Appendix 5

Soakaway Test Records

PRICENED. 28/08/2024

 Contract:
 PPK3
 Contract No.
 22000

 Test No.
 SA01 - Cycle 3
 Easting:
 703367.422

 Client
 PM
 Northing:
 730634.858

 Date:
 12/09/2019
 Elevation:
 74.273

Summary of ground conditions

| from | to | Description | Ground water |
|------|--|--|--------------|
| 0.00 | 0.20 | .20 TOPSOIL: Soft brown slightly sandy slightly gravelly CLAY. | |
| 0.20 | 0.85 Soft brown slightly sandy slightly gravelly CLAY. | | None |
| 0.85 | | | |
| | | | 1 |

Notes: Three cycles were carried out with the third cycle represented. Soakway located adjacent to TP01

Field Data Field Test

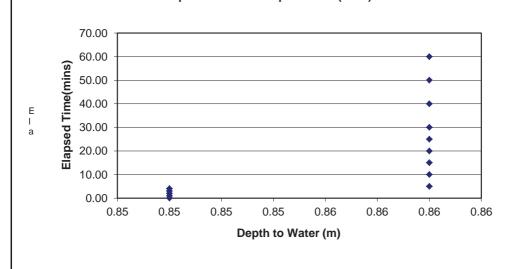
| Depth to | Elapsed | Depth of Pit (D) | 1.50 m | |
|----------|---------|---|-------------------------------|---|
| Water | Time | Width of Pit (B) | 0.70 m | |
| (m) | (min) | Length of Pit (L) | 2.20 m | |
| | | | | |
| 0.85 | 0.00 | Initial depth to Water = | 0.85 m | |
| 0.85 | 1.00 | Final depth to water = | 0.86 m | |
| 0.85 | 2.00 | Elapsed time (mins)= | 60.00 | |
| 0.85 | 3.00 | | | |
| 0.85 | 4.00 | Top of permeable soil | m | |
| 0.86 | 5.00 | Base of permeable soi | m | |
| 0.86 | 10.00 | | _ | |
| 0.86 | 15.00 | | | |
| 0.86 | 20.00 | | | |
| 0.86 | 25.00 | | | |
| 0.86 | 30.00 | Base area= | 1.54 m2 | 2 |
| 0.86 | 40.00 | *Av. side area of permeable stratum over test p | 3.741 m2 | 2 |
| 0.86 | 50.00 | Total Exposed area = | 5.281 m2 | 2 |
| 0.86 | 60.00 | ' | | |
| | | | | |
| | | Infiltration rate (f) = Volume of water used/ | unit exposed area / unit time | Э |
| | | | | |

Depth of water vs Elapsed Time (mins)

or

8.10032E-07 m/sec

f= 4.9E-05 m/min



 Contract:
 PPK3
 Contract No.
 22000

 Test No.
 SA12 - Cycle 3
 Easting:
 703426.439

 Client
 PM
 Northing:
 730585.003

 Date:
 12/09/2019
 Elevation:
 74.565

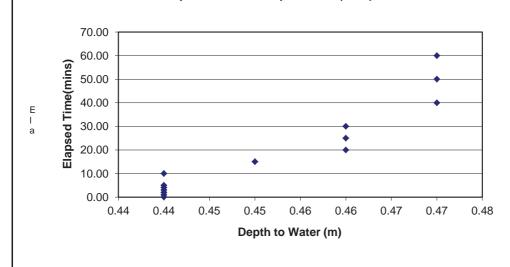
Summary of ground conditions

| from | to | Description | Ground water |
|------|--|----------------|--------------|
| 0.00 | 0.20 TOPSOIL: Soft brown slightly sandy slightly gravelly CLAY. | | |
| 0.20 | 0.20 0.85 Firm grey brown slightly sandy slightly gravelly CLAY | | None |
| 0.85 | 5 1.50 Firm brown mottled grey/orange sandy gravelly silty CLAY with a low | | |
| | | cobble content | |

Notes: Three cycles were carried out with the third cycle represented. Soakway located adjacent to TP12

Field Data Field Test

| | | f= 9.9E-05 m/min or 1.65649E-06 m/sec |
|----------|---------|--|
| | | Infiltration rate (f) = Volume of water used/unit exposed area / unit time |
| | | |
| 0.47 | 60.00 | |
| 0.47 | 50.00 | Total Exposed area = 7.043 m2 |
| 0.47 | 40.00 | *Av. side area of permeable stratum over test p 5.643 m2 |
| 0.46 | 30.00 | Base area= 1.4 m2 |
| 0.46 | 25.00 | |
| 0.46 | 20.00 | |
| 0.45 | 15.00 | |
| 0.44 | 10.00 | · ——— |
| 0.44 | 5.00 | Base of permeable soil m |
| 0.44 | 4.00 | Top of permeable soil m |
| 0.44 | 3.00 | · · · · · · · · · · · · · · · · · · · |
| 0.44 | 2.00 | Elapsed time (mins)= 60.00 |
| 0.44 | 1.00 | Final depth to water = 0.47 m |
| 0.44 | 0.00 | Initial depth to Water = 0.44 m |
| () | () | |
| (m) | (min) | Length of Pit (L) 2.00 m |
| Water | Time | Width of Pit (B) 0.70 m |
| Depth to | Elapsed | Depth of Pit (D) 1.50 m |



 Contract:
 PPK3
 Contract No.
 22000

 Test No.
 SA19 - Cycle 3
 Easting:
 703454.168

 Client
 PM
 Northing:
 730563.858

 Date:
 12/09/2019
 Elevation:
 75.544

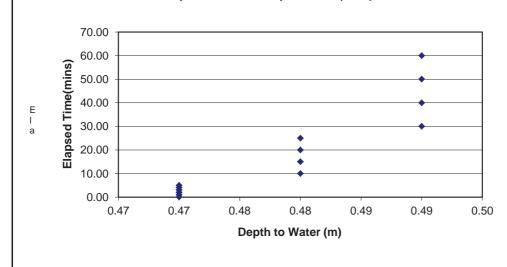
Summary of ground conditions

| | 9.00.00 | | |
|------|--|--|--------------|
| from | to Description (| | Ground water |
| 0.00 | 0.00 0.30 TOPSOIL: Soft brown slightly sandy slightly gravelly CLAY. | | |
| 0.30 | 0.30 O.90 Soft to firm grey mottled brown slightly sandy gravelly silty CLAY | | None |
| 0.85 | | | |
| | | | |

Notes: Three cycles were carried out with the third cycle represented. Soakway located adjacent to TP19

Field Data Field Test

| | | _ | |
|----------|---------|---|-------------------------------|
| Depth to | Elapsed | Depth of Pit (D) | 1.50 m |
| Water | Time | Width of Pit (B) | 0.70 m |
| (m) | (min) | Length of Pit (L) | 2.10 m |
| | | | • |
| 0.47 | 0.00 | Initial depth to Water = | 0.47 m |
| 0.47 | 1.00 | Final depth to water = | 0.49 m |
| 0.47 | 2.00 | Elapsed time (mins)= | 60.00 |
| 0.47 | 3.00 | | |
| 0.47 | 4.00 | Top of permeable soil | m |
| 0.47 | 5.00 | Base of permeable soi | m |
| 0.48 | 10.00 | | |
| 0.48 | 15.00 | | |
| 0.48 | 20.00 | | |
| 0.48 | 25.00 | | |
| 0.49 | 30.00 | Base area= | 1.47 m2 |
| 0.49 | 40.00 | *Av. side area of permeable stratum over test p | 5.712 m2 |
| 0.49 | 50.00 | Total Exposed area = | 7.182 m2 |
| 0.49 | 60.00 | | |
| | | | |
| | | Infiltration rate (f) = Volume of water used/ | unit exposed area / unit time |
| | | f= 6.8E-05 m/min or | 1.1371E-06 m/sec |
| | | 4 | |



f -value from field tests **Soakaway Design**

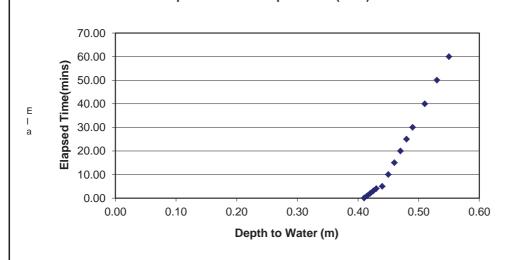
Contract: PPK3 Contract No. Test No. SA31 - Cycle 3 Easting: 703528.724 PM Northing: 730482.402 Client Date: 13/09/2019 Elevation:

| Test No. | SA31 - C | /cle 3 | asting: | 703528.724 | |
|----------|-----------|---|-----------------------|--------------|-----|
| Client | PM | No | orthing: | 730482.402 | |
| Date: | 13/09/201 | 9 El | evation: | 75.478 | |
| Summary | of ground | conditions | | | 6 |
| from | to | Description | | Ground water | 700 |
| 0.00 | 0.30 | TOPSOIL: Soft brown slightly sandy slightly | gravelly CLAY. | | |
| 0.30 | 1.30 | Firm brown mottled grey/orange slightly sandy ver | y gravelly silty CLAY | None | |
| | | with a low cobble content | | | |
| | | | | | |

Notes: Three cycles were carried out with the third cycle represented. Soakway located adjacent to TP31

Field Data Field Test

| | | f= 0.00057 | m/min or | | 9.51221E | -06 m/sec |
|----------|---------|--------------------------|-----------------------|------------|-----------------|-----------|
| | | Infiltration rate (f) = | Volume of water us | ed/unit ex | xposed area / ι | ınit time |
| 0.55 | 60.00 | | | | | |
| 0.53 | 50.00 | | Total Exposed area | = | 6.296 | m2 |
| 0.51 | 40.00 | *Av. side area of permea | | | 4.756 | m2 |
| 0.49 | 30.00 | | Base area= | | 1.54 | m2 |
| 0.48 | 25.00 | | | | | |
| 0.47 | 20.00 | | | | | |
| 0.46 | 15.00 | | | | | |
| 0.45 | 10.00 | | | | | <u>_</u> |
| 0.44 | 5.00 | | Base of permeable | | | m |
| 0.43 | 4.00 | | Top of permeable s | oil | | m |
| 0.43 | 3.00 | | (| <u> </u> | | |
| 0.42 | 2.00 | | Elapsed time (mins | | 60.00 | |
| 0.42 | 1.00 | | Final depth to wate | | 0.55 | m |
| 0.41 | 0.00 | | Initial depth to Wate | er = | 0.41 | m |
| (m) | (min) | | Length of Pit (L) | | 2.20 | m |
| Water | Time | | Width of Pit (B) | | 0.70 | m |
| Depth to | Elapsed | | Depth of Pit (D) | | 1.30 | m |



 Contract:
 PPK3
 Contract No.
 22000

 Test No.
 SA38 - Cycle 3
 Easting
 703601636

 Client
 PM
 Northing
 730457.893

 Date:
 13/09/2019
 Elevation
 75.736

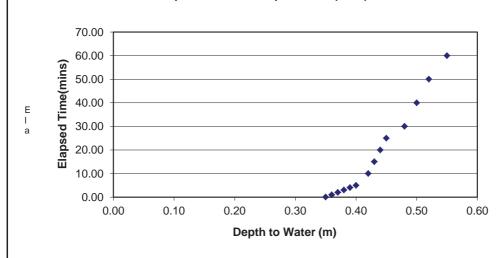
Summary of ground conditions

| ı | from | to | Description | Ground water |
|---|------|------|--|--------------|
| ı | 0.00 | 0.30 | TOPSOIL: Soft brown slightly sandy slightly gravelly CLAY | |
| ı | 0.30 | 1.40 | Firm to stiff brown slightly sandy gravelly silty CLAY with a medium | None |
| ı | | | cobble content | |
| ı | | | | |

Notes: Three cycles were carried out with the third cycle represented. Soakway located adjacent to TP38

Field Data Field Test

| | | _ | | | |
|----------|---------|--------------------------|--------------------------|------------------------------|-------|
| Depth to | Elapsed | | Depth of Pit (D) | 1.40 m | 1 |
| Water | Time | | Width of Pit (B) | 0.70 m | 1 |
| (m) | (min) | | Length of Pit (L) | 2.20 m | 1 |
| 0.35 | 0.00 | | Initial depth to Water = | 0.35 m | 1 |
| 0.36 | 1.00 | | Final depth to water = | 0.55 m | 1 |
| 0.37 | 2.00 | | Elapsed time (mins)= | 60.00 | |
| 0.38 | 3.00 | | | | |
| 0.39 | 4.00 | | Top of permeable soil | m | 1 |
| 0.40 | 5.00 | | Base of permeable soil | m | 1 |
| 0.42 | 10.00 | | | _ | |
| 0.43 | 15.00 | | | | |
| 0.44 | 20.00 | | | | |
| 0.45 | 25.00 | | | | |
| 0.48 | 30.00 | | Base area= | 1.54 m | า2 |
| 0.50 | 40.00 | *Av. side area of permea | able stratum over test p | 5.51 m | 12 |
| 0.52 | 50.00 | | Total Exposed area = | 7.05 m | า2 |
| 0.55 | 60.00 | | | | |
| | | Infiltration rate (f) = | Volume of water used/ | unit exposed area / unit tin | ne |
| | | f= 0.00073 | m/min or | 1.21355E-05 n | n/sec |



 Contract:
 PPK3
 Contract No.
 22000

 Test No.
 SA49 - Cycle 3
 Easting
 7031M 638

 Client
 PM
 Northing
 730328.947

 Date:
 11/09/2019
 Elevation
 82.538

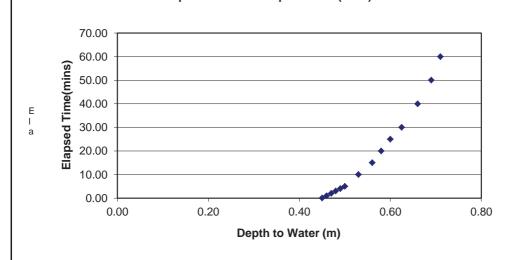
Summary of ground conditions

| from | to | Description | Ground water |
|------|------|---|--------------|
| 0.00 | 0.40 | MADE GROUND comprised of compact grey sandy clayey GRAVEL. | |
| 0.30 | 1.40 | Grey brown slightly sandy slightly gravelly silty CLAY with a low | None |
| | | cobble content and rare boulders | |
| | | | 1 |

Notes: Three cycles were carried out with the third cycle represented. Soakway located adjacent to TP49

Field Data Field Test

| | | _ | |
|----------|---------|--|----------------------------------|
| Depth to | Elapsed | Depth of Pit (D) | 1.40 m |
| Water | Time | Width of Pit (B) | 0.70 m |
| (m) | (min) | Length of Pit (L) | 2.30 m |
| ` ' | . , | | |
| 0.45 | 0.00 | Initial depth to Water | r = 0.45 m |
| 0.46 | 1.00 | Final depth to water | = 0.71 m |
| 0.47 | 2.00 | Elapsed time (mins) | = 60.00 |
| 0.48 | 3.00 | | |
| 0.49 | 4.00 | Top of permeable s | m |
| 0.50 | 5.00 | Base of permeable | soil m |
| 0.53 | 10.00 | | |
| 0.56 | 15.00 | | |
| 0.58 | 20.00 | 1 | |
| 0.60 | 25.00 | | |
| 0.63 | 30.00 | Base area= | 1.61 m2 |
| 0.66 | 40.00 | *Av. side area of permeable stratum over tes | t p 4.92 m2 |
| 0.69 | 50.00 | Total Exposed area | = 6.53 m2 |
| 0.71 | 60.00 | 1 | |
| | | 1 | |
| | | Infiltration rate (f) = Volume of water us | ed/unit exposed area / unit time |
| | | 1 | • |
| | | f= 0.00107 m/min or | 1.78067E-05 m/sec |
| | | 1 | |



 Contract:
 PPK3
 Contract No.
 22000

 Test No.
 SA79 - Cycle 3
 Easting
 703460.658

 Client
 PM
 Northing
 730297.399

 Date:
 11/09/2019
 Elevation
 77.699

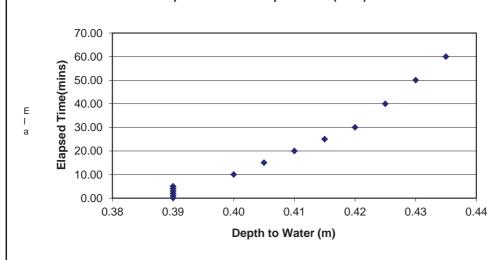
Summary of ground conditions

| [| from | to | Description | Ground water |
|---|------|------|---|--------------|
| ſ | 0.00 | 0.35 | TOPSOIL: Soft brown slightly sandy slightly gravelly CLAY | |
| l | 0.50 | 0.80 | Firm brown slightly sandy gravelly silty CLAY. | None |
| L | 0.80 | 1.35 | Firm-stiff greyish brown very gravelly silty CLAY. | |
| Γ | | | | |

Notes: Three cycles were carried out with the third cycle represented. Soakway located adjacent to TP79

<u>Field Data</u> <u>Field Test</u>

| | | f= 0.00018 m/min or | 2.97355E-06 m/se |
|----------|---------|---|---------------------------------|
| | | Infiltration rate (f) = Volume of water used | l/unit exposed area / unit time |
| 0.17 | 00.00 | | |
| 0.44 | 60.00 | . 515. =/ | |
| 0.43 | 50.00 | Total Exposed area = | |
| 0.43 | 40.00 | *Av. side area of permeable stratum over test | |
| 0.42 | 30.00 | Base area= | 1.61 m2 |
| 0.42 | 25.00 | | |
| 0.41 | 20.00 | | |
| 0.41 | 15.00 | | |
| 0.40 | 10.00 | ' | <u> </u> |
| 0.39 | 5.00 | Base of permeable so | m m |
| 0.39 | 4.00 | Top of permeable soil | m |
| 0.39 | 3.00 | | |
| 0.39 | 2.00 | Elapsed time (mins)= | 60.00 |
| 0.39 | 1.00 | Final depth to water = | 0.44 m |
| 0.39 | 0.00 | Initial depth to Water | = 0.39 m |
| (111) | (11111) | 2011gtr 01 1 tt (2) | 2.00 |
| (m) | (min) | Length of Pit (L) | 2.30 m |
| Water | Time | Width of Pit (B) | 0.70 m |
| Depth to | Elapsed | Depth of Pit (D) | 1.40 m |



 Contract:
 PPK3
 Contract No.
 22000

 Test No.
 SA99 - Cycle 3
 Easting
 703463,436

 Client
 PM
 Northing
 730149.264

 Date:
 11/09/2019
 Elevation
 80.786

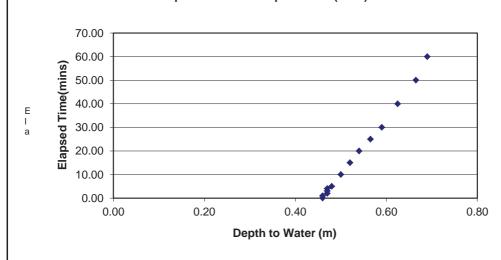
Summary of ground conditions

| - 1 | | g | | |
|-----|------|------|---|--------------|
| ı | from | to | Description | Ground water |
| ı | 0.00 | 0.35 | TOPSOIL: Soft brown slightly sandy slightly gravelly CLAY. | |
| ı | 0.35 | 1.50 | Firm greyish brown slightly sandy very gravelly silty CLAY with | None |
| ı | | | a low cobble content | |
| ı | | | | |

Notes: Three cycles were carried out with the third cycle represented. Soakway located adjacent to TP99

Field Data Field Test

| | | f= 0.00089 | m/min or | 1.47992E-05 | m/sec |
|----------|----------|--------------------------|--------------------------|----------------------------|-------|
| | | Infiltration rate (f) = | Volume of water used/ | unit exposed area / unit t | time |
| 0.69 | 60.00 | | | | |
| 0.67 | 50.00 | | Total Exposed area = | 6.622 | m2 |
| 0.63 | 40.00 | *Av. side area of permea | ' ' | | m2 |
| 0.59 | 30.00 | | Base area= | 1.47 | m2 |
| 0.57 | 25.00 | | | | |
| 0.54 | 20.00 | | | | |
| 0.52 | 15.00 | | | | |
| 0.50 | 10.00 | | • | | • |
| 0.48 | 5.00 | | Base of permeable soil | | m |
| 0.47 | 4.00 | | Top of permeable soil | | m |
| 0.47 | 3.00 | | , , , , | | • |
| 0.47 | 2.00 | | Elapsed time (mins)= | 60.00 | |
| 0.46 | 1.00 | | Final depth to water = | 0.70 | m |
| 0.46 | 0.00 | | Initial depth to Water = | 0.46 | m |
| (111) | (111111) | | Length of Fit (L) | 2.10 | |
| (m) | (min) | | Length of Pit (L) | 2.10 | m |
| Water | Time | | Width of Pit (B) | 0.70 | m |
| Depth to | Elapsed | 1 | Depth of Pit (D) | 1.50 | lm |



