of core loss. | | (1.00) | |
| | | | | 30 | 0 | 0 | | | | | | | | |
| | | | | | | | NR | | | | | | | |
| | | | | | | | NI | | | | | | | |
| 13.20-14.20 | | | | | | | | | | | | -6.50 | 13.20 | |
| | | | | | | | | | | | Very weak locally weak reddish brown medium grained SANDSTONE. Discontinuities: 1) very closely locally closely spaced 5-20° planar rough clay smeared locally infilled with soft reddish brown clay (<40mm). Recovered locally as non-intact core (sandy clayey angular fine to coarse gravel sized fragments). | | | |
| 13.80-13.90 | 201 | C | | 90 | 30 | 11 | NI 25 110 | | | | | | | |
| 14.20-15.20 | | | | | | | | | | | | | (2.40) | |
| | | | | | | | | | | | | | | |
| 14.76-14.86 | 202 | C | | 70 | 55 | 15 | | | | | ... at 14.70m, 1 No 0-10° discontinuity undulating rough infilled with reddish brown medium sand (15mm). | | | |
| 15.20-16.20 | | | | | | | NI 25 150 | | | | ... from 14.90m to 15.20m, assumed zone of core loss. | | | |
| | | | | | | | | | | | ... from 15.20m to 15.30m, recovered as non-intact core (angular fine to coarse gravel sized fragments). | | | |
| 15.50-15.60 | 203 | C | | 100 | 80 | 20 | | | | | ... from 15.50m to 15.80m, 3 No 0-10° fractures undulating rough infilled with reddish brown gravelly medium sand (<15mm). | -8.90 | 15.60 | |
| | | | | | | | | | | | Weak locally medium strong reddish brown medium grained | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | |
|--|------|----------------|--------------|------------------------|-------------|-----------------|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | |
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| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH111 |
| Contract Ref: 764393 | Start: 11.12.17 End: 15.12.17 | Ground Level (m): 6.70 | National Grid Co-ordinate: E:333528.5 N:392567.7 | | Sheet: 5 of 21 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|---------|-------------------------|----------|-------|--|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 16.00-16.10 | 204 | C | | 100 | 80 | 20 | NI 25 | | | | SANDSTONE. Discontinuities: 1) very closely to closely spaced 5-15° planar rough clean locally clay smeared. 2) widely spaced 80-90° undulating rough clean. . . . from 16.20m to 16.30m, extremely weak and recovered as non-intact core (brown fine to medium sand with rare inclusions of siltstone). | | | |
| 16.20-17.70 | | | | | | | 150 | | | | | | (1.80) | |
| 17.06-17.19 | 205 | C | | 100 | 83 | 16 | | | | | . . . at 17.20m, 1 No 5° fracture planar rough clean with penetrative light greenish grey reduction (<5mm). . . from 17.30m to 17.40m and at 18.00m, with orangish brown staining. | -10.70 | 17.40 | |
| 17.70-19.20 | | | | | | | | | | | | | | |
| 18.38-18.50 | 206 | C | | 93 | 60 | 27 | NI 70 | 90-100% return | | | Medium strong locally weak reddish brown medium grained SANDSTONE. With medium spaced very thin to thin beds of medium strong light greenish grey fine grained sandstone. Discontinuities: 1) very closely to closely spaced 5-15° planar rough clean locally infilled with reddish brown medium sand (<5mm). 2) medium spaced 80-90° undulating rough clean. . . . from 17.60m to 17.70m, recovered as non-intact core (sandy angular fine to coarse gravel sized fragments). . . . from 18.05m to 18.20m, recovered as non-intact core (reddish brown sand). . . . from 18.90m to 19.10m, 1 No 60° fracture planar rough clean. . . . at 19.10m, with orangish brown staining. | | | |
| 19.10-19.20 | 207 | C | | | | | 150 | Air+Mist (Red) | | | | | (3.30) | |
| 19.20-20.70 | | | | 97 | 90 | 7 | | | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks |
|--|------|----------------|--------------|------------------------|-------------|-----------------|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | |
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| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH111 |
| Contract Ref: 764393 | Start: 11.12.17 End: 15.12.17 | Ground Level (m): 6.70 | National Grid Co-ordinate: E:333528.5 N:392567.7 | | Sheet: 6 of 21 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|-----------|-------------------------------------|----------|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 20.70-22.20 | | | | 97 | 90 | 7 | NI 70 150 | | | | ... from 20.00m to 20.60m, 3 No 90° fracture undulating rough clean. ... at 20.20m, locally coarse grained with orangish brown and yellowish brown staining. | -14.00 | 20.70 | |
| 21.15-21.35 | 208 | C | | 80 | 67 | 21 | | 90-100% return Air+Mist (Red) | | | Medium strong locally weak reddish brown medium locally coarse grained SANDSTONE. With localised closely to medium spaced thin laminations to very thin beds of light grey fine grey sandstone. Discontinuities: 1) closely spaced 5-10° planar rough clean locally clay smeared or infilled with clay (<10mm). 2) medium spaced 80-90° undulating rough clean. | | | |
| 21.61-21.72 | 209 | C | | | | | | | | | | | | |
| 22.20-23.70 | | | | 100 | 90 | 32 | NI 90 190 | | | | | | | |
| 23.65-23.70 | 210 | C | | | | | | | | | ... from 23.20m to 23.25m, extremely weak and recovered as non-intact core (angular fine to medium gravel sized fragments). | | | |
| 23.70-25.20 | | | | | | | | | | | | | | |
| 23.80-24.08 | 211 | C | | 100 | 87 | 28 | | | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | | | |
|---|------|----------------|---|------------------------|----------------------------|--------------------|-------------|--|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | | |
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| Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | | | Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 205 | | Drilled By: Jonathan Newby | Logged By: TBeeson | Checked By: | | |