Soakaway 2 – Fig.1



Soakaway 2 – Fig. 2



Soakaway 12 – Fig. 1



Soakaway 12 – Fig. 2



ECENED. 28/06/2024

Soakaway 19 – Fig. 1



Soakaway 19 – Fig. 2



Soakaway 31 – Fig 1



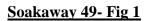


Soakaway 38- Fig. 1



Soakaway 38 – Fig. 2







Soakaway 49- Fig. 2



Soakaway 79 – Fig. 1



Soakaway 79 - Fig. 2



Soakaway 99 – Fig. 1



Soakaway 99 – Fig. 1



Appendix 6

Groundwater Monitoring Records

PRICENED. 28/08/2024

Groundwater Monitoring in Standpipes

Site Location PPK3 - Profile Park
Project No. 22000
Client

Engineer PM Group



| | | | Date of M | onitoring | | | | | | |
|----------------------|---------------------|-----------|-----------|-----------|---------|--------|---------|--------|---------|--------|
| | | | 17/1 | 0/19 | 11/1 | 1/19 | | | | |
| Exploratory Hole No. | Ground Level (m OD) | Standpipe | (m bgl) | (m OD) | (m bgl) | (m OD) | (m bgl) | (m OD) | (m bgl) | (m OD) |
| RC01 | 81.56 | SP 50mm | 2.60 | 78.96 | 1.80 | 79.76 | | | | |
| RC03 | 81.26 | SP 50mm | 2.30 | 78.96 | 1.52 | 79.74 | | | | |
| RC11 | 82.35 | SP 50mm | 2.27 | 80.08 | 1.62 | 80.73 | | | | |
| RC12 | 81.88 | SP 50mm | 1.80 | 80.08 | 1.29 | 80.59 | | | | |
| RC14 | 82.47 | SP 50mm | 1.94 | 80.53 | 1.34 | 81.13 | | | | |
| RC17 | 82.62 | SP 50mm | 2.40 | 80.22 | 1.63 | 80.99 | | | | |
| RC21 | 80.87 | SP 50mm | 3.45 | 77.42 | 3.10 | 77.77 | | | | |
| RC29 | 80.68 | SP 50mm | 2.60 | 78.08 | 2.10 | 78.58 | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Appendix 7

Rock Excavation Trial Records

PRICENED. 28/08/2024

Project No: 22000

Rock Excavation Trial Report Sheet



Project:PPK3 Profile ParkTrial No.:Trial No.:Trial Excavation 1 (TEX 1)Client:Date commenced:16.09.2019

Engineer: PM Group Date completed: 16.09.2019
Location: Grange Castle Co. Dublin Logged by: D O'Shea

Easting 703287.7 Elevation Northing ING Coordinates 730236.1 81.713 81.662 703284.7 730228 (Approximate corners of Excavation) 703292.6 730228.2 81.695 703294 730233 81.549

<u>Equipment Details</u> <u>General Site Conditions</u>

Breaker: 1T hydraulic breaker

Plant Used: 21T tracked Komatsu excavator

Bucket: 5' Toothed Bucket

Flat area beside contractor car park. Grass covered. Dry

Rock Excavation Log

| Lift No. | From Depth | To. Depth | Bedrock Description | Duration | Duration Lifting | Length (m) | Width (m) |
|----------|------------|-----------|---------------------|----------------|------------------|------------|-----------|
| | (m) | (m) | | Breaking/Diggi | (min) | | |
| | | | | na (min) | | | |
| 1 | 0.00 | 2.90 | See below | 95 | | 8.00 | 8.00 |
| 2 | 2.90 | 3.40 | See below | 55 | 5 | 7.90 | 7.90 |
| 3 | 3.40 | 3.90 | See below | 52 | 5 | 7.80 | 7.80 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Hydraulic Breaking Production Details

| Lift No. | Production | Duration | Digging Production | |
|----------|-----------------|----------|--------------------|--|
| | (m^3) | Digging | Rate (m^3/hr) | Comments |
| | (min) | | | |
| 1 | 185.6 | 95.00 | 117 | Overburden and variably weathered rock (excavated by digging with bucket only) |
| 2 | 2 31.2 55.00 34 | | 34 | LIMESTONE with some clay infill (hydraulic breaking) |
| 3 | 3 30.4 52.00 35 | | 35 | I IMESTONE with some clay infill (hyfraulic breaking) |

Rock Mass Geology

| Deptl | .h(m) | |
|-------|-------|--|
| | T | Rock Mass Description |
| 0.00 | 0.30 | TOPSOIL |
| 0.30 | 0.70 | Firm brown slightly sandy gravelly CLAY. Gravels are angular to subrounded and fine to coarse. Cobbles are |
| | | subangular to subrounded. |
| 0.70 | 2.90 | Weak and strong (in competent beds), medium to thinly bedded, dark grey/black, fine-grained argillaceous |
| | 1 | LIMESTONE. Weathering grades 3 and 4 (slightly and locally highly weathered) with abundant clay infill. |
| | | Discontinuities close and medium spaced, surfaces typically smooth to rough and planar with apertures of 1 to 10mm |
| | | tightening with depth), commonly clay-filled. Discontinuity persistence highy variable but largely between 0.1 and 0.9 |
| | 1 | Scanline Surveys carried out at approx 2.00m depth - refer to discontinuity sheets. |
| | 1 | Joint sets highly variable but trends are approximately: J1 - 20°/160, J2 - 88°/046 & J3 - 88°/258 |
| | 1 | |
| 2.90 | 3.90 | Strong, medium to thinly bedded (to thinly laminated where mudstone/shale), dark grey/black, fine-grained LIMESTOI |
| | 1 | Weathering grade 2 (slightly weathered). |
| | | Discontinuities close and medium spaced, surfaces typically smooth to rough and planar with apertures of 1 to 2mm |
| | | tightening with depth), locally clay-smeared. Discontinuity persistence highy variable but largely between 0.1 and 0.9 |

Sample details: Large bulk sample taken at a depth of 3.4 to 3.5m and placed in a 1T sack

Groundwater: Seepage at 2.80m (verly localised on eastern pit face)

Stability: No primary stability issues (i.e. planar, toppling or wedge failure mechanisms) noted in excavation batters of c70 degrees.

| | | | | | | | | | | | | | '\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ | |
|----------|--------------------------|----------|------------------|-------------------------------------|------------------------|--------------------|------------------|-------------------------------|--------------------|-----------------|------------------|---------------|--|------------------|
| | | | ENGINEER | RING | GEOLO | GICAL M | APPING | DATA | A SHEE | T (Sca | nline S | urvey | () De la companya del companya de la companya del companya de la c | IGSL |
| Project: | PPK3 Pro | file Pa | rk | Date Logged: 16/9/19 | | | | | | | | Face: 022/202 | | |
| Client: | Google | | | Engi | neer: PM Gr | oup | | Scanline Location: TEX1 | | | | | Direction: Horizontal | PAGE 1 of 2 |
| Chainage | Joint Type | Dip | Dip Direction | WG | Strength Assessment | Persistence (m) | Aperture (mm) | Joint Infilling | Joint Condition | Ground water | Daylight- ing | Veg Cover | Stability Rating | Remarks |
| 0.00 | J2 | 84 | 328 | II | S | 0.3 | - | CS | PL | D | N | 1 | 2 | 25 |
| 0.10 | J2 | 88 | 158 | Ш | S | 0.3 | - | CS | PL | D | N | 1 | 2 | * |
| | | | 0.10 | -0.65 | m - highly we | athered zone w | ith clay infill | - no jointii | ng discernib | le | • | • | | |
| 0.65 | J1 | 18 | 030 | III | MS | 0.8 | 5mm | CS | R | D | N | 1 | 2 | |
| 0.70 | J2 | 78 | 038 | Ш | S | 0.2 | 2mm | CS | R | D | N | 1 | 2 | |
| 0.75 | J3 | 78 | 312 | II | S | 0.1 | - | CS | PL | D | N | 1 | 2 | |
| 0.79 | J2 | 44 | 046 | Ш | S | 0.2 | 3mm | CS | PL | D | N | 1 | 2 | |
| 0.82 | J1 | 24 | 226 | III | MS | 0.4 | 2mm | CS | PL | D | N | 1 | 2 | |
| 0.85 | J1 | 24 | 226 | III | MS | 0.4 | 2mm | CS | PL | D | N | 1 | 2 | |
| 0.90 | J3 | 78 | 152 | II | S | 0.2 | - | CS | PL | D | N | 1 | 2 | |
| 1.01 | J2 | 64 | 800 | П | S | 0.1 | 2mm | CS | PL | D | N | 1 | 2 | |
| 1.06 | J3 | 88 | 258 | II | S | 0.1 | - | CS | PL | D | N | 1 | 2 | |
| 1.15 | J3 | 82 | 290 | Ш | S | 0.1 | - | CS | PL | D | N | 1 | 2 | |
| 1.20 | J2 | 78 | 018 | Ш | S | 0.3 | 2mm | CS | PL | D | N | 1 | 2 | |
| 1.23 | J3 | 62 | 262 | Ш | S | 0.3 | - | CS | PL | D | N | 1 | 2 | |
| 1.30 | J1 | 20 | 160 | III | MS | 0.3 | 2mm | CS | PL | D | N | 1 | 2 | |
| 1.35 | J2 | 18 | 020 | Ш | S | 0.1 | 2mm | CS | PL | D | N | 1 | 2 | |
| 1.50 | J1 | 10 | 184 | III | MS | 0.3 | 2mm | CS | PL | D | N | 1 | 2 | |
| 1.60 | J2 | 86 | 254 | Ш | S | 0.6 | - | CS | PL | D | N | 1 | 2 | |
| 1.70 | J2 | 80 | 044 | II | S | 0.15 | 2mm | CS | PL | D | N | 1 | 2 | |
| 1.80 | J2 | 80 | 044 | II | S | 0.15 | 2mm | CS | PL | D | N | 1 | 2 | |
| 1.85 | J2 | 80 | 044 | II | S | 0.15 | 2mm | CS | PL | D | N | 1 | 2 | |
| 1.90 | J2 | 80 | 044 | II | S | 0.15 | 2mm | CS | PL | D | N | 1 | 2 | |
| 2.10 | J1 | 20 | 164 | II | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | |
| 2.2 | J1 | 20 | 164 | II | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | |
| 2.25 | J1 | 20 | 164 | Ш | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | |
| 2.45 | J3 | 76 | 314 | Ш | S | 0.4 | 1mm | CS | PL | D | N | 1 | 2 | |
| | | | | | | athered zone w | | | | | 1 | ı | | |
| 2.75 | J2 | 60 | 230 | II | S | 0.4 | 1mm | CS | PL | D | N | 1 | 2 | |
| 2.8 | J3 | 78 | 306 | П | S | 0.4 | - | CS | PL | D | N | 1 | 2 | |
| KEY | Y WG - Weathering Grade | | | | Strength | Joint Infilling | | Joint Cor | | Groundwa | ter | Veget. | Cover | Stability Rating |
| | I Fresh | | | | very strong | | | (PL) plan | | (D) dry | | 1 none | | 1 Excellent |
| | II Slightly Weathered | | | (S) st | • | (SS) surface st | • | (R) rough (SS) slight seepage | | | | 2 light | | 2 Good |
| | III Moderately Weathered | | | (MS) mod. Strong (CS) clay smearing | | | ring | (S) smooth (MS) mod. seepage | | | | 3 mode | | 3 Fair |
| | IV Highly Weathered | | | ` ′ | | (CF) clay filling | | (ST) step | • | (HS) high | seepage | 4 heavy | | 4 Poor |
| | V Comple | tely wea | athered | (W) v | veak | (CA) calcite | | (P) polish | ied | | | 5 very l | neavy | 5 Very poor |

| | | | | | | | | | | | | | <u>'(')</u> | | |
|----------|--------------------------|----------|------------------|--------------------|------------------------|--------------------|------------------|-------------------------|-----------------|-----------------|-----------|--------------|-----------------------------------|------------------|--|
| | | | ENGINEE | RING | GEOLO | OGICAL M | APPING | DATA | A SHEE | T (Sca | nline S | urvey | (I) | IGSL | |
| Project: | PPK3 Pro | ofile Pa | rk | | | | | Date Lo | gged: 16 | /9/19 | | | Face: 022/202 | | |
| Client: | lient: Google | | | Engineer: PM Group | | | | Scanline Location: TEX1 | | | | | Direction: Horizontal PAGE 2 of 2 | | |
| Chainage | Joint Type | Dip | Dip Direction | WG | Strength Assessment | Persistence (m) | Aperture (mm) | Joint Infilling | Joint Condition | Ground water | Daylight- | Veg Cover | Stability Rating | Remarks | |
| 2.85 | J1 | 10 | 162 | I | S | 0.5 | 1mm | CS | PL | D | N | 1 | 2 | 2 | |
| 2.92 | J3 | 80 | 238 | II | S | 0.2 | - | CS | PL | D | N | 1 | 2 | × | |
| 2.98 | J3 | 82 | 138 | II | S | 0.1 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 3.01 | J3 | 80 | 130 | П | S | 0.1 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 3.02 | J2 | 84 | 070 | II | S | 0.3 | - | CS | PL | D | N | 1 | 2 | | |
| 3.06 | J2 | 60 | 322 | II | S | 0.1 | 1mm | CS | PL | D | N | 1 | 2 | | |
| 3.1 | J2 | 86 | 174 | II | S | 0.1 | - | CS | PL | D | N | 1 | 2 | | |
| 3.14 | J1 | 18 | 214 | II | S | 0.3 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 3.2 | J3 | 88 | 076 | II | S | 0.15 | - | CS | PL | D | N | 1 | 2 | | |
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| | | | | | | _ | _ | | | | | | | | |
| KEY | EY WG - Weathering Grade | | | Rock | Strength | Joint Infilling | · | Joint Cor | ndition | Groundwa | ter | Veget. | Cover | Stability Rating | |
| | I Fresh | | | (VS) | very strong | (C) clean | | (PL) plan | ar | (D) dry | | 1 none | | 1 Excellent | |
| | II Slightly | Weath | ered | (S) s | trong | (SS) surface st | aining | (R) rough | ı | (SS) slight | seepage | 2 light | | 2 Good | |
| | III Modera | tely We | athered | (MS) | mod. Strong | (CS) clay smea | ring | (S) smoo | th | (MS) mod. | . seepage | 3 mode | rate | 3 Fair | |
| | IV Highly | Weathe | red | (MW) |) mod. Weak | (CF) clay filling | | (ST) step | ped | (HS) high | seepage | 4 heavy | <i>'</i> | 4 Poor | |
| | V Comple | tely we | athered | (W) v | weak | (CA) calcite | | (P) polish | ned | | | 5 very | heavy | 5 Very poor | |

| | | | | | | | | | | | | | PK | |
|----------|-------------|-----------|------------|----------|-------------|-------------------|------------|------------|-----------------|-----------|--------------------------|---------|---|------------------|
| | | | ENGINEE | RING | GEOLC | GICAL M | APPING | | | | nline S | urve | <u>() </u> | <i>IGSL</i> |
| Project: | PPK3 Pro | ofile Par | 'k | | | | | Date Lo | gged: 16 | /9/19 | | | Face: 022/202 | |
| Client: | Google | | | Engi | neer: PM Gr | oup | | Scanline | Location: | TEX1 | | | Direction: Vertical | PAGE 1 of 1 |
| Chainage | Joint | Dip | Dip | | Strength | Persistence | Aperture | Joint | Joint | Ground | Daylight- | Veg | Stability | Remarks |
| | Туре | | Direction | WG | Assessment | (m) | (mm) | Infilling | Condition | water | ing | Cover | Rating | * |
| 0 | J1 | 25 | 198 | II | S | 0.7 | 1mm | CS | PL | D | N | 1 | 2 | 25 |
| 0.07 | J1 | 25 | 198 | П | S | 0.6 | 1mm | CS | PL | D | N | 1 | 2 | × |
| 0.1 | J1 | 25 | 198 | II | S | 0.2 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.14 | J1 | 25 | 198 | П | S | 0.7 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.15 | J3 | 80 | 090 | II | S | 0.2 | - | CS | PL | D | N | 1 | 2 | |
| 0.16 | J1 | 25 | 198 | II | S | 0.8 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.18 | J1 | 25 | 198 | II | S | 0.7 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.2 | J1 | 25 | 198 | II | S | 0.7 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.24 | J3 | 50 | 296 | II | S | 0.2 | - | CS | PL | D | N | 1 | 2 | |
| 0.33 | J1 | 25 | 198 | II | S | 0.7 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.37 | J1 | 25 | 198 | II | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.39 | J1 | 25 | 198 | II | S | 0.5 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.40 | J2 | 84 | 070 | II | S | 0.3 | - | CS | PL | D | N | 1 | 2 | |
| 0.42 | J1 | 25 | 198 | II | S | 0.5 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.48 | J1 J1 | 25 25 | 198 198 | II II | S S | 0.5 | 1mm 1mm | CS CS | PL PL | D D | N N | 1 | 2 2 | |
| 0.54 | J1 | 25 | 198 | " | S | 0.7 | 1 mm | CS | PL PL | D | N N | 1 | 2 | |
| 0.56 | J1 | 25 | 198 | | S | 0.3 | 1mm | CS | PL PL | D | N N | 1 | 2 | |
| 0.61 | J1 | 25 | 198 | " | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.63 | J1 | 25 | 198 | | S | 0.1 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.66 | J1 | 25 | 198 | 11 | S | 0.5 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.67 | J1 | 25 | 198 | T ii | S | 0.5 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.68 | J1 | 25 | 198 | 11 | S | 0.4 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.74 | J2 | 86 | 346 | II. | S | 0.15 | - | CS | PL | D | N | 1 | 2 | |
| 0.78 | J3 | 82 | 046 | II | S | 0.2 | - | CS | PL | D | N | 1 | 2 | |
| | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | |
| KEY | WG - Wea | athering | Grade | Rock | Strength | Joint Infilling | · | Joint Cor | ndition | Groundwa | ter | Veget. | Cover | Stability Rating |
| | I Fresh | | | (VS) | very strong | (C) clean | | (PL) plan | ar | (D) dry | | 1 none | | 1 Excellent |
| | II Slightly | Weathe | ered | (S) s | trong | (SS) surface st | aining | | | | (SS) slight seepage 2 li | | | 2 Good |
| | III Modera | tely Wea | athered | (MS) | mod. Strong | (CS) clay smea | ring | (S) smoo | th | (MS) mod. | . seepage | 3 mode | rate | 3 Fair |
| | IV Highly | Weather | red | (MW) |) mod. Weak | (CF) clay filling | | (ST) step | ped | (HS) high | seepage | 4 heavy | ′ | 4 Poor |
| | V Comple | tely wea | athered | (W) v | weak | (CA) calcite | | (P) polish | ned | | | - | | 5 Very poor |

Project No: 22000

Rock Excavation Trial Report Sheet



Project: Client: PPK3 Profile Park Google

PM Group **Engineer:**

Location: Grange Castle Co. Dublin Trial No.: Trial Excavation 2 (TEX 2)

Date commenced: 17.09.2019 17.09.2019 Date completed: Logged by: D O'Shea

Elevation 80.193 **Easting** 703485.2 **Northing** 730198.2 **ING Coordinates** (Approximate corners of Excavation) 703482.9 730191.9 80.105 703490.2 730188.9 80.212 703491.2 730196.3 80.08

Equipment Details

1T hydraulic breaker

Plant Used: 21T tracked Komatsu excavator Bucket:

5' Toothed Bucket

General Site Conditions

Flat area in field. Grass covered. Dry

Rock Excavation Log

Breaker:

| | | | 1 | | | | |
|----------|------------|-----------|---------------------|----------------|------------------|------------|-----------|
| Lift No. | From Depth | To. Depth | Bedrock Description | Duration | Duration Lifting | Length (m) | Width (m) |
| | (m) | (m) | | Breaking/Diggi | (min) | | |
| | | | | na (min) | | | |
| 1 | 0.00 | 3.15 | See below | 32 | | 4.80 | 4.50 |
| 2 | 3.15 | 3.65 | See below | 20 | 5 | 4.80 | 4.50 |
| 3 | 3.65 | 4.15 | See below | 21 | 5 | 4.70 | 4.50 |
| | | | | | | | |
| | | | | | | | |
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Hydraulic Breaking Production Details

| Lift No. | Production | Duration | Digging Production | |
|----------|------------|----------|--------------------|---|
| | (m^3) | Digging | Rate (m^3/hr) | Comments |
| | | (min) | | |
| 1 | 68.0 | 32.00 | 128 | Overburden and weathered rock - excavated by digging with bucket only |
| 2 | 10.8 | 20.00 | 32 | LIMESTONE with some clay infill (hydraulic breaking) |
| 3 | 10.6 | 21.00 | 30 | LIMESTONE with some clay infill (hydraulic breaking) |

Rock Mass Geology

| Dept | h(m) | |
|------|------|---|
| | | Rock Mass Description |
| 0.00 | 0.30 | TOPSOIL |
| 0.30 | 1.10 | Firm brown silty slightly sandy gravelly CLAY. Gravels are angular to subrounded and fine to coarse. Cobbles are |
| | | subangular to subrounded. |
| 1.10 | 3.15 | Weak and medium strong (in competent beds), medium to thinly bedded, dark grey/black, fine-grained LIMESTONE, |
| | | Weathering grades 3 and 4 (slightly and locally highly weathered) with abundant clay infill. Discontinuities are |
| | | close and medium spaced, surfaces typically smooth to rough and planar with apertures of 1 to 10mm (tightening with |
| | | depth), commonly clay-filled. Discontinuity persistence highy variable but largely between 0.1 and 0.9m. |
| | | Scanline Surveys carried out at approx 2.00m depth - refer to discontinuity sheets |
| | | Joint sets highly variable but trends are approximately: J1 - 25°/020, J2 - 58°/134 & J3 - 70°/052 |
| | | |
| 3.15 | 4.15 | Strong and very strong, medium to thinly bedded (to thinly laminated where mudstone/shale), dark grey/black, fine-grained |
| | | LIMESTONE. Weathering grade 2 (slightly weathered). |
| | | Discontinuities close and medium spaced, surfaces typically smooth to rough and planar with apertures of 1 to 2mm |
| | | tightening with depth), locally clay-smeared. Discontinuity persistence highy variable but largely between 0.1 and 0.9m. |

Large bulk sample taken at a depth of 3.2m and placed in a 1T sack Sample details:

Groundwater: No groundwater encountered

Stability: No primary stability issues (i.e. planar, toppling or wedge failure mechanisms) noted on excavation batters of c70 degrees.