GINT LIBRARY V8 06.GLB LibVersion: v8.06.018 ProjVersion: v8.06 - Core+Full Castleford SI - 008 | Log COMPOSITE LOG - A4P | 764393 - PROJECT BLUE.GPJ - v8.06. Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk, [01/06/18 - 10:03 | AJ4]



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| Contract: Project Blue | | | Client: Buro Happold | | | Borehole: BH111 |
| Contract Ref: 764393 | Start: 11.12.17 End: 15.12.17 | Ground Level (m): 6.70 | National Grid Co-ordinate: E:333528.5 N:392567.7 | | | Sheet: 7 of 21 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|-----------|-------------------------------------|----------|-------|--|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 24.28-24.40 | 212 | C | | 100 | 87 | 28 | | | | | ... from 24.62m to 24.65m, recovered as non-intact core (reddish brown medium sand). | | (7.50) | |
| 25.20-26.70 | | | | | | | | | | | | | | |
| 25.90-26.08 | 213 | C | | 100 | 77 | 33 | NI 90 190 | 90-100% return Air+Mist (Red) | | | | | | |
| 26.70-28.20 | | | | | | | | | | | ... from 26.64m to 26.70m, very weak and recovered as non-intact core (reddish brown medium sand). ... at 27.05m, 1 No 10° discontinuity planar rough with penetrative light greenish grey reduction (<5mm). ... from 27.64m to 27.85m, recovered as non-intact core (gravelly medium sand). | | | |
| | | | | 97 | 80 | 31 | | | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | | |
|---|------|----------------|---|------------------------|----------------------------|--------------------|-------------|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | |
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| Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | | | Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 205 | | Drilled By: Jonathan Newby | Logged By: TBeeson | Checked By: | |

GINT LIBRARY V8 06.GLB LibVersion: v8.06.018 ProjVersion: v8.06 - Core+Full Castleford SI - 008 | Log COMPOSITE LOG - A4P | 764393 - PROJECT BLUE.GPJ - v8.06.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk, | 01/06/18 - 10:03 | AJ4 |