ENGINEERING GEOLOGICAL MAPPING DATA SHEET (Scanline Survey)

Project: PPK3 Profile Park Date Logged: 17/9/19 Face: 026/206

| Client: | Google | | | Engi | neer: PM Gr | oup | | Scanline | Location | : TEX2 | | | Direction: Horizontal | PAGE 1 of 1 |
|----------|-------------|----------|-----------|--------|---------------|-------------------|-----------------|-----------------------------|--------------|-------------|-----------|------------|-----------------------|------------------|
| Chainage | Joint | Dip | Dip | | Strength | Persistence | Aperture | Joint | Joint | Ground | Daylight- | Veg | Stability | Remarks |
| | Туре | | Direction | WG | Assessment | (E) | (mm) | Infilling | Condition | water | ing | Cover | Rating | 10/3 |
| 0.00 | J2 | 72 | 126 | II | S | 0.4 | - | CS | PL | D | N | 1 | 2 | 0 |
| 0.10 | J1 | 52 | 016 | П | S | 0.4 | 1mm | CS | PL | D | N | 1 | 2 | X |
| | | | 0.10 | 0-0.65 | m - highly we | athered zone w | ith clay infill | - no jointii | ng discernil | ole | | | | |
| 0.70 | J3 | 30 | 030 | II | S | 0.2 | - | CS | R | D | N | 1 | 2 | |
| 0.80 | J2 | 58 | 134 | II | S | 0.3 | 1mm | CS | R | D | N | 1 | 2 | |
| 1.05 | J1 | 18 | 070 | III | MS | 0.8 | 3mm | CS | PL | D | N | 1 | 2 | |
| 1.10 | J3 | 50 | 040 | II | S | 0.2 | - | CS | R | D | N | 1 | 2 | |
| 1.35 | J3 | 50 | 040 | II | S | 0.2 | - | CS | R | D | N | 1 | 2 | |
| 1.40 | J2 | 56 | 148 | Ш | S | 0.4 | - | CS | R | D | N | 1 | 2 | |
| 1.42 | J3 | 50 | 040 | II | S | 0.1 | - | CS | R | D | N | 1 | 2 | |
| 1.55 | J2 | 56 | 148 | Ш | S | 0.2 | - | CS | R | D | N | 1 | 2 | |
| 1.60 | J2 | 56 | 148 | Ш | S | 0.2 | - | CS | R | D | N | 1 | 2 | |
| | | | 1.60 | 0-2.00 | m - highly we | athered zone w | ith clay infill | - no jointii | ng discernil | ole | | | | |
| 2.00 | J3 | 62 | 060 | II | S | 0.15 | - | CS | R | D | N | 1 | 2 | |
| 2.10 | J3 | 62 | 060 | Ш | S | 0.15 | - | CS | R | D | N | 1 | 2 | |
| 2.15 | J1 | 70 | 058 | III | MS | 0.8 | 1mm | CS | PL | D | N | 1 | 2 | |
| 2.30 | J3 | 70 | 015 | Ш | S | 0.3 | - | CS | R | D | N | 1 | 2 | |
| | | | 2.30 | 0-2.70 | m - highly we | athered zone w | ith clay infill | - no jointii | ng discernil | ole | | | | |
| 2.70 | J3 | 60 | 056 | Ш | S | 0.1 | - | CS | R | D | N | 1 | 2 | |
| 2.80 | J1 | 40 | 184 | III | MS | 0.4 | 2mm | CS | PL | D | N | 1 | 2 | |
| 2.90 | J2 | 70 | 176 | II | S | 0.1 | - | CS | R | D | N | 1 | 2 | |
| 3.00 | J1 | 25 | 202 | III | MS | 0.2 | 1mm | CS | PL | D | N | 1 | 2 | |
| 3.01 | J1 | 25 | 202 | III | MS | 0.2 | 1mm | CS | PL | D | N | 1 | 2 | |
| 3.03 | J1 | 25 | 202 | III | MS | 0.2 | 1mm | CS | PL | D | N | 1 | 2 | |
| 3.05 | J1 | 25 | 202 | III | MS | 0.2 | 1mm | CS | PL | D | N | 1 | 2 | |
| 3.3 | J1 | 25 | 202 | III | MS | 0.2 | 1mm | CS | PL | D | N | 1 | 2 | |
| 3.34 | J3 | 70 | 052 | II | S | 0.3 | - | CS | R | D | N | 1 | 2 | |
| 3.6 | J3 | 72 | 084 | II | S | 0.3 | - | CS | R | D | N | 1 | 2 | |
| 3.65 | J1 | 25 | 202 | III | MS | 0.2 | 1mm | CS | PL | D | N | 1 | 2 | |
| 3.85 | J1 | 52 | 018 | III | MS | 0.2 | 1mm | CS | PL | D | N | 1 | 2 | |
| 3.9 | J2 | 82 | 115 | II | S | 0.3 | - | CS | R | D | N | 1 | 2 | |
| KEY | WG - Wea | thering | Grade | Rock | Strength | Joint Infilling | | Joint Condition Groundwater | | | ter | Veget. | Cover | Stability Rating |
| | I Fresh | | | (VS) | very strong | (C) clean | | (PL) plan | ar | (D) dry | | 1 none | | 1 Excellent |
| | II Slightly | Weath | ered | (S) s | trong | (SS) surface st | aining | (R) rough | 1 | (SS) slight | seepage | 2 light | | 2 Good |
| | III Moderat | tely We | athered | (MS) | mod. Strong | (CS) clay smea | ring | (S) smoo | th | (MS) mod. | . seepage | 3 moderate | | 3 Fair |
| | IV Highly \ | Weathe | red | (MW) | mod. Weak | (CF) clay filling | | (ST) step | ped | (HS) high | seepage | 4 heavy | , | 4 Poor |
| | V Comple | tely wea | athered | (W) v | veak | (CA) calcite | | (P) polish | ned | | | 5 very l | neavy | 5 Very poor |

IGSL

| ı | | | ENGINEE | RING | GEOL(| GICAL M | APPING | DATA | A SHEE | T (Sca | nline S | urvey | () Enga: 026/206 | IGSL | | |
|----------|---------------|-----------|------------------|--------------------|------------------------|--------------------|------------------|-------------------------|-----------------|-----------------|-----------|----------|------------------------------------|------------------|--|--|
| Project: | PPK3 Pro | ofile Par | k | | | | | Date Log | gged: 17 | /9/19 | | | Face: 026/206 Direction: Vertical | | | |
| Client: | Google | | | Engineer: PM Group | | | | Scanline Location: TEX2 | | | | | Direction: Vertical | | | |
| Chainage | Joint Type | Dip | Dip Direction | WG | Strength Assessment | Persistence (m) | Aperture (mm) | Joint Infilling | Joint Condition | Ground water | Daylight- | Veg | Stability Rating | Remarks | | |
| 0.00 | J1 | 52 | 016 | | S | 0.4 | 1mm | CS | PL | D | N | 1 | 2 | *** | | |
| 0.02 | J2 | 55 | 142 | П | S | 0.2 | - | CS | R | D | N | 1 | 2 | | | |
| 0.15 | J1 | 59 | 024 | II | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | | | |
| 0.24 | J1 | 59 | 024 | II | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | | | |
| 0.25 | J1 | 59 | 024 | II | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | | | |
| 0.28 | J1 | 59 | 024 | II | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | | | |
| 0.29 | J1 | 59 | 024 | II | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | | | |
| 0.35 | J1 | 59 | 024 | II | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | | | |
| 0.40 | J2 | 75 | 130 | II | S | 0.15 | - | CS | R | D | N | 1 | 2 | | | |
| 0.42 | J1 | 59 | 024 | II | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | | | |
| 0.45 | J1 | 59 | 024 | II | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | | | |
| 0.50 | J1 | 59 | 024 | II | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | | | |
| 0.55 | J2 | 75 | 130 | П | S | 0.15 | - | CS | R | D | N | 1 | 2 | | | |
| 0.58 | J1 | 59 | 024 | II | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | | | |
| 0.60 | J2 | 75 | 130 | П | S | 0.65 | - | CS | R | D | N | 1 | 2 | | | |
| 0.69 | J1 | 59 | 024 | П | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | | | |
| 0.70 | J1 | 59 | 024 | П | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | | | |
| 0.74 | J1 | 59 | 024 | П | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | | | |
| 0.80 | J2 | 60 | 150 | II | S | 0.5 | - | CS | R | D | N | 1 | 2 | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| KEY | WG - Wea | thering | Grade | Rock | Strength | Joint Infilling | | Joint Con | ndition | Groundwa | ter | Veget. | Cover | Stability Rating | | |
| | I Fresh | | | | very strong | (C) clean | | (PL) plan | ar | (D) dry | | 1 none | | 1 Excellent | | |
| | II Slightly | Weathe | red | | trong | (SS) surface st | aining | (R) rough | | (SS) slight | seepage | 2 light | | 2 Good | | |
| | III Modera | | | | - | (CS) clay smea | • | (S) smoo | | (MS) mod. | | • | | 3 Fair | | |
| | IV Highly | - | | | | (CF) clay filling | | (ST) step | | (HS) high | | 4 heavy | | 4 Poor | | |
| | V Comple | | | (W) v | | (CA) calcite | | (P) polish | | | | 5 very l | neavy | 5 Very poor | | |

Project No: 22000

Rock Excavation Trial Report Sheet



Project:PPK3 Profile ParkTrial No.:Trial Excavation 3 (TEX 3)Client:Date commenced:18.09.2019

Engineer: PM Group Date completed: 19.09.2019
Location: Grange Castle Co. Dublin Logged by: S. Cunningham

Northing Elevation Easting **ING Coordinates** 703423.616 730594.307 74.486 703421.019 730587.696 74.628 (Approximate corners of Excavation) 703430.169 730584.909 74.455 703432.316 730592.168 74.434

Equipment Details

General Site Conditions

Breaker: 1T hydraulic breaker
Plant Used: 21T tracked Komatsu excavator

Flat area beside located in area 1. Grass covered. Dry

Bucket: 5' Toothed Bucket

Rock Excavation Log

| Lift No. | From Depth | To. Depth | Bedrock Description | Duration | Duration Lifting | Length (m) | Width (m) |
|----------|------------|-----------|---------------------|----------------|------------------|------------|-----------|
| | (m) | (m) | | Breaking/Diggi | (min) | | |
| | | | | na (min) | | | |
| 1 | 0.00 | 2.50 | See below | 92 | | 7.80 | 7.40 |
| 2 | 2.50 | 3.10 | See below | 45 | 5 | 6.20 | 6.00 |
| 3 | 3.10 | 3.70 | See below | 42 | 5 | 6.00 | 5.70 |
| | | | | | | | |
| | | | | | · | | |
| | | | | | | | |

Hydraulic Breaking Production Details

| Lift No. | Production | Duration | Digging Production | |
|----------|------------|----------|--------------------|---|
| | (m^3) | Digging | Rate (m^3/hr) | Comments |
| | | (min) | | |
| 1 | 144.3 | 92.00 | 94 | Overburden and weathered rock - excavated by digging with bucket only |
| 2 | 22.3 | 45.00 | 30 | LIMESTONE with some clay infill |
| 3 | 20.5 | 42.00 | 29 | LIMESTONE with some clay infill |

Rock Mass Geology

| Dept | :h(m) | |
|------|-------|--|
| 0.00 | 0.30 | TOPSOIL |
| 0.30 | 1.00 | Firm grey brown slightly sandy slightly gravelly CLAY with a low cobble content. |
| | | Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse. |
| 1.00 | 2.50 | Weak and strong (where competent), medium to thinly bedded, dark grey/black, fine-grained argillaceous LIMESTONE, |
| | | Weathering grades 3 and 4 (slightly and locally highly weathered) with abundant clay infill. Discontinuities are |
| | | close and medium spaced, surfaces typically smooth to rough and planar with apertures of 1 to 8mm (tightening with |
| | | depth), commonly clay-filled. Discontinuity persistence highy variable but largely between 0.1 and 0.9m. |
| | | Scanline Surveys carried out at approx 2.5m depth - see Corresponding Report Sheets |
| | | Joint sets highly variable but trends are approximately: J1 - 50°/120, J2 - 80°/150, J3 - 70°/080 |
| 2.50 | 3.70 | Strong, medium to thinly bedded (to thinly laminated where mudstone/shale), dark grey/black, fine-grained LIMESTONE, |
| | | Weathering grade 2 (slightly weathered). Discontinuities are |
| | | close and medium spaced, surfaces typically smooth to rough and planar with apertures of 1 to 2mm (tightening with |
| | | depth), locally clay-smeared. Discontinuity persistence highy variable but largely between 0.1 and 0.9m. |
| | | |
| | | |

Sample details: Large bulk sample was taken at a depth of 3.10m and placed in a 1T sack

Groundwater: Seepage at 2.50m

Stability: No primary stability issues (i.e. planar, toppling or wedge failure mechanisms) noted on excavation batters of c70 degrees.

| | | | | | | | | | | | | | <u> </u> | | |
|----------|-------------------------|----------|------------------|-------------------------------|-------------------------------|--------------------|-------------------|---------------------------|-------------------------|-----------------------|----------------------|--------------|-----------------------------------|------------------|--|
| | | | ENGINE | ERII | NG GEO | LOGICAL I | MAPPIN(| G DAT | A SHEE | T (Sca | nline Su | urvey) | | IGSL | |
| Project: | PPK3 Pro | file Par | k | | | | | Date Log | ged: 18 | /9/19 | | | Face - 045 - 225 | | |
| Client: | | | | | Engineer: PM Group | | | | Scanline Location: TEX3 | | | | Direction: Horizontal PAGE 1 of 1 | | |
| Chainage | Joint | Dip | Pip Direction | WC | Strength Assessment | Persistence (m) | Aperture (rom) | Joint Joint | Joint Condition | Ground Water | Daylight- Ing | Veg Gover | Stability Raving | Remarks | |
| 0.00 | Tÿpe J1 | 50 | 080 | .rws | S F. Wadeastilleile | 0.2 | 1mm | CS | PL | D D | N | 1 | 2 | 700 | |
| 0.00 | J1 | 25 | 108 | " | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 0.20 | J2 | 80 | 168 | " | S | 0.1 | 1mm | CS | PL | D | N | 1 | 2 | * | |
| 0.35 | J2 | 72 | 170 | " | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 0.40 | J3 | 81 | 084 | " | S | 0.5 | | CS | PL | D | N | 1 | 2 | | |
| 0.45 | J1 | 20 | 095 | ii ii | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 0.55 | J1 | 29 | 120 | <u> </u> | S | 0.4 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 0.60 | J2 | 85 | 152 | l ii | S | 0.1 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 0.62 | J2 | 81 | 149 | | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 0.64 | J2 | 80 | 148 | | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | | |
| 0.65 | J2 | 79 | 145 | Ш | S | 0.4 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 0.69 | J2 | 69 | 138 | Ш | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 0.77 | J3 | 70 | 070 | Ш | S | 0.2 | - | CS | PL | D | N | 1 | 2 | | |
| 0.79 | J1 | 20 | 110 | Ш | S | 0.2 | - | CS | PL | D | N | 1 | 2 | | |
| 0.80 | J1 | 25 | 129 | Ш | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 1.20 | J1 | 29 | 108 | Ш | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 1.25 | J3 | 70 | 070 | III | MS | 0.4 | - | CS | PL | D | N | 1 | 2 | | |
| | | | | | | 1.25 - 3 | .4 - Highly we | athered zo | ne with cla | y infill - no jo | inting discer | rnible | | | |
| 3.40 | J2 | 80 | 181 | III | MS | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 3.60 | J3 | 72 | 082 | II | S | 0.3 | - | CS | PL | D | N | 1 | 2 | | |
| 3.70 | J2 | 72 | 155 | П | S | 0.2 | 1mm | CS | PL | D | N | 1 | 2 | | |
| 3.90 | J2 | 69 | 128 | II | S | 0.4 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 4.00 | J3 | 69 | 069 | II | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 4.2 | J2 | 74 | 174 | II | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 4.5 | J2 | 79 | 186 | II | S | 0.2 | 1mm | CS | PL | D | N | 1 | 2 | | |
| 4.6 | J1 | 21 | 124 | II | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 4.9 | J1 | 48 | 126 | II | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 5 | J2 | 74 | 178 | II | S | 0.4 | 2mm | CS | PL | D | N | 1 | 2 | | |
| 5.2 | J2 | 61 | 153 | II | S | 0.3 | 3mm | CS | PL | D | N | 1 | 2 | | |
| 5.25 | J3 | 68 | 069 | II | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | | |
| ŒY | Y WG - Weathering Grade | | | | Rock Strength Joint Infilling | | | Joint Condition Groundwat | | | ndwater Veget. Cover | | | Stability Rating | |
| | I Fresh | | | (VS) | very strong | (C) clean | | (PL) plana | ır | | | 1 none | | 1 Excellent | |
| | II Slightly | Neathe | red | (S) strong (SS) surface stain | | | • | | | (SS) slight seepage 2 | | 2 light | | 2 Good | |
| | III Moderate | ely Wea | thered | (MS) | mod. Strong. | (CS) clay smear | ing | (S) smooth | | (MS) mod. seepage 3 | | 3 moderate | | 3 Fair | |
| | IV Highly W | eathere | ed | (MW) | mod. Weak | (CF) clay filling | | (ST) stepp | ped | (HS) high s | seepage | 4 heavy | | 4 Poor | |
| | V Complete | ely weat | thered | (W) v | veak | (CA) calcite | | (P) polish | ed | | | 5 very h | eavy | 5 Very poor | |

| | | | ENGINE | ERII | NG GEO | LOGICAL N | MAPPING | DAT/ | A SHEE | T (Scar | าline Sเ | ırvey) | | IGSL |
|----------|----------------------|----------|-------------------------|--|------------------|-------------------|-------------------------|----------------|-----------------|--|-----------|-----------------------|---------------------|------------------|
| roject: | PPK3 Pro | file Par | k | | | | | Date Log | ged: 16/ | 9/19 | | | Face - 045 - 225 | - |
| lient: | | | | | | oup | Scanline Location: TEX1 | | | | | | PAGE 1 of 1 | |
| Chainage | .Jqint Toda | Dip | - Dip | wic | Strength | Persistence (m) | Aperture | Joint Joint | Joint. | Ground | Daylight- | Veg | Stability Rating | Remarks |
| 0 | ∵∵Tÿpe∵ J1 | 18 | Direction 109 | 1440 | [·Assessitierti. | | ······(romy····· | CS | Gondition PL | water D | ing N | .∵Gover∵ 1 | Rating 2 | 70 5 |
| 0.1 | J1 | 25 | 085 | | | | | CS | PL | D | N | 1 | 2 | |
| 0.1 | J1 | 31 | 110 | | | | | CS | PL | D | N | 1 | 2 | ^ |
| 0.3 | J1 | 35 | 092 | | | | | CS | PL | D | N | 1 | 2 | |
| 0.35 | J2 | 72 | 168 | <u> </u> | | | | CS | PL | D | N | 1 | 2 | |
| 0.4 | J1 | 26 | 095 | | | | | CS | PL | D | N | 1 | 2 | |
| 0.41 | J1 | 49 | 079 | 1 | | | | CS | PL | D | N | 1 | 2 | |
| 0.43 | J1 | 40 | 100 | | | | | CS | PL | D | N | 1 | 2 | |
| 0.45 | J1 | 30 | 092 | | | | | CS | PL | D | N | 1 | 2 | |
| 0.46 | J3 | 74 | 069 | | | | | CS | PL | D | N | 1 | 2 | |
| 0.47 | J1 | 12 | 100 | | | | | CS | PL | D | N | 1 | 2 | |
| 0.49 | J1 | 18 | 101 | | | | | CS | PL | D | N | 1 | 2 | |
| 0.50 | J2 | 69 | 170 | | | | | CS | PL | D | N | 1 | 2 | |
| 0.52 | J1 | 32 | 103 | | | | | CS | PL | D | N | 1 | 2 | |
| 0.53 | J1 | 20 | 280 | | | | | CS | PL | D | N | 1 | 2 | |
| 0.56 | J1 | 40 | 097 | | | | | CS | PL | D | N | 1 | 2 | |
| 0.58 | J1 | 42 | 089 | | | | | CS | PL | D | N | 1 | 2 | |
| 0.62 | J3 | 80 | 068 | | | | | CS | PL | D | N | 1 | 2 | |
| 0.64 | J1 | 36 | 096 | | | | | CS | PL | D | N | 1 | 2 | |
| 0.67 | J1 | 20 | 101 | | | | | CS | PL | D | N | 1 | 2 | |
| | | | | | | | | CS | PL | D | N | 1 | 2 | |
| | | | | | | | | CS | PL | D | N | 1 | 2 | |
| | | | | | | | | CS | PL | D | N | 1 | 2 | |
| | | | | | | | | CS | PL | D | N | 1 | 2 | |
| | | | | _ | | | | CS | PL | D | N | 1 | 2 | |
| | | | | <u> </u> | | | | - | | | | | | |
| | | | | <u> </u> | | | | | 1 | | | 1 | | |
| | | | | <u> </u> | | | | | - | | | - | | |
| | | | | - | | | | | | | | | | |
| Υ | WG - Weat | hering (| | Pock | Strength | Joint Infilling | | Joint Con | dition | Groundwest | er. | Veget. (| Cover | Stability Rating |
| • | I Fresh | nering (| n auc | | _ | (C) clean | | (PL) plana | | | | | JOVGI | 1 Excellent |
| | Il Slightly \ | Naatha | ed. | (S) st | , , | (SS) surface sta | ining | (R) rough | | (D) dry | | 1 none | | 2 Good |
| | III Moderate | | | | • | (CS) clay smeari | _ | (S) smoot | | (SS) slight seepage (MS) mod. seepage | | 2 light 3 moderate | | 3 Fair |
| | IV Highly W | - | | | • | (CF) clay filling | ''9 | (ST) step | | (MS) filod. | | 4 heavy | atc | 4 Poor |
| | V Complete | | | (W) w | | (CA) calcite | | (P) polish | | (113) High S | ccpaye | 5 very h | 200.07 | 5 Very poor |

Project No: 22000

Rock Excavation Trial Report Sheet



Project: Client: PPK3 Profile Park

Engineer: PM Group

Location: Grange Castle Co. Dublin

Trial Excavation 4 (TEX 4) 20.09.2019 Trial No.:

Date commenced: Date completed: 20.09.2019 Logged by: S.Cunningham

Easting 703211.733 **Northing** 730300.981 Elevation 82.747 ING Coordinates 703204.619 730303.854 82.873 (Approximate corners of Excavation) 730297.123 703202.271 82.99 703208.109 730293.988 83.034

Equipment Details

Breaker:

1T hydraulic breaker

21T tracked Komatsu excavator

Plant Used: Bucket: 5' Toothed Bucket **General Site Conditions**

Flat area in BAM coumpound (Area 2)

Rock Excavation Log

| Lift No. | From Depth | To. Depth | Bedrock Description | Duration | Duration Lifting | Length (m) | Width (m) |
|----------|------------|-----------|---------------------|----------------|------------------|------------|-----------|
| | (m) | (m) | | Breaking/Diggi | (min) | | |
| | | | | na (min) | | | |
| 1 | 0.00 | 3.00 | See below | 95 | | 7.20 | 7.30 |
| 2 | 3.00 | 3.60 | See below | 55 | 5 | 7.00 | 7.00 |
| 3 | 3.60 | 4.10 | See below | 50 | 5 | 6.70 | 6.80 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Hydraulic Breaking Production Details

| Lift No. | Production | Duration | Production Rate | |
|----------|------------|----------|-----------------|---|
| | (m^3) | Digging | (m^3/hr) | Comments |
| | | (min) | | |
| 1 | 157.7 | 95.00 | 100 | Overburden and weathered rock - excavated by digging with bucket only |
| 2 | 29.4 | 55.00 | 32 | LIMESTONE with some clay infill (hydraulic breaking) |
| 3 | 22.8 | 50.00 | 27 | LIMESTONE with some clay infill (hydraulic breaking) |

Rock Mass Geology

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| |
| TONE, |
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| ning with |
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| |
| MESTONE, |
| |
| ng with |
| |
| e e |

Large bulk sample was taken at a depth of 3.50m and placed in a 1T sack Sample details:

Groundwater: No groundwater encountered

Stability: No primary stability issues (i.e. planar, toppling or wedge failure mechanisms) noted on excavation batters of c70 degrees.

| | | | | | | | | | | | | | <u>`C</u> , | |
|----------------------------|---------------------|----------|-------------------------------|--------------------------------------|------------|----------------------|--------------------------|--------------------------------|--------------------------------|--------|-------------------|--|-----------------------|-------------|
| | | | ENGINE | ERII | NG GEO | LOGICAL N | MAPPING | G DAT | A SHEE | T (Sca | nline Su | urvey) | | IGSL |
| Project: PPK3 Profile Park | | | | | | Date Logged: 16/9/19 | | | | | | Face: 036 - 216 | | |
| lient: Google | | | | Engineer: PM Group | | | | Scanline Location: TEX4 | | | | | Direction: Horizontal | PAGE 1 of 1 |
| . Chainage | Joint | Dip | -Dip | | Śtrength | Persistence | Aperture | Joint | Joint. | Ground | Daylight- | Veg | Stability. | Remarks |
| <u></u> | ····Type··· | | | | Assessment | | ·····(rom)····· | | Gondition | | i ing | : Cover: | Rating | |
| 0 | J1 | 10 | 030 | II II | S S | 0.1 | 1mm - | CS | PL | D D | N N | 1 | 2 | |
| 0.2 | J3 J2 | 86 68 | 060 160 | " | S | 0.1 0.1 | - 2mm | CS CS | PL PL | D | N N | 1 | 2 2 | * |
| 0.3 | J2 J3 | 88 | 048 | " | S | 0.1 | l | CS | PL PL | D | N N | 1 | 2 | |
| 0.4 | J3 J2 | 72 | 178 | " | S | 0.2 | 1mm 2mm | CS | PL PL | D | N N | 1 | 2 | |
| 0.6 | J3 | 76 | 062 | | S | 0.2 | 2mm | CS | PL | D | N N | | 2 | |
| 0.8 | J2 | 84 | 186 | " | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | |
| 0.8 | J3 | 78 | 150 | " | S | 0.4 | 2mm | CS | PL | D | N | 1 | 2 | |
| 0.95 | J2 | 85 | 180 | <u>"</u> | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | |
| 1.00 | J3 | 78 | 150 | <u>"</u> | S | 0.3 | 2mm | CS | PL | D | N | 1 | 2 | |
| 1.10 | J2 | 72 | 172 | ı. | S | 0.3 | 1mm | CS | PL | D | N | 1 | 2 | |
| 1.20 | J3 | 70 | 061 | II. | S | 0.2 | - | CS | PL | D | N | 1 | 2 | |
| 1.00 | J3 | 71 | 056 | II. | S | 0.2 | _ | CS | PL | D | N | 1 | 2 | |
| 1.20 | J2 | 81 | 160 | II. | S | 0.4 | 2mm | CS | PL | D | N | 1 | 2 | |
| 1.55 | J3 | 70 | 050 | Ш | S | 0.2 | - | CS | PL | D | N | 1 | 2 | |
| 1.80 | J2 | 74 | 180 | Ш | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | |
| 2.00 | J3 | 81 | 072 | Ш | S | 0.2 | - | CS | PL | D | N | 1 | 2 | |
| 2.10 | J2 | 69 | 171 | Ш | S | 0.3 | 2mm | CS | PL | D | N | 1 | 2 | |
| 2.20 | J1 | 25 | 028 | Ш | S | 0.5 | 1mm | CS | PL | D | N | 1 | 2 | |
| 2.30 | J1 | 30 | 020 | Ш | S | 0.4 | 2mm | CS | PL | D | N | 1 | 2 | |
| 2.90 | J1 | 18 | 018 | II | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | |
| 3.00 | J2 | 80 | 170 | Ш | S | 0.3 | 2mm | CS | PL | D | N | 1 | 2 | |
| 3.10 | J2 | 74 | 190 | II | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | |
| 3.20 | J2 | 71 | 192 | II | S | 0.5 | 2mm | CS | PL | D | N | 1 | 2 | |
| 3.30 | J3 | 67 | 002 | II | S | 0.4 | - | CS | PL | D | N | 1 | 2 | |
| 3.35 | J1 | 20 | 045 | II | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | |
| 3.45 | J1 | 30 | 052 | II | S | 0.2 | 3mm | CS | PL | D | N | 1 | 2 | |
| 3.6 | J3 | 80 | 145 | II | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | |
| 3.7 | J2 | 74 | 180 | II | S | 0.3 | 2mm | CS | PL | D | N | 1 | 2 | |
| 3.75 | J2 | 67 | 185 | II | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | |
| EY WG - Weathering Grade | | | Rock Strength Joint Infilling | | | | Joint Condition | | | · · | | Cover | Stability Rating | |
| I Fresh | | | | (VS) very strong (C) clean | | | (PL) planar (R) rough | | (D) dry (SS) slight seepage | | 1 none 2 light | | 1 Excellent | |
| II Slightly Weathered | | | (S) strong (SS) surface state | | | • | | | | | | | 2 Good | |
| III Moderately Weathered | | | thered | (MS) mod. Strong. (CS) clay smearing | | | ing | (S) smooth | | | ` ' | | rate | 3 Fair |
| | IV Highly Weathered | | | (MW) mod. Weak (CF) clay filling | | | | (ST) stepped (HS) high seepage | | | 4 heavy | | 4 Poor | |
| V Completely weathered | | | thered | (W) weak (CA) calcite | | | | (P) polished | | | | 5 very h | eavy | 5 Very poor |

| | | | ENGINE | EDII | NG GEO | LOGICAL I | MADDINIC | DAT. | V CHEE | T (Scal | olina Sı | IL/O/ | | IGSL |
|--|-----------------------|----------|----------------------------|----------------------------------|---------------------|-----------------|--------------------------|-------------------------|---|--------------|---------------------------|------------------|---------------------|-------------|
| ! | PPK3 Pro | ela Dau | | LIXII | NG GLO | LOGICALI | VIAFFIINC | | | | IIII IE SC | ıı vey | Face: 036 - 216 | IGSL |
| oject: | PPK3 PIO | ille Par | К | | | | | Date Logged: 16/9/19 | | | | | O. | |
| ient: | Google | | | Engineer: PM Group | | | | Scanline Location: TEX4 | | | | | Direction: Vertical | PAGE 1 of 1 |
| Chainage | Joint Type | Diρ | Dip Direction | . XVC | Strength Assessment | Persistence (m) | Aperture (rom) | Joint Infillina | Joint Condition | Ground | Daylight- Ing | Veg Cover | Stability Rating | Remarks |
| 0 | J1 | 15 | 146 | | S | 0.2 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.12 | J1 | 30 | 158 | T ii | S | 0.2 | 1mm | CS | PL | D | N | 1 | 2 | T T |
| 0.15 | J2 | 74 | 180 | Ш | S | 0.5 | 2mm | CS | PL | D | N | 1 | 2 | |
| 0.18 | J2 | 67 | 185 | II | S | 0.7 | 2mm | CS | PL | D | N | 1 | 2 | |
| 0.2 | J1 | 60 | 180 | II | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | |
| 0.22 | J1 | 52 | 161 | II | S | 0.4 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.25 | J1 | 15 | 035 | II | S | 0.5 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.3 | J2 | 70 | 171 | II | S | 0.2 | 2mm | CS | PL | D | N | 1 | 2 | |
| 0.31 | J3 | 56 | 055 | II | S | 0.2 | - | CS | PL | D | N | 1 | 2 | |
| 0.30 | J3 | 70 | 061 | II | S | 0.1 | - | CS | PL | D | N | 1 | 2 | |
| 0.35 | J1 | 10 | 130 | II | S | 0.4 | 1mm | CS | PL | D | N | 1 | 2 | |
| 0.46 | J1 | 40 | 164 | II | S | 0.4 | - | CS | PL | D | N | 1 | 2 | |
| 0.48 | J1 | 36 | 157 | II | S | 0.8 | 2mm | CS | PL | D | N | 1 | 2 | |
| 0.49 | J2 | 70 | 180 | II. | S | 0.4 | 2mm | CS | PL | D | N | 1 | 2 | |
| 0.53 | J1 | 34 | 174 | II | S | 0.5 | 2mm | CS | PL | D | N | 1 | 2 | |
| 0.55 | J1 | 57 70 | 152 | II. | S | 0.3 | 2mm - | CS | PL | D D | N | 1 | 2 | |
| 0.58 | J3 J1 | 10 | 061 171 | II | S S | 0.6 0.2 | | CS CS | PL PL | D | N N | 1 | 2 2 | |
| 0.60 | JI | 10 | 171 | II | 3 | 0.2 | 2mm | CS | PL | 0 | IN | | 2 | |
| | | | | 1 | | | | | | | | | | |
| | | | | <u> </u> | | | | | | | | | | |
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| | | | | | | | | | | | | | | |
| <u> </u> | WG - Weathering Grade | | | Rock Strength Joint Infilling | | Joint Condition | | Groundwater \ | | Veget. Cover | | Stability Rating | | |
| I Fresh II Slightly Weathered III Moderately Weathered | | | (VS) very strong (C) clean | | _ | | (PL) planar (R) rough | | (D) dry (SS) slight seepage (MS) mod. seepage | | 1 none 2 light 3 moderate | | 1 Excellent | |
| | | | | | (SS) surface sta | ining | | | | | | | 2 Good | |
| | | | | (MS) mod. Strong. (CS) clay smea | | | • , , | | | | | | | 3 Fair |
| | IV Highly W | /eather | ed | (MW) mod. Weak (CF) clay filling | | | | (ST) stepped | | | (HS) high seepage | | | 4 Poor |
| | V Complete | ely wea | thered | (W) v | weak (CA) calcite | | | (P) polished | | | | 5 very h | eavy | 5 Very poor |

Appendix 8

Compaction Trial records

PRICENED. 28/08/2024



Project No: 22000

Compaction Trial Report Sheet



 Project:
 PPK3 Profile Park
 Trial No.:
 Compaction Trial 1

 Client:
 Date commenced:
 19.09.2019

 Engineer:
 PM Group
 Date completed:
 19.09.2019

 Location:
 Grange Castle Co. Dublin
 Supervisor:
 S. Cunningham

Easting Northing Elevation ING Coordinates 703423.616 730594.307 74.486 (Approximate corners of Excavation) 74.628 74.455 730587.696 703421.019 703430.169 730584.909 703432.316 730592.168 74.434

Equipment Details

Breaker: 1T hydraulic breaker

Plant Used: 21T tracked Komatsu excavator

Bucket: 5' Toothed Bucket

Roller: 3T Smooth Drum Roller JCB Vibromax

Dumper: 6T Forward Tip JCB Dumper

Plate Load Diameter: 450mm

General Site Conditions

Compaction Trial 1 was carried out in a flat area adjacent to TEX3

Grass covered. Dry.

Compaction Trial Methodology

The excavated upper bedrock generated from TEX 3 was used at the Compaction Trial 1. The compaction trial encompassed a footprint of c10 x 15m and each loose layer or lift was 275 to 300mm in thickness. Three lifts or layers were formed for the compaction trial area. The rock material was dozed out with the Komatsu tracked excavator employing a smooth ditching bucket. The material used consisted of the as-dug' bedrock material with particle sizes typically <150 to 200mm. The topsoil was stripped (0.5mbgl) and a plate load test was carried out prior to compaction (formation). Each layer was subject to 10 roller passes of the smooty drum roller. Plate load tests were carried out following compaction of each layer or lift. The plate load tests were carried out in accordance with 85 1377 Test 4 (incremental load test) and utilized a 450mm plate. Two load cycle tests were performed (initial loading followed by a re-load) and kentledge was provided by the 21T tracked machine. The plate test results are summarised below with accompanying photographs to illustrate the work.

Compaction Trial Results

| Layer/Lift | Plate Test No. | Ks (MPa/m) Initial Load / Re-Load | CBR (%) Initial Load / Re-Load | Depth | Material | |
|------------|----------------|--------------------------------------|-----------------------------------|---------|---------------------------------|--|
| Formation | 1 | 25/45 | 2.6/6.9 | 0.5mbgl | Firm brown sandy gravelly CLAY | |
| Layer 1 | 2 | 53/79 | 9.5/8.7 | +300mm | Dark grey argillacous limestone | |
| Layer 2 | 3 | 61/83 | 11.8/20.4 | +300mm | Dark grey argillacous limestone | |
| Layer 3 | 4 | 80/90 | 19.0/23.6 | +300mm | Dark grey argillacous limestone | |

Figure 1 - As dug bedrock material, typically <150 - 200mm



Figure 2 – Lift/layer 1 after compaction



Figure 3 – Compaction using a smooth drum roller on layer 2 -KN/KD: 2006/2024



Figure 4 – Plate bearing test on layer





Figure 5 – Grey argillaceous limestone after compaction

Appendix 9

Geophysical Survey Report

PRICENED. 28/08/2024

AGP19137_02

RECEINED: 28 OF 2024

REPORT

ON THE

GEOPHYSICAL INVESTIGATION

AT

PROFILE PARK,

GRANGE CASTLE, CO. DUBLIN

FOR

IGSL



APEX Geophysics Limited
Unit 6, Knockmullen Business Park
Gorey
Co. Wexford

T: 0402 21842

F: 0402 21843

E: info@apexgeophysics.ie W: www.apexgeophysics.com



PRIVATE AND CONFIDENTIAL

THE FINDINGS OF THIS REPORT ARE THE RESULT OF A GEOPHYSICAL SURVEY USING NON-INVASIVE SURVEY TECHNIQUES CARRIED OUT AT THE GROUND SURFACE. INTERPRETATIONS CONTAINED IN THIS REPORT ARE DERIVED FROM A KNOWLEDGE OF THE GROUND CONDITIONS, THE GEOPHYSICAL RESPONSES OF GROUND MATERIALS AND THE EXPERIENCE OF THE AUTHOR. APEX GEOPHYSICS LTD. HAS PREPARED THIS REPORT IN LINE WITH BEST CURRENT PRACTICE AND WITH ALL REASONABLE SKILL, CARE AND DILIGENCE IN CONSIDERATION OF THE LIMITS IMPOSED BY THE SURVEY TECHNIQUES USED AND THE RESOURCES DEVOTED TO IT BY AGREEMENT WITH THE CLIENT. THE INTERPRETATIVE BASIS OF THE CONCLUSIONS CONTAINED IN THIS REPORT SHOULD BE TAKEN INTO ACCOUNT IN ANY FUTURE USE OF THIS REPORT.

| PROJECT NUMBER | AGP19137 | | |
|---|-----------------------------------|------------------|---------------------------------|
| Author | CHECKED | REPORT STATUS | DATE |
| EURGEOL YVONNE O'CONNELL PH.D., M.Sc. (GEOPHYSICS), PGEO | TONY LOMBARD M.Sc (GEOPHYSICS) | V.01 | 16 TH SEPTEMBER 2019 |
| EURGEOL YVONNE O'CONNELL Ph.D., M.Sc. (GEOPHYSICS), PGEO | Tony Lombard M.Sc (geophysics) | V.02 | 6 [™] November 2019 |



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1. EXECUTIVE SUMMARY

APEX Geophysics Limited was requested by IGSL to carry out a geophysical survey at three sites of Grange Castle, Co. Dublin as part of the ground investigation for a proposed extension to the Profile Park Data Centre.

The objectives of the investigation were to provide information on the thickness and stiffness of superficial deposits, produce a depth to bedrock map for the site, provide information on the type and quality of the bedrock, provide information on the excavatability of the bedrock and measure the soil resistivity values at 2 no. locations.

The sites are in an area of till derived from limestone underlain by muddy limestone and shale of the Lucan Formation.

One hundred trial pits were opened across all sites and thirty rotary cores were cored across sites 3 and 4. Soil typically comprising of firm to stiff slightly sandy slightly gravelly silty clay ranged in thickness from 0.8 to 3.1 m (average 1.7 m). Bedrock typically comprised of limestone with subordinate mudstone.

The investigation consisted of reconnaissance EM ground conductivity mapping with follow-up 2D Electrical Resistivity Tomography (ERT), Seismic Refraction profiling and 1D soil resistivity profiling.

The geophysical data in conjunction with the trial pit data have been interpreted as indicating 0.5 – 3.6 m (average 1.7 m) of soft to firm silt/clay and/or firm to stiff slightly sandy slightly gravelly silty clay. Seismic velocities indicate that on average the upper 1.0m of soils will be soft to firm, becoming firm to stiff with depth.

Bedrock has been interpreted as limestone and mudstone. The geophysical data indicates two rock layers: an upper layer of highly to moderately weathered limestone/mudstone (on average 2.0 m thick) which should be rippable to marginally rippable; over slightly weathered to fresh limestone/mudstone which will require breaking/blasting. It should be noted that the cut-off velocity for excavatability will be lower if excavating in trenches.

The interpreted base of the soils (MSL) and top of the slightly weathered to fresh rock (MSL) have been plotted incorporating trial pit and borehole information. All contour maps include a degree of interpolation, and the data points used to construct the map are shown on each of the drawings.

If any additional ground investigation is planned, the following rotary cores are recommended to investigate bedrock variations:

| No. | Site | Easting | Northing | No. | Site | Easting | Northing |
|------|------|-----------|-----------|------|------|-----------|-----------|
| PBH1 | 1 | 303444.55 | 230609.19 | PBH3 | 4 | 303374.74 | 230195.72 |
| PBH2 | 1 | 303503.19 | 230551.03 | PBH4 | 4 | 303620.38 | 230117.88 |

Where bedrock excavation is proposed, a detailed assessment of excavatability should be carried out combining the results of the geophysical survey, any rotary core drilling, strength testing and trial excavation pits using a high powered excavator such as a CAT 336E or more powerful model. Trial excavations should be attempted down to formation level using a high powered excavator of similar rating to that to be used during construction. A more detailed discussion of velocity and excavatability is contained in Appendix B.

The findings of the geophysical investigation should be reviewed following any further direct investigation.



2. INTRODUCTION

APEX Geophysics Limited was requested by IGSL to carry out a geophysical survey at three sites at Grange Castle, Co. Dublin as part of the ground investigation for a proposed extension to the Profile Park Data Centre.

2.1 Survey Objectives

The objectives of the investigation were to:

- provide information on the thickness and stiffness of superficial deposits,
- produce a depth to bedrock map for the site,
- provide information on the type and quality of the bedrock,
- · provide information on the excavatability of the bedrock,
- measure the soil resistivity values at 2 no. locations.

2.2 Site Background

The survey area consists of 3 sites, 1 (1.2 ha), 2 (0.7 ha) and 4 (8.6 ha) and a proposed substation location west of Site 4 in Profile Park (Figure 2.1). Site topography ranges from 74 to 75.5 MSL in Site 1 in the north increasing to 78 to 83 MSL across Site 4 in the south. Earthworks were apparent across much of Site 1. An area of hardcore cover is present in the northwest corner of Site 4 and large spoil heaps were present in the southeast of Site 4.



Fig 2.1: Location map (sites marked in red).



2.2.1 Soils

The Geological Survey of Ireland (GSI) and Teagasc soils map for the area (Figure 2.2) indicates that the sites are in an area of till derived from limestone with subcropping/outcropping rock west and southwest of the site.



Fig 2.2: The Teagasc soil map (sites marked in red).