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| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH111 |
| Contract Ref: 764393 | Start: 11.12.17 End: 15.12.17 | Ground Level (m): 6.70 | National Grid Co-ordinate: E:333528.5 N:392567.7 | | Sheet: 8 of 21 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|------------|-------------------------------|----------|-------|---|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 28.00-28.14 | 214 | C | | 97 | 80 | 31 | NI 90 190 | | | | | -21.50 | 28.20 | |
| 28.20-29.70 | | | | | | | | | | | Medium strong reddish brown medium to coarse grained SANDSTONE. With medium to widely spaced very thin to medium beds of medium strong thinly laminated light yellowish brown and grey fine to medium grained sandstone. Discontinuities: 1) closely to medium spaced 5-20° planar rough clean. Localised yellowish brown and orangish brown discolouration. ... from 28.30m, with orangish brown staining. ... from 28.80m to 29.70m, with very closely spaced spaced very thin to thin beds of medium strong light greenish grey fine grained sandstone and light yellowish brown coarse grained sandstone. | | | |
| 29.02-29.29 | 215 | C | | 100 | 93 | 65 | | | | | | | | |
| 29.70-31.20 | | | | | | | | | | | | | | |
| 29.73-29.93 | 216 | C | | | | | NI 110 370 | 90-100% return Air+Mist (Red) | | | | | | |
| | | | | 93 | 88 | 47 | | | | | | | | |
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| 31.20-32.70 | | | | | | | | | | | | | | |
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| 31.60-31.80 | 217 | C | | 100 | 97 | 62 | | | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | | | |
|--|------|----------------|--------------|------------------------|-------------|-----------------|--|--|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | | |
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|-------------------------------|--|-------------------------------|---|--|------------------------|
| Contract: Project Blue | | | Client: Buro Happold | | Borehole: BH111 |
| Contract Ref: 764393 | Start: 11.12.17 End: 15.12.17 | Ground Level (m): 6.70 | National Grid Co-ordinate: E:333528.5 N:392567.7 | | Sheet: 9 of 21 |

| Depth (m) | Samples & Testing | | | Mechanical Log | | | | Flush Returns & Details | Backfill | Water | Description of Strata | Reduced Level | Depth (Thickness) | Material Graphic Legend |
|-------------|-------------------|------|---------|----------------|---------|---------|------------|-------------------------------------|----------|-------|--|---------------|-------------------|-------------------------|
| | No | Type | Results | TCR (%) | SCR (%) | RQD (%) | If (mm) | | | | | | | |
| 32.70-34.20 | 218 | C | | 100 | 97 | 62 | | 90-100% return Air+Mist (Red) | | | ... from 32.23 to 32.26m, 33.60m to 33.64m and 33.66m to 33.70m, light brown medium to coarse grained sandstone. | | | |
| 32.83-33.11 | | | | | | | NI 110 370 | | | | | | | |
| | | | | 100 | 93 | 41 | | | | | | | | |
| 34.20-35.70 | 219 | C | | | | | | 90-100% return Air+Mist (Red) | | | ... from 34.20m to 34.55m, with extremely closely spaced very thin to thin beds of weak to medium strong grey and yellowish brown medium to coarse grained sandstone. | | (12.00) | |
| 34.33-34.62 | | | | | | | NI 130 230 | | | | | | | |
| | | | | 100 | 90 | 74 | | | | | | | | |
| 35.70-37.20 | | | | | | | | | | | ... from 35.04m to 35.08m, extremely weak and recovered as non-intact core (angular fine to coarse gravel sized fragments). ... from 35.45m to 35.53m and 35.81m to 35.84m, with extremely closely spaced thick laminations of grey and yellowish brown fine grained sandstone. | | | |
| | | | | 100 | 90 | 75 | | | | | | | | |

| Boring Progress and Water Observations | | | | | | General Remarks | | | |
|---|------|----------------|---|------------------------|----------------------------|--------------------|-------------|--|--|
| Date | Time | Borehole Depth | Casing Depth | Borehole Diameter (mm) | Water Depth | | | | |
| | | | | | | | | | |
| Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored | | | Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 205 | | Drilled By: Jonathan Newby | Logged By: TBeeson | Checked By: | | |

GINT LIBRARY_V8_06.GLB LibVersion: v8_06 - Core+Full Castleford SI - 008 | Log COMPOSITE LOG - A4P | 764393 - PROJECT BLUE.GPJ - v8_06.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk, | 01/06/18 - 10:03 | AJ4 |