2.2.2 Geology

The GSI 1:100k Bedrock Geology map (Figure 2.3) indicates that the sites are underlain by muddy limestone and shale of the Lucan Formation (Calp). The Lucan Formation is classified as a 'Locally Important aquifer – bedrock which is moderately productive only in local zones'.

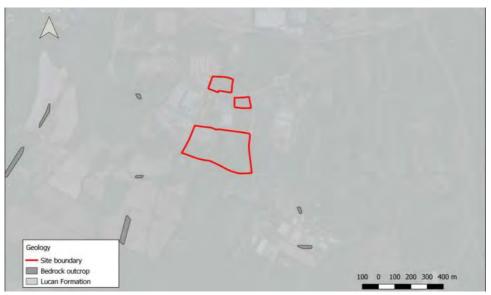


Fig 2.3: The GSI bedrock map (sites marked in red).



2.2.3 Historical Data

The historical 6 inch sheet for the area indicates outcropping limestone and shales west and southwest of the sites. Noted dips vary from 20° to the south to 40° to the west (Figure 2.4).

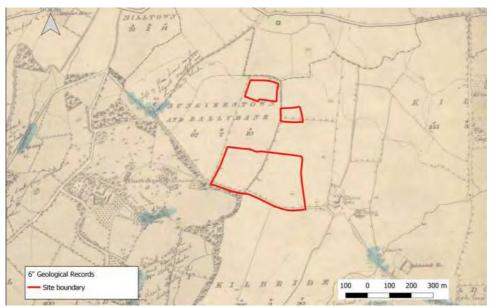


Fig 2.4: The historical 6inch map (sites marked in red, outcrop marked in blue).

2.2.4 Groundwater Vulnerability

The groundwater vulnerability rating for the sites (Figure 2.5) is classified as predominantly high with an extreme classification in the southwest corner of Site 4.

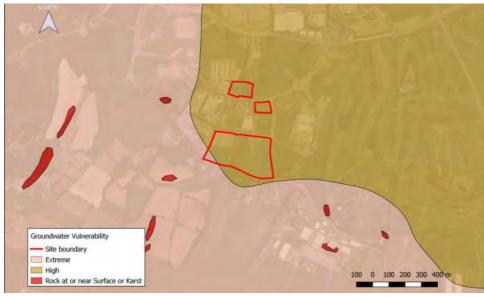


Fig 2.5: The GSI groundwater vulnerability classification map (sites marked in red).



2.2.5 Direct Investigation

One hundred trial pits were opened across all sites and refused on possible rock at depths from 0.12 to 3.1 m (average 1.65 m) below ground level (bgl). Soil encountered typically comprised of firm to stiff slightly sandy slightly gravelly silty clay. Thirty boreholes were cored across sites 3 and 4 and encountered limestone with subordinate mudstone bedrock at depths from 1.1 to 3.0 m bgl.

2.3 Survey Rationale

The investigation consisted of reconnaissance EM ground conductivity mapping with follow-up 2D Electrical Resistivity Tomography (ERT), Seismic Refraction profiling and Soil Resistivity:

EM ground conductivity mapping operates on the principle of inducing currents in conductive substrata and measuring the resultant secondary electro-magnetic field. The strength of this secondary EM field is calibrated to give apparent ground conductivity in milliSiemens/metre (mS/m). This technique will provide information on the shallow (0-6m below ground level) variation of the superficial deposits and outline the shallow bedrock.

ERT images the resistivity of the materials in the subsurface along a profile to produce a cross-section showing the variation in resistivity with depth, depending on the length of the profile. Each cross-section is interpreted to determine the material type along the profile at increasing depth, based on the typical resistivities returned for Irish ground materials.

Seismic Refraction profiling measures the velocity of refracted seismic waves through the overburden and rock material and allows an assessment of the thickness and quality of the materials present to be made. Stiffer and stronger materials usually have higher seismic velocities while soft, loose or fractured materials have lower velocities.

Soil Resistivity measurements determine vertical variations in subsurface resistivity and are used in the design of earthing systems. Data acquisition with the Wenner Array, as described in IEEE Std 81-1983 (Guide for measuring Earth Resistivity, Ground Impedance and Earth Surface Potentials of a Ground System) is a standard method for measuring subsurface resistivity.

As with all geophysical methods the results are based on indirect readings of the subsurface properties. The effectiveness of the proposed approach will be affected by variations in the ground properties. By combining a number of techniques it is possible to provide a higher quality interpretation and reduce any ambiguities which may otherwise exist. Further information on the detailed methodology of each geophysical method employed in this investigation is given in **APPENDIX A: DETAILED METHODOLOGY**.



3. RESULTS

The survey was carried out between the 12th and 16th August 2019 involving the collection of 3621 EM readings, 8 ERT profiles, 26 seismic refraction profiles and 3 soil resistivity measurements.

The geophysical survey locations are indicated on Drawing AGP19137_01 (Appendix C).

3.1 EM Ground Conductivity Mapping

EM ground conductivity data was recorded across Sites 1 and 4. The EM conductivity results (Drawing AGP19137_02, Appendix C) are indicative of the bulk conductivity of the ground materials from 0-6.0m bgl. The recorded conductivity values ranged from 5 to 20 mS/m and have been generally interpreted in conjunction with the ERT and Seismic data as follows:

| Conductivity (mS/m) | Interpretation |
|---------------------|--|
| < 10 | ≤ 3 m soils over LIMESTONE/MUDSTONE |
| > 10 | Interference from stockpile material, disturbed ground, fences, surface metals, etc) |

Highest conductivities) were recorded across Site 1 and in the northwest and east/southeast of Site 4;

- In Site 1, disturbed ground with backfilling was noted across the site. The high conductivities indicate probable areas of made ground while the highest conductivities (>15 mS/m) were recorded along the southern and eastern boundaries and are likely to indicate interference from fencing.
- In Site 4, elevated conductivities occur across the area of hardcore in the northwest and indicate probable localised areas of made ground. Other areas of elevated values (>10 mS/m) are coincident with the stockpiles in the east/southeast of the site.

3.2 ERT

Eight ERT Profiles (R1 to R8) were recorded across Sites 1 and 4. The resistivity values have been interpreted on in conjunction with the trial pits and boreholes as follows:

| Resistivity (Ohm-m) | Interpretation |
|---------------------|---|
| 50 - 75 | SILT/CLAY |
| 75 - 125 | Slightly sandy slightly gravelly silty CLAY |
| 125 - 150 | Weathered muddy LIMESTONE/MUDSTONE |
| 50 - 200 | MUDSTONE |
| 150 - 550 | LIMESTONE/MUDSTONE |

3.3 Seismic Refraction Profiling

Twenty six seismic refraction spreads (S1-S26) were recorded across Sites 1 and 4. The seismic refraction data indicated up to 4 velocity layers which have been interpreted in conjunction with the trial pits and boreholes as follows:



| Layer | Seismic Velocity (m/s) | Average Seismic Velocity (m/s) | Interpretation | Stiffness/ Rock Quality | Excavatabi!!ry |
|-------|------------------------------|---|----------------------------------|-------------------------------|----------------------------------|
| 1 | 258-762 | 400 | Soil | Soft-Firm | |
| 2 | 372-1000 | 670 | Soil | Firm-Stiff | Diggable |
| | | | Soil | Stiff | |
| 3 | 610-1600 | 1090 | Highly-Moderately Weathered Rock | Poor-Fair | Rippable -Marginally Rippable |
| 4 | 2470-4344 | 3530 | Slightly Weathered –Fresh Rock | Good | Breaking/Blasting |

^{*}It should be noted that the cut-off velocity for excavatability will be lower if excavating in trenches.

3.4 Discussion

The ERT, Seismic Refraction and direct investigation results have been combined to produce the Interpreted Sections on Drawings AGP19137_R1 to AGP19137_R8 (Appendix C). The combined results are summarised on the following basis:

| Layer | Seismic Velocity (m/s) | Average Seismic Velocity (m/s) | Resistivity (Ohm-m) | Interpretation | Stiffness/ Rock Quality | Excavatability |
|-------|------------------------------|---|------------------------|-----------------------------|-------------------------------|------------------|
| 1 | 258-762 | 400 | 50-75 | SILT/CLAY | Soft-Firm | Diggable |
| | | | 75-125 | Sandy gravelly silty CLAY | | |
| 2 | 372-1000 | 670 | 50-75 | SILT/CLAY | Firm-Stiff | |
| | | | 75-125 | Sandy gravelly silty CLAY | | |
| 3 | | | 125-150 | Highly-Moderately Weathered | Poor-Fair | Rippable - |
| | 610-1600 | 1090 | | LIMESTONE/MUDSTONE | | Marginally Ripp. |
| | | | | | | |
| 4 | 2470-4344 | 3530 | 50-200 | Slightly Weathered –Fresh | Good | Breaking/ |
| | | | | MUDSTONE | | Blasting |
| | | | 150 - 550 | Slightly Weathered –Fresh | | |
| | | | | LIMESTONE/MUDSTONE | | |

3.4.1 Soils

The soils have been interpreted as soft to firm silt/clay and/or firm to stiff slightly sandy slightly gravelly silty clay. The interpreted soil thickness across Sites 1 and 4 combined with trial pit and borehole depths is contoured on Drawings AGP19137_03, Figure 2 and AGP19137_04 and ranges from 0.5 - 3.6 m and is an average of 1.7 m thick. Seismic velocities indicate that on average the upper 1.0m of soils will be soft to firm, becoming firm to stiff with depth.

3.4.2 Bedrock

Bedrock has been interpreted as muddy limestone and shale. Combined resistivity and seismic velocity values have been interpreted as indicating two rock layers: an upper layer of highly to moderately weathered limestone and mudstone (on average 2.0 m thick) which should be rippable to marginally rippable; over slightly

Geophysical Investigation Profile Park, Grange Castle, Co. Dublin For IGSL



weathered to fresh limestone and mudstone which will require breaking/blasting. It should be noted that the cut-off velocity for excavatability will be lower if excavating in trenches.

The interpreted top of the highly to moderately weathered rock/base of the soils is contoured on Drawings AGP19137_03, Figure 3 and AGP19137_05 at elevations from 71.5 to 82.2 MSL. The top of the slightly weathered to fresh rock has been interpreted at elevations from 68.5 to 82.1 MSL (Drawings AGP19137_03, Figure 4 and AGP19137_06).

Trial pit and rotary core information has been incorporated into all relevant contour plots. All contour maps include a degree of interpolation, and the data points used to construct the map are shown on each of the Drawings AGP19137 03 to AGP19137 06.



4. Soil Resistivity

Two orthogonal 1D soil resistivity measurements were acquired at Site 2 and due to site limitations one 1D soil resistivity measurement was acquired at the proposed substation site west of Site 4. The locations are shown on Drawing AGL19137_01.

| Site 2 | VES1 | | |
|---------------|-------------------|---------------------|--|
| A-Spacing (m) | Resistance (Ohms) | Resistivity (Ohm-m) | |
| 0.5 | 21.8 | 68.5 | |
| 1 | 16.24 | 102.0 | |
| 2 | 9.64 | 121.1 | |
| 4 | 5.335 | 134.1 | |
| 6 | 4.275 | 161.2 | |
| 8 | 3.55 | 178.4 | |
| 10 | 2.8 | 175.9 | |
| 12 | 2.505 | 188.9 | |
| 15 | 2.145 | 202.2 | |
| 20 | 1.735 | 218.0 | |
| 25 | 1.445 | 227.0 | |
| 30 | 1.16 | 218.7 | |

| Site 2 | VES2 | | |
|---------------|-------------------|---------------------|--|
| A-Spacing (m) | Resistance (Ohms) | Resistivity (Ohm-m) | |
| 0.5 | 25.2 | 79.2 | |
| 1 | 15.15 | 95.2 | |
| 2 | 9.19 | 115.5 | |
| 4 | 5.28 | 132.7 | |
| 6 | 4.03 | 151.9 | |
| 8 | 3.345 | 168.1 | |
| 10 | 2.915 | 183.2 | |
| 12 | 2.5 | 188.5 | |
| 15 | 2.135 | 201.2 | |
| 20 | 1.56 | 196.0 | |
| 25 | 1.31 | 205.8 | |
| 30 | 0.995 | 187.6 | |

| Substation | VES3 | | |
|---------------|-------------------|---------------------|--|
| A-Spacing (m) | Resistance (Ohms) | Resistivity (Ohm-m) | |
| 0.5 | 119.45 | 375.3 | |
| 1 | 37.5 | 235.6 | |
| 2 | 11 | 138.2 | |
| 4 | 5 | 125.7 | |
| 6 | 4.02 | 151.6 | |
| 8 | 2 | 100.5 | |
| 10 | 3 | 188.5 | |
| 12 | 2 | 150.8 | |
| 15 | 2 | 188.5 | |
| 20 | 2 | 251.3 | |



5. RECOMENDATIONS

If any additional ground investigation is planned, the following rotary cores are recommended to we stigate bedrock variations:

| No. | Site | Easting | Northing |
|------|------|-----------|-----------|
| PBH1 | 1 | 303444.55 | 230609.19 |
| PBH2 | 1 | 303503.19 | 230551.03 |
| PBH3 | 4 | 303374.74 | 230195.72 |
| PBH4 | 4 | 303620.38 | 230117.88 |

Where bedrock excavation is proposed, a detailed assessment of excavatability should be carried out combining the results of the geophysical survey, any rotary core drilling, strength testing and trial excavation pits using a high powered excavator such as a CAT 336E or more powerful model. Trial excavations should be attempted down to formation level using a high powered excavator of similar rating to that to be used during construction. A more detailed discussion of velocity and excavatability is contained in Appendix B.

The findings of the geophysical investigation should be reviewed following any further direct investigation.



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APPENDIX A: DETAILED METHODOLOGY

A combination of geophysical techniques was used to provide a high quality interpretation and reduce any ambiguities, which may otherwise exist.

EM Ground Conductivity Mapping

Principles

This is an electromagnetic technique used to investigate lateral variations in overburden material and to assist with the indication of the depth to bedrock. This method operates on the principle of inducing currents in conductive substrata and measuring the resultant secondary electro-magnetic field. The strength of this secondary EM field is calibrated tore give apparent ground conductivity in milliSiemens/metre (mS/m). Readings over material such as organic waste and peat give high conductivity values while readings over dry materials with low clay mineral content such as gravels, limestone or quartzite give low readings. The EM31 survey technique determines the apparent conductivity of the ground material from 0-6m bgl depending on the dipole mode used. Depending on the dipole mode used, the measured conductivity is a function of the different overburden layers and/or rock from 0 to 6m below ground level.

Data collection

The EM31 equipment used was a GF CMD-4 conductivity meter equipped with data logger. This instrument features a real time graphic display of the previous 20 measurement points to monitor data quality and results. Conductivity and in-phase values were recorded across the site. Local conditions and variations were recorded.

Data processing

The conductivity and in-phase field readings were downloaded, contoured and plotted using the SURFER 9 program (Golden Software, 2009). Data which was affected by metallic objects was removed. Assignation of material types and possible anomaly sources was carried out, with cross-reference to other data.

Electrical Resistivity Tomography (ERT)

Electrical Resistivity Tomography was carried out to provide information on lateral variations in the overburden material as well as on the underlying overburden and bedrock.

Principles

This surveying technique makes use of the Wenner resistivity array. The 2D-resistivity profiling method records a large number of resistivity readings in order to map lateral and vertical changes in material types. This method involves the use of electrodes connected to a resistivity meter, using computer software to control the process of data collection and storage.

Data Collection

Profiles were recorded using a Tigre resistivity meter, imaging software, two 32 takeout multicore cables and up to 64 stainless steel electrodes. Saline solution was used at the electrode/ground interface in order to gain a good electrical contact required for the technique to work effectively. The recorded data were processed and viewed immediately after surveying.

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Data Processing

The field readings were stored in computer files and inverted using the RES2DINV package (Geotomo Software, 2006) with up to 5 iterations of the measured data carried out for each profile to obtain a 2D-depthonodel of the resistivities.

The inverted 2D resistivity models and corresponding interpreted geology are displayed on the accompanying drawings alongside the processed seismic sections. Profiles have been contoured using the same contour intervals and colour codes. Distance is indicated along the horizontal axis of the profiles.

Seismic Refraction Profiling

Principles

This method measures the velocity of refracted seismic waves through the overburden and rock material and allows an assessment of the thickness and quality of the materials present to be made. Stiffer and stronger materials usually have higher seismic velocities while soft, loose or fractured materials have lower velocities.

Seismic profiling measures the p-wave velocity (Vp) of refracted seismic waves through the overburden and rock material and allows an assessment of the thickness and quality of the materials present to be made. Stiffer and stronger materials usually have higher Vp velocities while soft, loose or fractured materials have lower Vp velocities. Readings are taken using geophones connected via multi-core cable to a seismograph.

Data Collection

A Geode high resolution 24 channel digital seismograph, 24 10HZ vertical geophones and a 10 kg hammer were used to provide first break information, with a 24 take-out cable (2m spacing). Equipment was carried was operated by a two-person crew.

Readings are taken using geophones connected via multi-core cable to a seismograph. The depth of resolution of soil/bedrock boundaries is determined by the length of the seismic spread, typically the depth of resolution is about one third the length of the profile (e.g. 46m profile $^{\sim}16m$ depth). Shots from seven different positions were taken (2 x off-end, 2 x end, 3 x middle) to ensure optimum coverage of all refractors.

Data Processing

First break picking in digital format was carried out using the FIRSTPIX software program to construct p-wave (Vp) traveltime plots for each spread. Velocity phases were selected from these plots using the GREMIX software program and were used to calculate the thickness of individual velocity units. Topographic data were input. Material types were assigned and estimation made of material properties.

First break picking in digital format was carried out using the FIRSTPIX software program to construct traveltime plots for each spread. The recorded data was processed and interpreted using the GREMIX software program. GREMIX interprets seismic refraction data as a laterally varying layered earth structure. It incorporates the slope-intercept method, parts of the Plus-Minus Method of Hagedoorn (1959), Time-Delay Method, and features the Generalized Reciprocal Method (GRM) of Palmer (1980). Up to four layers can be mapped; one deduced from direct arrivals and three deduced from refractions. Phantoming of all possible travel time pairs can be carried out by adjusting reciprocal times of off shots.



Approximate errors for Vp velocities are estimated to be +/- 10%. Errors for the calculated layer thicknesses are of the order of +/-20%. Possible errors due to the "hidden layer" and "velocity inversion" effects may also occur (Soske, 1959).

Soil Resistivity Measurements

Principles

The method used is the four point method as described in IEEE Std 81-1983 (Guide for measuring Earth Resistivity, Ground Impedance and Earth Surface Potentials of a Ground System).

This method utilizes the equally spaced Wenner Array to determine the apparent resistivity of the ground material using four electrodes placed in a line in the ground and a current is passed through the two outer electrodes. The potential difference (V) is measured across the two inner electrodes. The measured potential is divided by the current value (I) to obtain the resistance (R) using the following formula: V/I=R.

The resistivity is determined from the measured resistance recorded at increasing electrode separations using the following standard formula for the Wenner array:

Resistivity (Ohm-m) =
$$R * 2 * Pi * a$$

(Equation 1)

where R = measured resistance (Ohms) and a = inter-electrode spacing.

IEEE Std 81-1983 states that use of an electrode spacing of a m gives approximately the average resistivity of the soil to a m, although general geophysical experience indicates that the effective depth of penetration for the Wenner array is approximately a/2 m.

Data Collection

Approximate orthogonal soil resistivity measurements were taken at the survey location in Site 2 and one direction was recorded at the proposed electrical substation. The measurements were taken with α spacings of 0.5, 1, 2, 6, 8, 10, 12, 15, 20, 25 and 30 m where accessible.

Data Processing

The field readings were converted to apparent resistivities using Equation 1.

Spatial Relocation

All the geophysical investigation locations were acquired using Trimble Geo 7X high-accuracy GNSS handheld GPS system using the settings listed below. This system allows collecting GPS data with c.20mm accuracy.

| Projection: | Irish National Grid |
|----------------------------|---------------------|
| Datum: | Ordnance |
| Coordinate units: | Meters |
| Altitude units: | Meters |
| Survey altitude reference: | MSL |
| Geoid model: | Republic of Ireland |



APPENDIX B: EXCAVATABILITY

The seismic velocity of a rock formation is related to characteristics of the rock mass which include rock hardness and strength, degree of weathering and discontinuities. Usually the velocity is just one of several parameters used in the assessment of excavatability. The excavatability of a rock formation is favoured by the following factors:

- Open fractures, faults and other planes of weakness of any kind
- Weathering
- Brittleness and crystalline nature
- High degree of stratification or lamination
- Large grain size
- Low compressive strength

Weaver (1975) presented a comprehensive rippability rating chart (Fig.1) in which the p-wave velocity value and the relevant geological factors could be entered and assigned appropriate weightings. The total weighted index was found to correlate very well with actual rippability.

Fig.1 Rippability Rating Chart

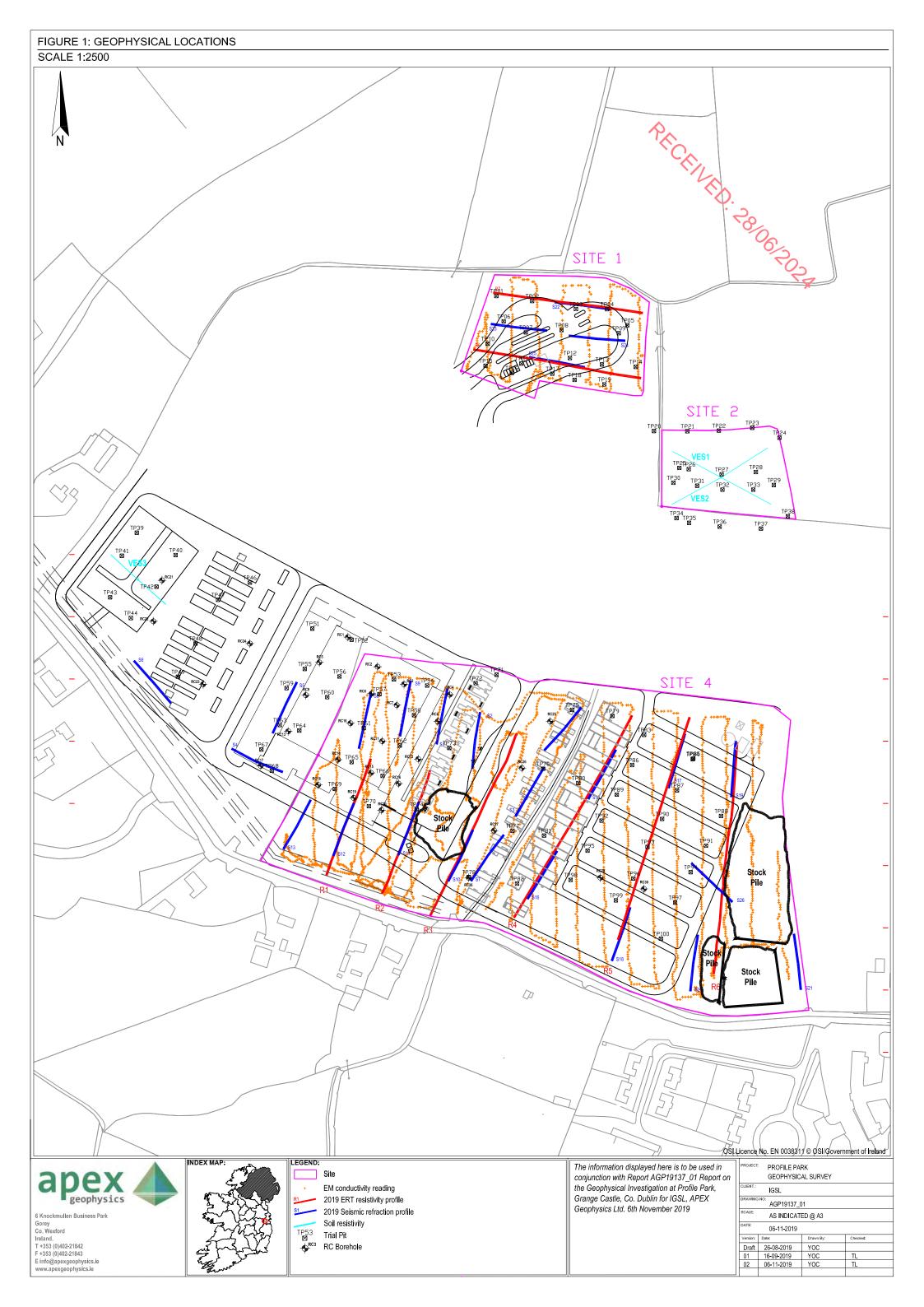
| Rock class | | II | III | IV | V |
|----------------------------|----------------------|-------------------------------------|--------------------------|---------------------|----------------------|
| Description | Very good rock | Good rock | Fair rock | Poor rock | Very poor rock |
| Seismic velocity | | | | | |
| (m/s) | >2150 | 2150-1850 | 1850-1500 | 1500-1200 | 1200-450 |
| Rating | 26 | 24 | 20 | 12 | 5 |
| Rock hardness | Extremely hard rock | Very hard rock | Hard rock | Soft rock | Very soft rock |
| Rating | 10 | 5 | 2 | 1 | 0 |
| Rock weathering | Unweathered | Slightly weathered | Weathered | Highly weathered | Completely weathered |
| Rating | 9 | 7 | 5 | 3 | 1 |
| Joint spacing (mm) | >3000 | 3000-1000 | 1000-300 | 300-50 | <50 |
| Rating | 30 | 25 | 20 | 10 | 5 |
| Joint continuity | Non continuous | Slightly | Continuous- | Continuous- | Continuous- |
| | | continuous | no gouge | some gouge | with gouge |
| Rating | 5 | 5 | 3 | 0 | 0 |
| Joint gouge | No separation | Slight separation | Separation <1mm | Gouge <5mm | Gouge >5mm |
| Rating | 5 | 5 | 4 | 3 | 1 |
| Strike and dip orientation | Very unfavourable | Unfavourable | Slightly unfavourable | Favourable | Very favourable |
| Rating | 15 | 13 | 10 | 5 | 3 |
| Total rating | 100-90 | 90-70* | 70-50 | 50-25 | <25 |
| Rippability assessment | Blasting | Extremely hard ripping and blasting | Very hard ripping | Hard ripping | Easy ripping |
| Tractor horsepower | | 770/385 | 385/270 | 270/180 | 180 |
| Tractor kilowatts | | 575/290 | 290/200 | 200/135 | 135 |

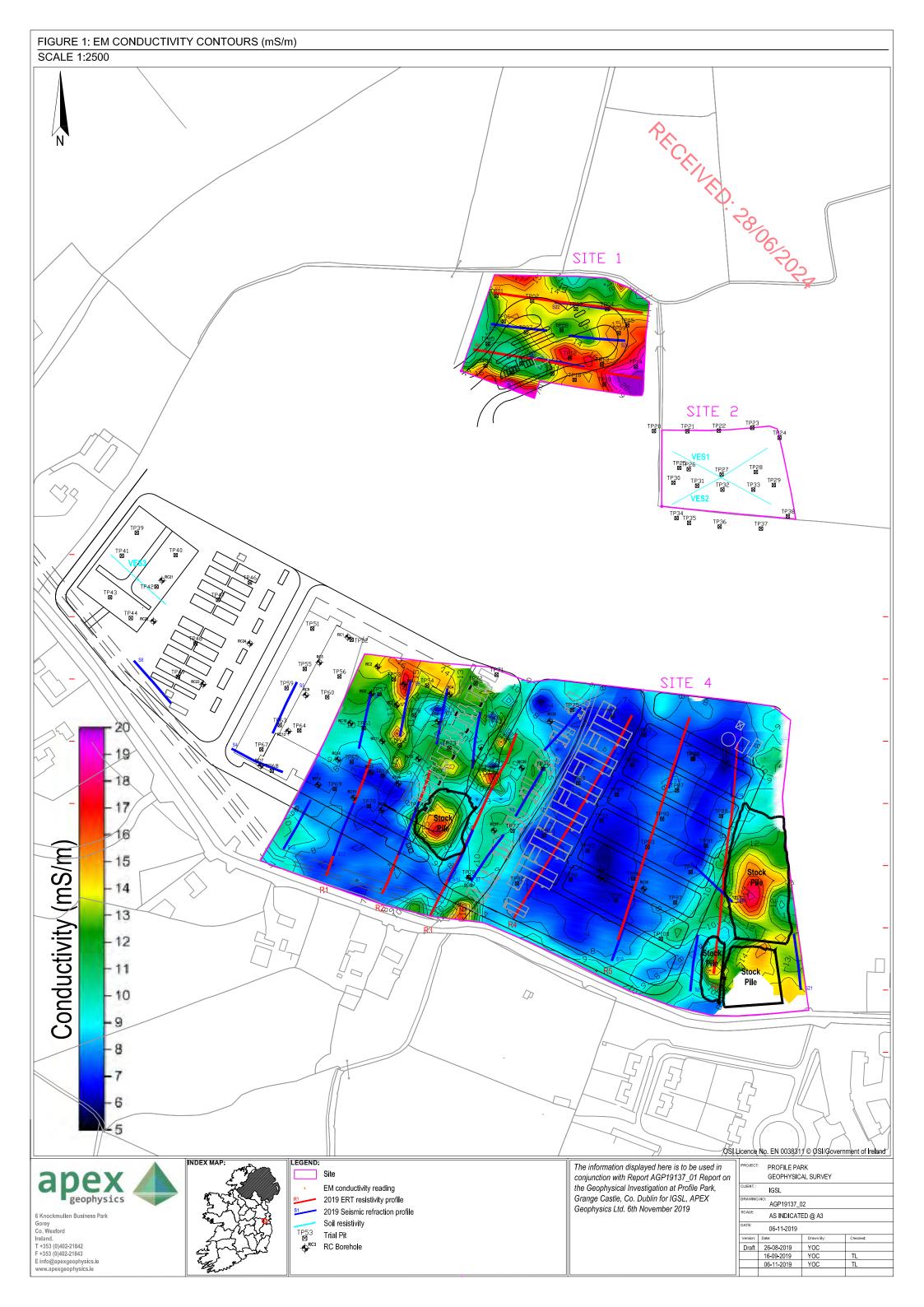


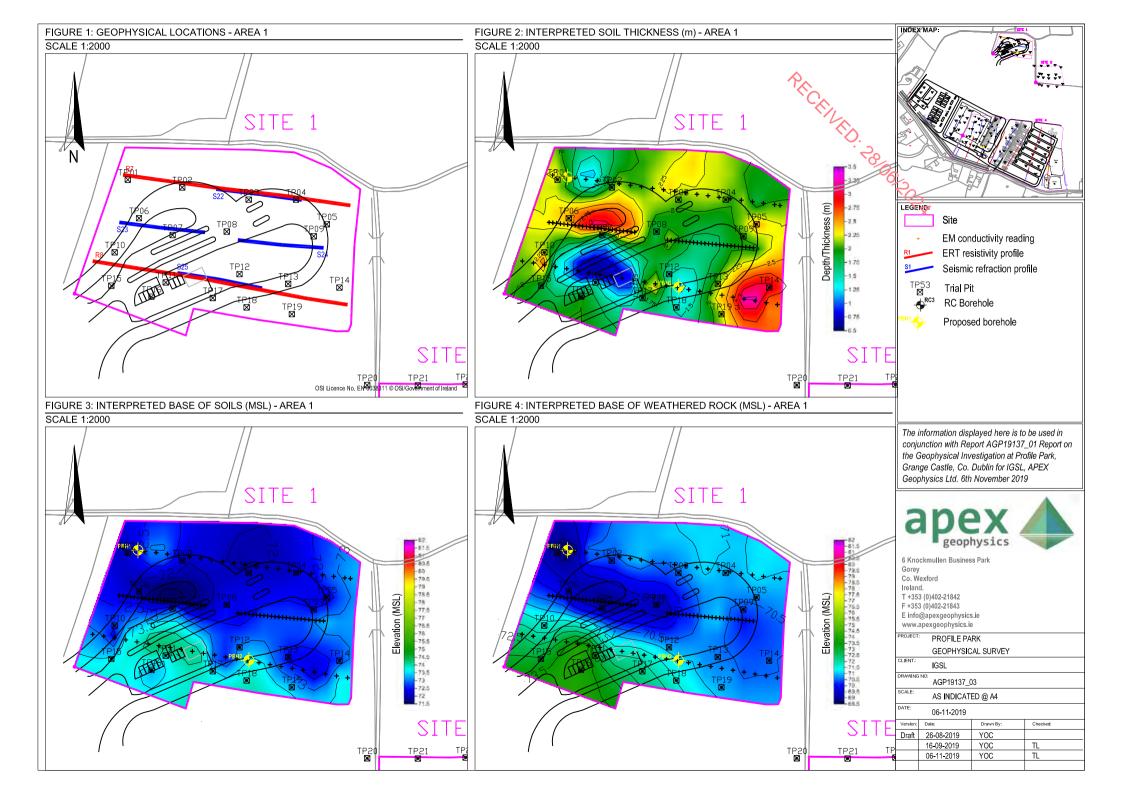
APPENDIX C: DRAWINGS

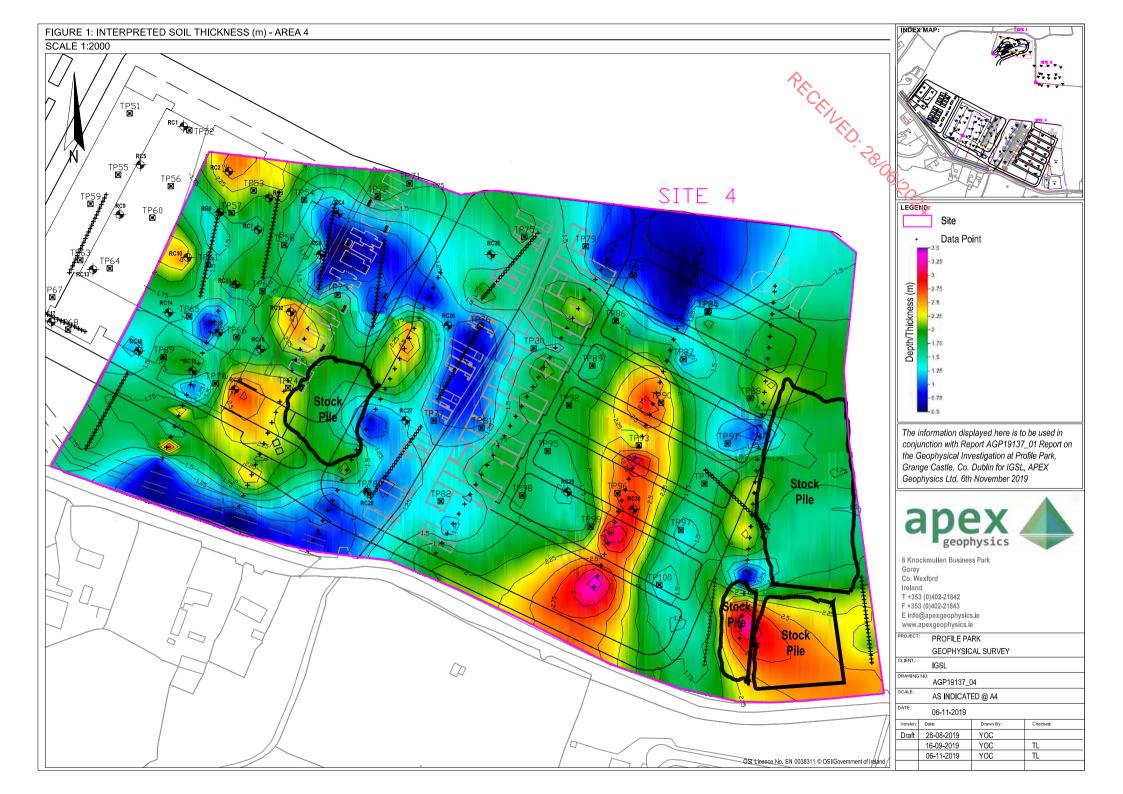
The information derived from the geophysical investigation as well as correlation with the available direct investigation is presented in the following drawings:

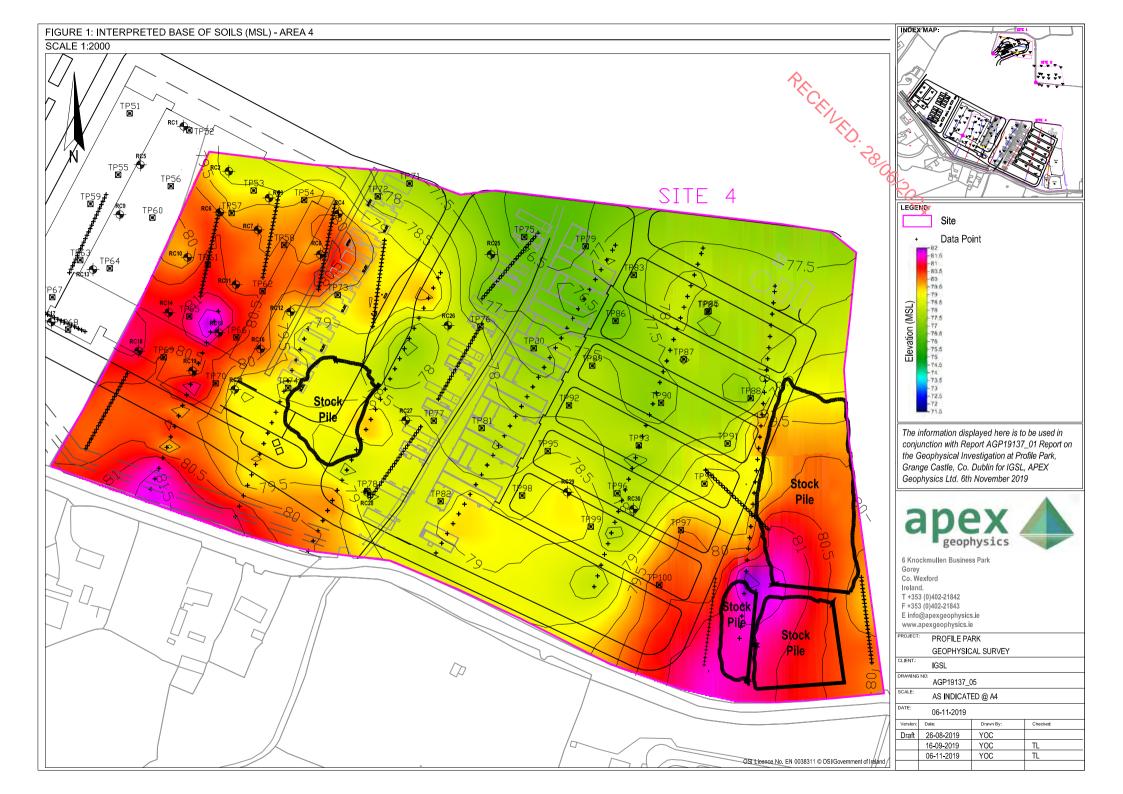
| AGP19137_01 | Geophysical Locations | 1:2500 | @ A3 |
|-------------|---|--------|------|
| AGP19137_02 | EM Conductivity Contours (mS/m) | 1:2500 | @ A3 |
| AGP19137_03 | Figure 1: Geophysical Locations – Area 1 | 1:2000 | @ A4 |
| | Figure 2: Interpreted Soil Thickness (m) – Area 1 | 1:2000 | @ A4 |
| | Figure 3: Interpreted Base of Soils (MSL) – Area 1 | 1:2000 | @ A4 |
| | Figure 4: Interpreted Base of Weathered Rock (MSL) – Area 1 | 1:2000 | @ A4 |
| AGP19137_04 | Interpreted Soil Thickness (m) – Area 4 | 1:2000 | @ A4 |
| AGP19137_05 | Interpreted Base of Soils (MSL) – Area 4 | 1:2000 | @ A4 |
| AGP19137_06 | Interpreted Base of Weathered Rock (MSL) – Area 4 | 1:2000 | @ A4 |
| | | | |
| AGP19137_R1 | Results & Interpretation – ERT R1 | 1:750 | @ A4 |
| AGP19137_R2 | Results & Interpretation – ERT R2 | 1:750 | @ A4 |
| AGP19137_R3 | Results & Interpretation – ERT R3 | 1:1000 | @ A4 |
| AGP19137_R4 | Results & Interpretation – ERT R4 | 1:1000 | @ A4 |
| AGP19137_R5 | Results & Interpretation – ERT R5 | 1:1000 | @ A4 |
| AGP19137_R6 | Results & Interpretation – ERT R6 | 1:1000 | @ A4 |
| AGP19137_R7 | Results & Interpretation – ERT R7 | 1:750 | @ A4 |
| AGP19137_R9 | Results & Interpretation – ERT R8 | 1:750 | @ A4 |

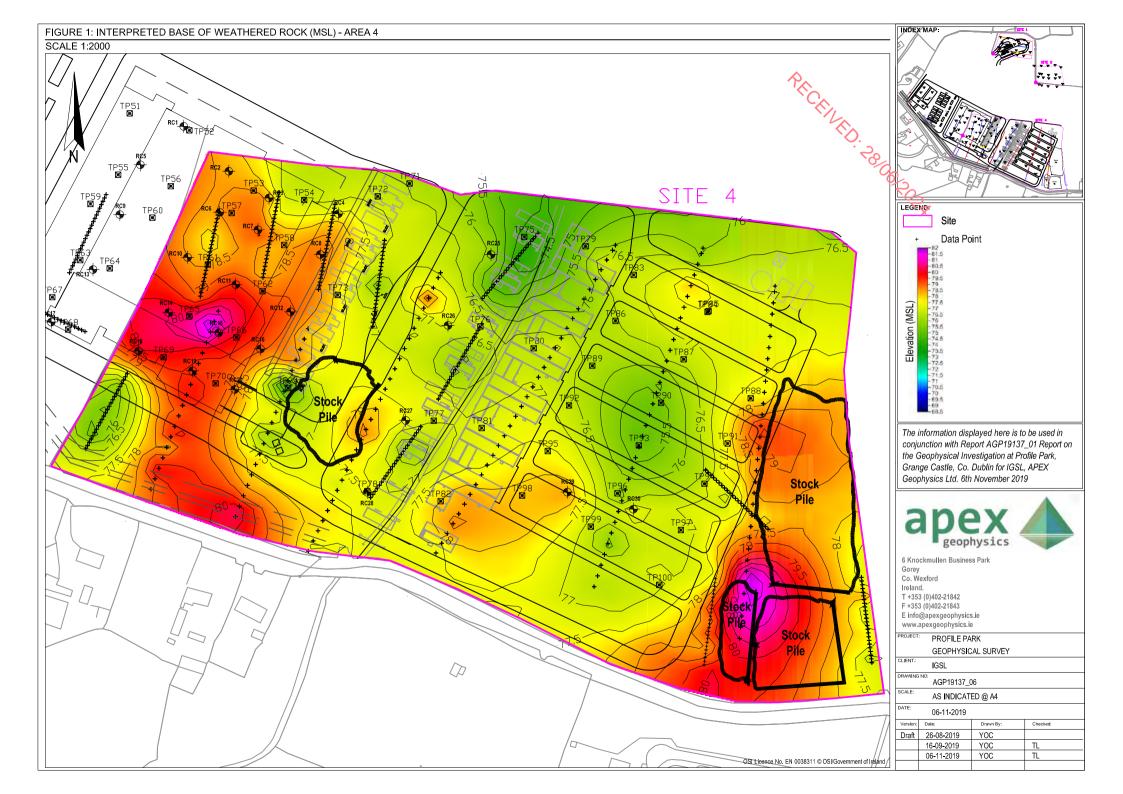




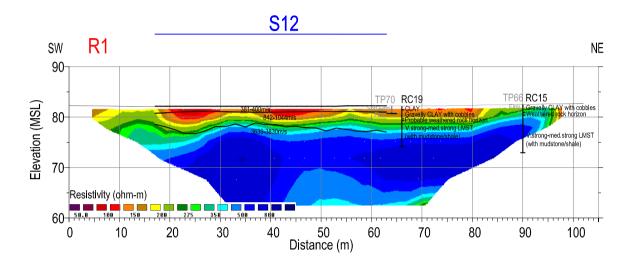


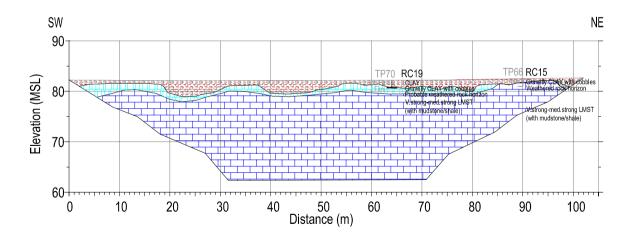


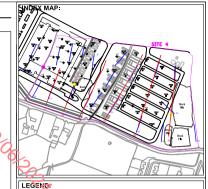




SCALE 1:750







Soft-firm SILT/CLAY

Firm-stiff slightly sandy slightly gravelly silty CLAY Highly -Moderately weathered MUDSTONE

Slightly weathered-Fresh MUDSTONE

Highly-Moderately weathered LIMESTONE/MUDSTONE

Slightly weathered-Fresh LIMESTONE/MUDSTONE

The information displayed here is to be used in conjunction with Report AGP19137_01 Report on the Geophysical Investigation at Profile Park, Grange Castle, Co. Dublin for IGSL, APEX Geophysics Ltd. 6th November 2019



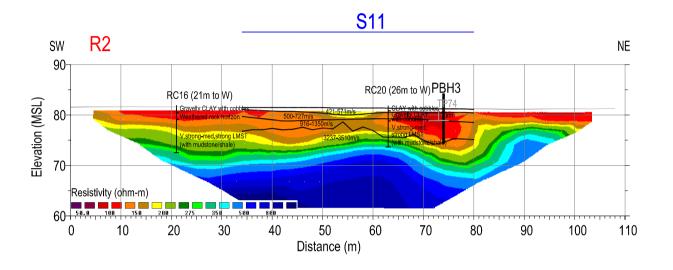
6 Knockmullen Business Park

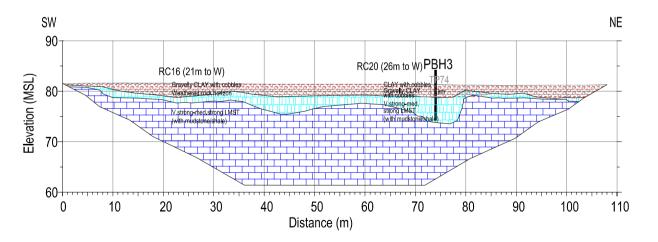
Gorey Co. Wexford Ireland.

T +353 (0)402-21842 F +353 (0)402-21843 E info@apexgeophysics.ie www.apexgeophysics.ie

| PROJECT | PROFILE PA | RK | | | |
|----------------------------|--------------------|-----------|----------|--|--|
| | GEOPHYSICAL SURVEY | | | | |
| IGSL | | | | | |
| DRAWING NO: AGP19137_R1 | | | | | |
| SCALE: AS INDICATED @ A4 | | | | | |
| DATE: | DATE: 06-11-2019 | | | | |
| Version: | Date: | Drawn By: | Checked: | | |
| Draft | 26-08-2019 | YOC | | | |
| | 16-09-2019 | YOC | TL | | |
| | 06-11-2019 | YOC | TL | | |
| | | | | | |

SCALE 1:750







Soft-firm SILT/CLAY

Firm-stiff slightly sandy

slightly gravelly silty CLAY Highly -Moderately weathered MUDSTONE

Slightly weathered-Fresh MUDSTONE

Highly-Moderately weathered LIMESTONE/MUDSTONE

Slightly weathered-Fresh LIMESTONE/MUDSTONE

The information displayed here is to be used in conjunction with Report AGP19137_01 Report on the Geophysical Investigation at Profile Park, Grange Castle, Co. Dublin for IGSL, APEX Geophysics Ltd. 6th November 2019



6 Knockmullen Business Park

Gorey Co. Wexford Ireland.

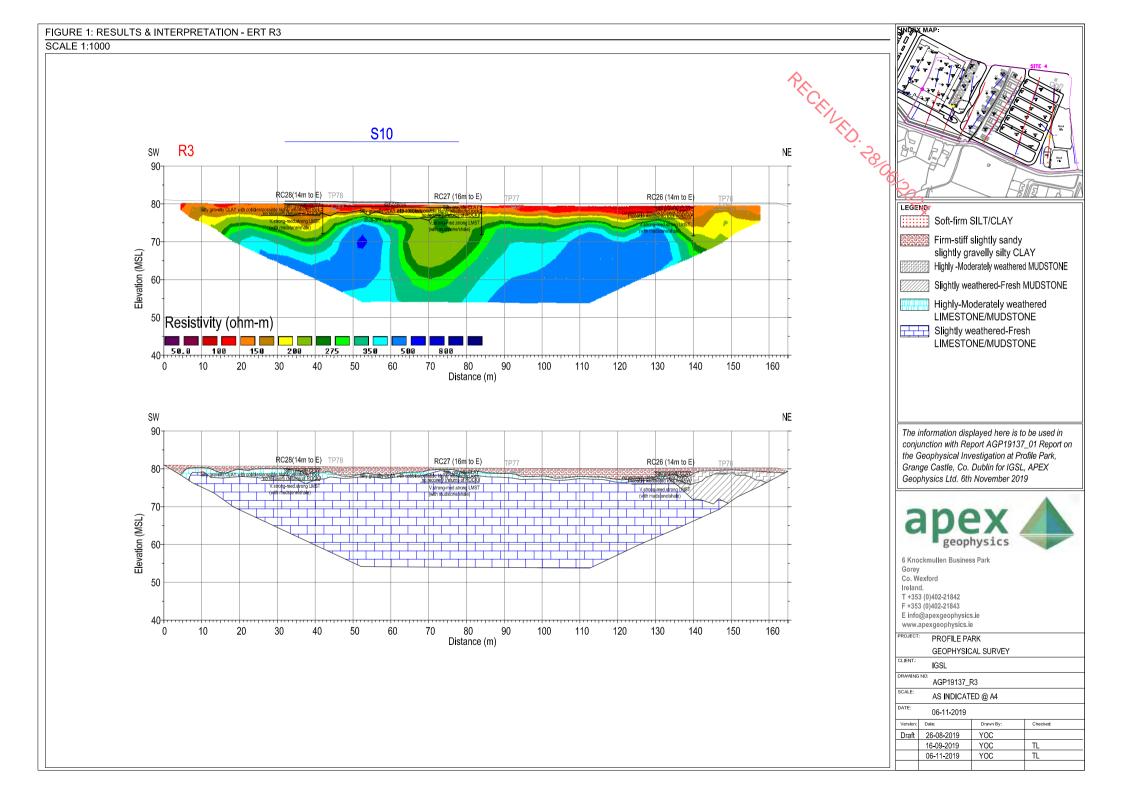
T +353 (0)402-21842 F +353 (0)402-21843 E info@apexgeophysics.ie

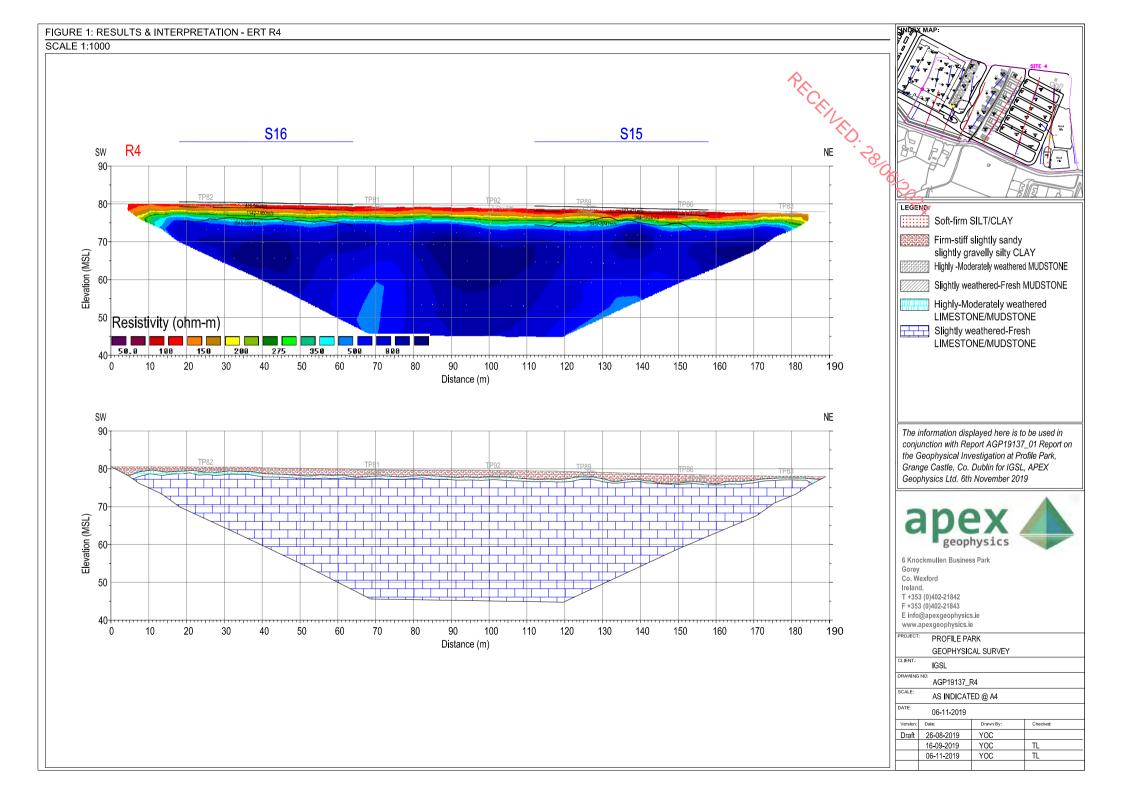
www.apexgeophysics.ie

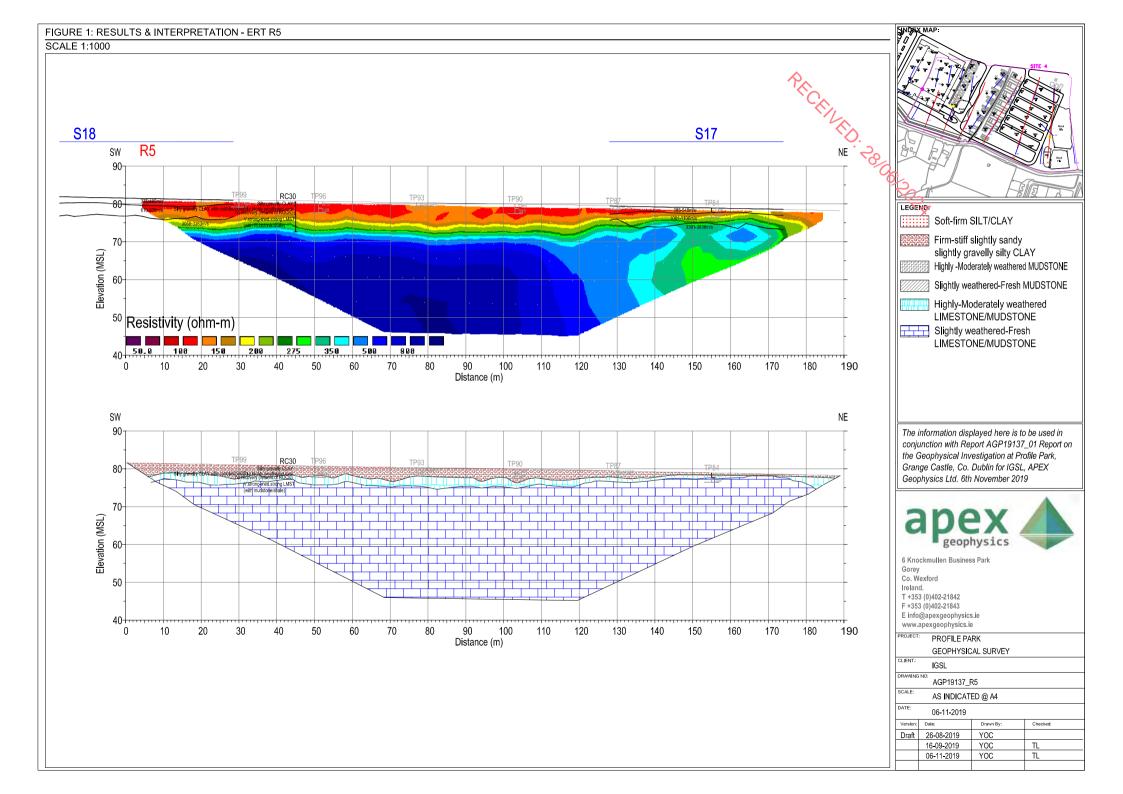
06-11-2019

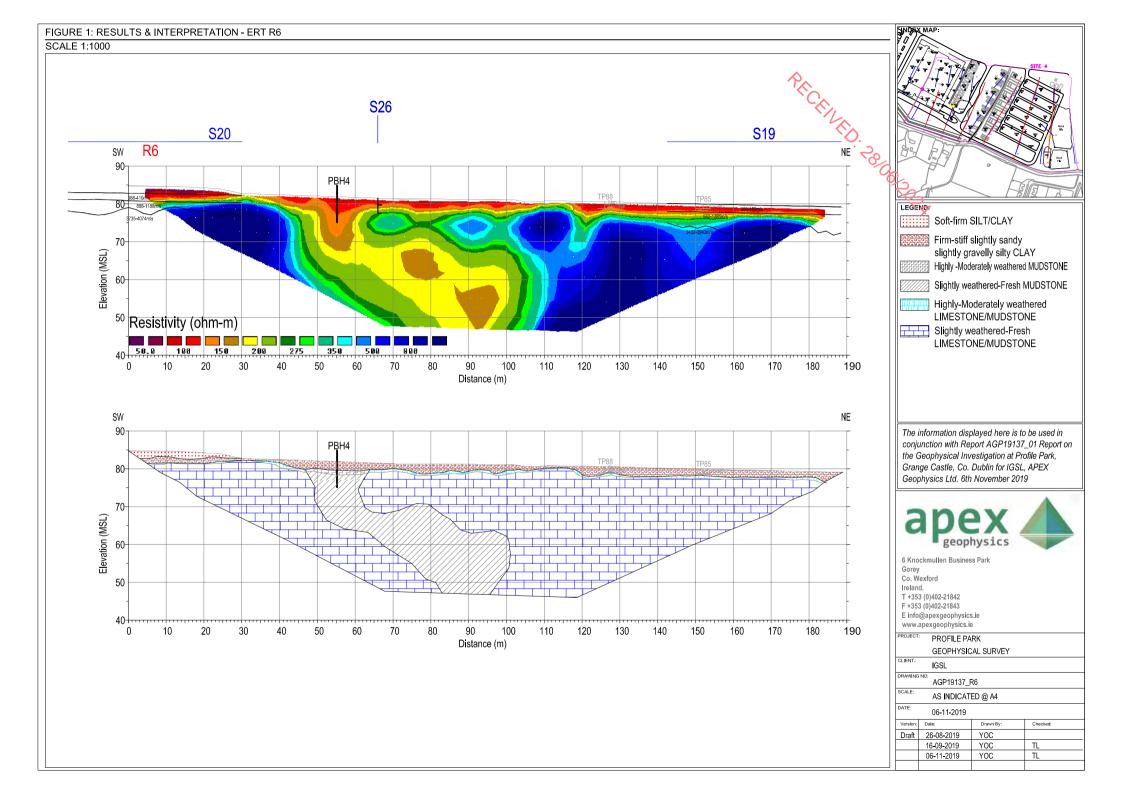
| PROJECT | PROFILE PARK | | | | |
|------------------|----------------------------|-----------|----------|--|--|
| | GEOPHYSICAL SURVEY | | | | |
| CLIENT.: | IGSL | | | | |
| DRAWING | DRAWING NO: AGP19137_R2 | | | | |
| SCALE: | SCALE: AS INDICATED @ A4 | | | | |
| DATE: 06-11-2019 | | | | | |
| Version: | Date: | Drawn By: | Checked: | | |
| Draft | 26-08-2019 | YOC | | | |
| | 16-09-2019 | YOC | TL | | |
| | | | | | |

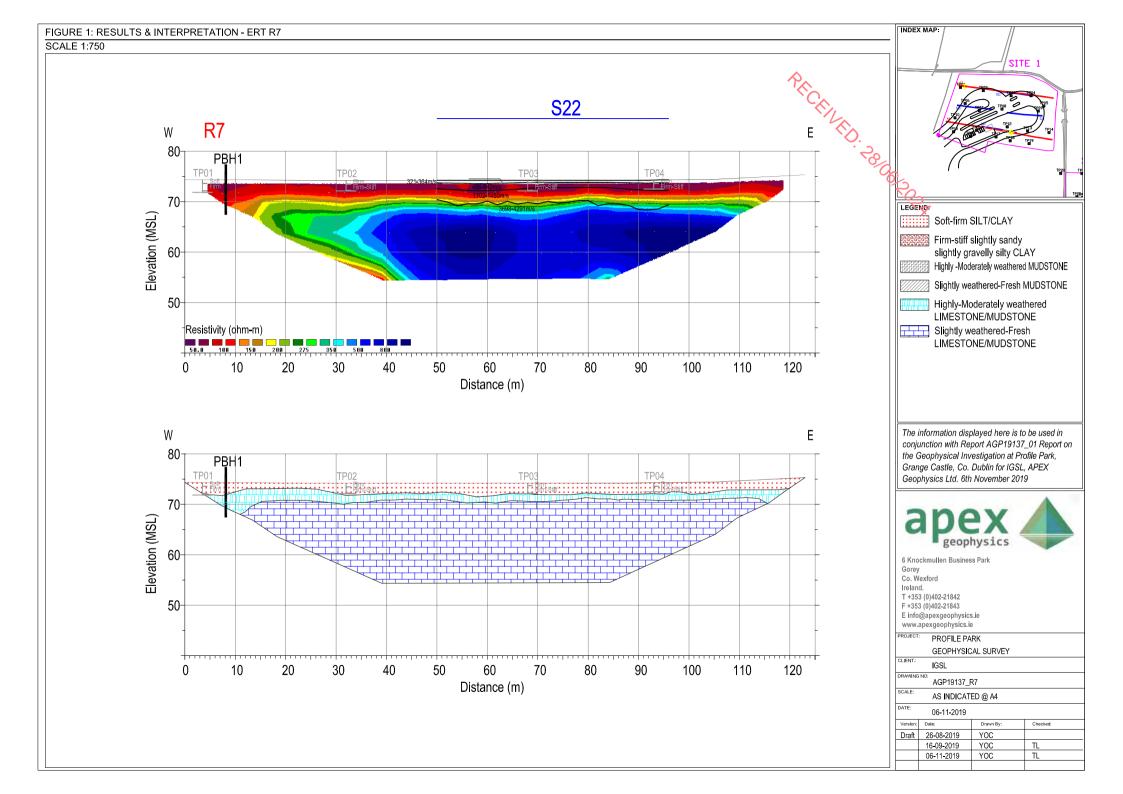
YOC

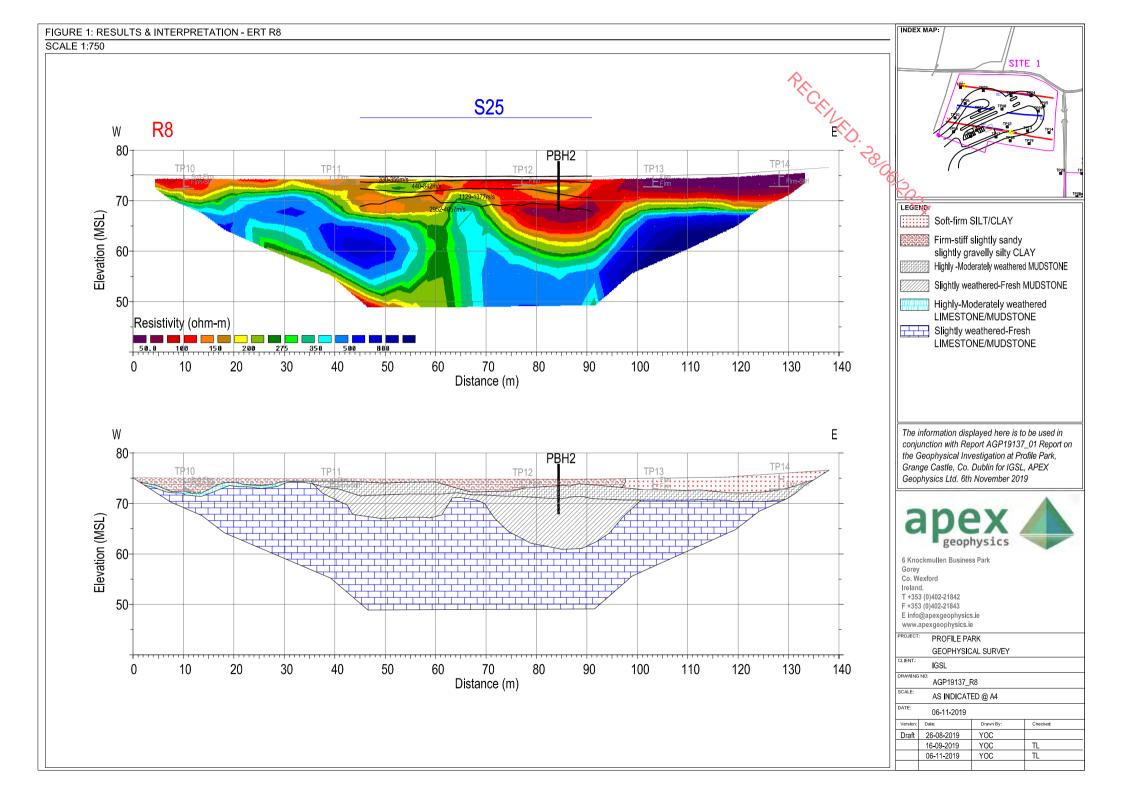












Appendix 10

Simplified Petrographic Records

PRICENED. 28/08/2024

Project No. 22000

Project Location:

Client:

22000

PPK 3 Profile Park

PM Group

Sample Ref No. AA128656

Sample Location: TP42 - 0.30m

Examination & Log by: J. Lawler

Date Logged: 30/10/18



Sheet 1 of 2

Notes on sample preparation & examination: Sample reduced (riffled & quartered) in accordance with IS EN 932-2:1999. Sample examined and classified by IGSL Professional Geologist in accordance with IS EN 14689-1:2004, IS EN 932-3:1997 and IS 398;2013 Part 1, Testing & Categorization Protocol Sample examined with hand lens and bionocular microscope.

Bulk Sample



Sample Description

Sample consists of metamorphosed sandstone, sandy limestone and concrete with fine grained grey coatings. No evidence of mineralogical changes, encrustations (e.g. gypsum) or calcareous mudstone. Sample in a dry state.

Riffled & Quartered Sub-Sample



Washed Fragments Sub-Sample Characteristics

Particle Sizes Estimation (mm):

J. Lawler BSc MSc P Geo

| Max | Mean | Min. |
|-----|------|------|
| 80 | 20 | 10 |
| | | |

Particle Shape:

Angular to subrounded

Nature of Fines:

Grey, silt or clay size

Nature of Coatings:

Grey, fine sand & silt / clay size

Image of Washed Fragments



Assessed Rock Types (lithologies) in Bulk Sample

| Assessed Rock Types (lithologies) in Bulk Sample | | | | |
|--|--|--|--|--|
| % Present | | | | |
| 50% | | | | |
| 35% | | | | |
| 15% | | | | |
| | | | | |
| | | | | |

| Project No. 22000 | | SIMPLIFIED PETROLOGY [®] | | | | Sheet 2 of 2 |
|--|--|--|----------------------------|--|-----------|---|
| ROCK Type 1 Dominant Particle size: Colour: Strength: Apparent Porosity / Water Absorption: Reaction to dilute HCL (Dry Sample): Presence of Laminations in hand specimen Surface Coatings Staining Secondary Mineral Present Carbonate Mineralisation Sulphate Mineralisation | YES YES YES YES YES YES | Metamorphosed Sandstone 10-80mm Blueish grey Very strong Low N/A | NO NO NO NO NO | | PROBINED. | If YES, Laminar Spacing Clay/silt Local Slight Iron-Oxide |
| ROCK Type 2 Dominant Particle size: Colour: Strength: Apparent Porosity / Water Absorption: Reaction to dilute HCL (Dry Sample): Presence of Laminations in hand specimen Surface Coatings Staining Secondary Mineral Present Carbonate Mineralisation Sulphate Mineralisation | YES YES YES YES YES YES | Sandy Limestone 10-60mm Blueish grey Very strong Low Strong | NO NO NO NO NO | | | If YES, Laminar Spacing Clay/silt Local Slight Iron-Oxide |
| ROCK Type 3 Dominant Particle size: Colour: Strength: Apparent Porosity / Water Absorption: Reaction to dilute HCL (Dry Sample): Presence of Laminations in hand specimen Surface Coatings Staining Secondary Mineral Present Carbonate Mineralisation Sulphate Mineralisation | YES YES YES YES YES YES | | NO NO NO NO NO | | | If YES, Laminar Spacing |
| Selected Microscopy Images | | | | | | |

Examination & Log by:

Project No. 22000

Project Location:

PPK 3 Profile Park

Client: PM Group Sample Ref No. AA128665

Sample Location: TP48 - 0.50m

Date Logged: 30/10/18

Notes on sample preparation & examination: Sample reduced (riffled & quartered) in accordance with IS EN 932-2:1999. Sample examined and classified by IGSL Professional Geologist in accordance with IS EN 14689-1:2004, IS EN 932-3:1997 and IS 398;2013 Part 1, Testing & Categorization Protocol. Sample examined with hand lens and bionocular microscope.

Bulk Sample



Sample Description

Samplebconsists of metamorphosed sandstone, sandy limestone and concrete with fine grained grey coatings. No evidence of mineralogical changes, encrustations (e.g. gypsum) or calcareous mudstone. Sample in a dry state.

Riffled & Quartered Sub-Sample



Washed Fragments Sub-Sample Characteristics

Particle Sizes Estimation (mm):

J. Lawler BSc MSc P Geo

| Max | Mean | Min. |
|-----|------|------|
| 180 | 10 | 10 |
| | | |

Particle Shape:

Angular to subrounded

Nature of Fines:

Grey, silt or clay size

Nature of Coatings:

Grey, fine sand & silt / clay size

Image of Washed Fragments



| | Assessed Rock Types (lithologies) | in Bulk Sample |
|---|--|----------------|
| | Rock Types | % Present |
| - | Type 1: Metamorphosed Sandstone | 50% |
| | Type 2: Sandy Limestone | 40% |
| | (Type 3: Concrete) | 10% |
| | | |
| l | Note: Rock types and proportions assessed by | |

| Project No. 22000 | | SIMPLIFIED PETROLOGY [®] | | | Sheet 2 of 2 | |
|--|--|--|----------------------------------|--|--------------|---|
| ROCK Type 1 Dominant Particle size: Colour: Strength: Apparent Porosity / Water Absorption: Reaction to dilute HCL (Dry Sample): Presence of Laminations in hand specimen Surface Coatings Staining Secondary Mineral Present Carbonate Mineralisation Sulphate Mineralisation | YES YES YES YES YES YES | Metamorphosed Sandstone 10-80mm Blueish grey Very strong Low N/A | NO NO NO NO NO NO | | PRCRIVED. | If YES, Laminar Spacing Clay/silt Local Slight Iron-Oxide |
| ROCK Type 2 Dominant Particle size: Colour: Strength: Apparent Porosity / Water Absorption: Reaction to dilute HCL (Dry Sample): Presence of Laminations in hand specimen Surface Coatings Staining Secondary Mineral Present Carbonate Mineralisation Sulphate Mineralisation | YES YES YES YES YES YES | Sandy Limestone 10-180mm Blueish grey Very strong Low Strong | NO NO NO NO NO | | | If YES, Laminar Spacing Clay/silt Local Slight Iron-Oxide |
| ROCK Type 3 Dominant Particle size: Colour: Strength: Apparent Porosity / Water Absorption: Reaction to dilute HCL (Dry Sample): Presence of Laminations in hand specimen Surface Coatings Staining Secondary Mineral Present Carbonate Mineralisation Sulphate Mineralisation | YES YES YES YES YES YES | | NO NO NO NO NO | | | If YES, Laminar Spacing |
| Selected Microscopy Images | | | | | | |

Project No. 22000

Project Location: PPK 3 Profile Park

Client: PM Group

Sample Ref No. AA128672
Sample Location: TP52 - 0.30m

Examination & Log by: J. Lawler BSc MSc P Geo

Date Logged: 30/10/18

Notes on sample preparation & examination: Sample reduced (riffled & quartered) in accordance with IS EN 932-2:1999. Sample examined and classified by IGSL Professional Geologist in accordance with IS EN 14689-1:2004, IS EN 932-3:1997 and IS 398;2013 Part 1, Testing & Categorization Protocol: Sample examined with hand lens and bionocular microscope.





Sample Description

Sample consists of metamorphosed sandstone, sandy limestone and green sandstone with fine grained grey coatings. No evidence of mineralogical changes, encrustations (e.g. gypsum) or calcareous mudstone. Sample in a dry state.

Riffled & Quartered Sub-Sample



Washed Fragments Sub-Sample Characteristics

Particle Sizes Estimation (mm):

| Max | Mean | Min. |
|-----|------|------|
| 80 | 15 | 10 |
| | | |

Particle Shape:

Angular to subrounded

Nature of Fines:

Grey, silt or clay size

Nature of Coatings:

Grey, fine sand & silt / clay size

Image of Washed Fragments

Transferration of



Assessed Rock Types (lithologies) in Bulk Sample

| Assessed Nock Types (Inflologies) in Bulk Cample | | | | | |
|--|--|--|--|--|--|
| % Present | | | | | |
| 35% | | | | | |
| 40% | | | | | |
| 25% | | | | | |
| | | | | | |
| | | | | | |

| Project No. 22000 | | SIMPLIFIED PETROLOGY® | | | Sheet 2 of 2 | |
|--|-----|-------------------------|----|------------------------|--------------|------------------------------------|
| ROCK Type 1 | | Metamorphosed Sandstone | | | | |
| Dominant Particle size: | | 10-60mm | | | | |
| Colour: | | Blueish grey | | | PA | |
| Strength: | | Very strong | | | `C | |
| Apparent Porosity / Water Absorption: | | Low | | | 1/2 | |
| Reaction to dilute HCL (Dry Sample): | | N/A | | | % . | |
| Presence of Laminations in hand specimen | YES | П | NO | \boxtimes | | If YES, Laminar Spacing Clay/silt |
| Surface Coatings | YES | \boxtimes | NO | 一 | | Clay/silt |
| Staining | YES | \boxtimes | NO | 一 | | Local Slight Iron-Oxide |
| Secondary Mineral Present | YES | | NO | $\overline{\boxtimes}$ | | 20041 011311 11011 021140 |
| Carbonate Mineralisation | YES | Ä | NO | \boxtimes | | |
| Sulphate Mineralisation | YES | | NO | \boxtimes | | |
| | | | | | | |
| ROCK Type 2 | | Sandy Limestone | | | | |
| Dominant Particle size: | | 10-80mm | | | | |
| Colour: | | Blueish grey | | | | |
| Strength: | | Very strong | | | | |
| Apparent Porosity / Water Absorption: | | Low | | | | |
| Reaction to dilute HCL (Dry Sample): | | Strong | | | | |
| Presence of Laminations in hand specimen | YES | | NO | \boxtimes | | If YES, Laminar Spacing |
| Surface Coatings | YES | \boxtimes | NO | | | Clay/silt |
| Staining | YES | \boxtimes | NO | | | Local Slight Iron-Oxide |
| Secondary Mineral Present | YES | | NO | \boxtimes | | |
| Carbonate Mineralisation | YES | | NO | \boxtimes | | |
| Sulphate Mineralisation | YES | | NO | \boxtimes | | |
| DOOK T | | One of One date of | | | | |
| ROCK Type 3 | | Green Sandstone | | | | |
| Dominant Particle size: | | 10-60mm | | | | |
| Colour: | | Greenish grey | | | | |
| Strength: | | Strong | | | | |
| Apparent Porosity / Water Absorption: | | Low | | | | |
| Reaction to dilute HCL (Dry Sample): | | N/A | | | | If VEC Laminar Chasing |
| Presence of Laminations in hand specimen | | | | ∇ | | If YES, Laminar Spacing |
| i · | YES | | NO | | | 01/!! |
| Surface Coatings | YES | | NO | | | Clay/silt |
| Staining | YES | | NO | | | Local Slight Iron-Oxide |
| Secondary Mineral Present | YES | | NO | | | |
| Carbonate Mineralisation | YES | | NO | | | |
| Sulphate Mineralisation | YES | | NO | \boxtimes | | |
| Selected Microscopy Images | | | | | | |
| | | | | | | |
| | | | | | | |
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| | | | | | | |

Project No. 22000

Project Location:

PPK 3 Profile Park

examined with hand lens and bionocular microscope.

Client: PM Group

Sample Ref No. AA123621
Sample Location: TP54 - 0.30m

Examination & Log by: J. Lawler BSc MSc P Geo

Date Logged: 30/10/18

Notes on sample preparation & examination: Sample reduced (riffled & quartered) in accordance with IS EN 932-2:1999. Sample examined and classified by IGSL Professional Geologist in accordance with IS EN 14689-1:2004, IS EN 932-3:1997 and IS 398;2013 Part 1, Testing & Categorization Protocol: Sample





Sample consists of muddy limestone & sandy limestone with fine grained grey/brown coatings. No mineralogical changes, encrustations (e.g. gypsum) or calcareous mudstone. Sample in a dry state.

Riffled & Quartered Sub-Sample

Washed Fragments Sub-Sample Characteristics

Particle Sizes Estimation (mm):

| Max | Mean | Min. |
|-----|------|------|
| 120 | 25 | 10 |
| | | |

Particle Shape:

Angular to subrounded

Nature of Fines:

Grey/brown, silt or clay size

Nature of Coatings:

Grey/brown, fine sand & silt / clay size

Image of Washed Fragments



Assessed Rock Types (lithologies) in Bulk Sample

| Rock Types | % Present | | |
|-------------------------|-----------|--|--|
| Type 1: Muddy Limestone | 60% | | |
| Type 2: Sandy Limestone | 40% | | |
| | | | |
| | | | |

| Project No. 22000 | | GEOLOGICAL CLASSIFICATION / SIMPLIFIED PETROLOGY © | | | | Sheet 2 of 2 |
|---|--|--|----------------------------|----------|----------------|---|
| ROCK Type 1 Dominant Particle size: Colour: Strength: Apparent Porosity / Water Absorption: Reaction to dilute HCL (Dry Sample): Presence of Laminations in hand specimen | | Muddy Limestone / Arg 10-90mm Dark grey/black Strong Moderate Low | | ™ | P.E.C.E.N.E.D. | If YES, Laminar Spacing Clay/silt |
| Surface Coatings Staining Secondary Mineral Present Carbonate Mineralisation Sulphate Mineralisation | YES YES YES YES YES YES YES | | NO NO NO NO NO | | | Clay/silt Sparite |
| ROCK Type 2 Dominant Particle size: Colour: Strength: Apparent Porosity / Water Absorption: Reaction to dilute HCL (Dry Sample): Presence of Laminations in hand specimen Surface Coatings Staining Secondary Mineral Present Carbonate Mineralisation Sulphate Mineralisation | YES YES YES YES YES YES | Sandy Limestone 10-120mm Blueish grey Very strong Low Strong | NO NO NO NO NO | | | If YES, Laminar Spacing Clay/silt Local Slight Iron-Oxide |
| ROCK Type 3 Dominant Particle size: Colour: Strength: Apparent Porosity / Water Absorption: Reaction to dilute HCL (Dry Sample): Presence of Laminations in hand specimen Surface Coatings Staining Secondary Mineral Present Carbonate Mineralisation Sulphate Mineralisation | YES YES YES YES YES YES | | NO NO NO NO NO | | | If YES, Laminar Spacing |
| Selected Microscopy Images | | | | | | |

Project No. 22000

Project Location: PPK 3 Profile Park

Client: PM Group

Sample Ref No. AA128667
Sample Location: TP55 - 0.20m

Examination & Log by: J. Lawler BSc MSc P Geo

Date Logged: 30/10/18



Notes on sample preparation & examination: Sample reduced (riffled & quartered) in accordance with IS EN 932-2:1999. Sample examined and classified by IGSL Professional Geologist in accordance with IS EN 14689-1:2004, IS EN 932-3:1997 and IS 398;2013 Part 1, Testing & Categorization Protocol: Sample examined with hand lens and bionocular microscope.

Bulk Sample



Sample Description

Sample consists of metamorphosed sandstone and concrete with fine grained grey/brown coatings. No evidence of mineralogical changes, encrustations (e.g. gypsum) or calcareous mudstone. Sample in a damp state.

Riffled & Quartered Sub-Sample



Washed Fragments Sub-Sample Characteristics

Particle Sizes Estimation (mm):

| Max | Mean | Min. | | | |
|-----|------|------|--|--|--|
| 70 | 20 | 10 | | | |
| | | | | | |

Particle Shape:

Angular to subrounded

Nature of Fines:

Grey/brown, silt or clay size

Nature of Coatings:

Grey/brown, fine sand & silt / clay size

Image of Washed Fragments



Assessed Rock Types (lithologies) in Bulk Sample

| Rock Types | % Present |
|---------------------------------|-----------|
| Type 1: Metamorphosed Sandstone | 80% |
| Type 2: Concrete | 20% |
| | |
| | |

| Project No. 22000 | | | SIMPLIFIED PETROLOGY® | | | | | | |
|--|---------------|--------------------|-----------------------|-------------|------|------------------------------------|--|--|--|
| ROCK Type 1 | ************* | Metamorphosed Sand | stone | | | | | | |
| Dominant Particle size: | | 10-80mm | | | ^ | | | | |
| Colour: | | Blueish grey | | | 750 | | | | |
| Strength: | | Very strong | | | | | | | |
| Apparent Porosity / Water Absorption: | | Low | | | | | | | |
| Reaction to dilute HCL (Dry Sample): | | N/A | | | ``O. |) ICVED Landau Octabe | | | |
| Presence of Laminations in hand specimen | VE0 | | NO | \square | _ | If YES, Laminar Spacing Clay/silt | | | |
| | YES | | NO | | | Clay/silt | | | |
| Surface Coatings | YES YES | \boxtimes | NO NO | | | Local Slight Iron Oxide | | | |
| Staining Secondary Mineral Present | YES | | NO | | | Local Slight Iron-Oxide | | | |
| Carbonate Mineralisation | YES | | NO | \boxtimes | | | | | |
| Sulphate Mineralisation | YES | | NO | \boxtimes | | | | | |
| | | | | | | | | | |
| ROCK Type 2 | | | | | | | | | |
| Dominant Particle size: | | | | | | | | | |
| Colour: | | | | | | | | | |
| Strength: | | | | | | | | | |
| Apparent Porosity / Water Absorption: | | | | | | | | | |
| Reaction to dilute HCL (Dry Sample): | | | | | | If YES, Laminar Spacing | | | |
| Presence of Laminations in hand specimen | YES | | NO | | | ii 120, Lamilai opaoliig | | | |
| Surface Coatings | YES | | NO | | | | | | |
| Staining | YES | | NO | Щ | | | | | |
| Secondary Mineral Present | YES | | NO | | | | | | |
| Carbonate Mineralisation | YES | | NO | | | | | | |
| Sulphate Mineralisation | YES | | NO | | | | | | |
| ROCK Type 3 | | | | | | | | | |
| Dominant Particle size: | | | | | | | | | |
| Colour: | | | | | | | | | |
| Strength: | | | | | | | | | |
| Apparent Porosity / Water Absorption: | | | | | | | | | |
| Reaction to dilute HCL (Dry Sample): | | | | | | | | | |
| Presence of Laminations in hand | | | | | | If YES, Laminar Spacing | | | |
| specimen | YES | | NO | | | | | | |
| Surface Coatings | YES | | NO | | | | | | |
| Staining | YES | | NO | | | | | | |
| Secondary Mineral Present | YES | | NO | | | | | | |
| Carbonate Mineralisation | YES | | NO | | | | | | |
| Sulphate Mineralisation | YES | | NO . | | | | | | |
| Selected Microscopy Images | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
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Project No. 22000

Project Location: PPK 3 Profile Park

Client: PM Group

Sample Ref No. AA123686

Sample Location: TP64 - 0.30m

Examination & Log by: J. Lawler BSc MSc P Geo

ate Logged: 30/10/18

PROPERTY IGSL

Notes on sample preparation & examination: Sample reduced (riffled & quartered) in accordance with IS EN 932-2:1999. Sample examined and classified by IGSL Professional Geologist in accordance with IS EN 14689-1:2004, IS EN 932-3:1997 and IS 398;2013 Part 1, Testing & Categorization Protocol Sample examined with hand lens and bionocular microscope.

Bulk Sample



Sample Description

Sample consists of metamorphosed sandstone and concrete with fine grained grey coatings. No evidence of mineralogical changes, encrustations (e.g. gypsum) or calcareous mudstone. Sample in a dry state.

Riffled & Quartered Sub-Sample



Washed Fragments Sub-Sample Characteristics

Particle Sizes Estimation (mm):

| Max | Mean | Min. | | | | |
|-----|------|------|--|--|--|--|
| 110 | 20 | 10 | | | | |
| | | | | | | |

Particle Shape:

Angular to subrounded

Nature of Fines:

Grey, silt or clay size

Nature of Coatings:

Grey, fine sand & silt / clay size

Image of Washed Fragments



Assessed Rock Types (lithologies) in Bulk Sample

| Rock Types | % Present | | | | |
|---------------------------------|-----------|--|--|--|--|
| Type 1: Metamorphosed Sandstone | 85% | | | | |
| Type 2: Concrete | 15% | | | | |
| | | | | | |
| | | | | | |

| Project No. 22000 | | S | Sheet 2 of 2 | | |
|--|--|---|----------------------------|----------|---|
| ROCK Type 1 Dominant Particle size: Colour: Strength: Apparent Porosity / Water Absorption: Reaction to dilute HCL (Dry Sample): Presence of Laminations in hand specimen Surface Coatings Staining Secondary Mineral Present Carbonate Mineralisation Sulphate Mineralisation | YES YES YES YES YES YES | Metamorphosed Sandstone 10-110mm Blueish grey Very strong Low N/A | NO NO NO NO NO | PECENED. | If YES, Laminar Spacing Clay/silt Local Slight Iron-Oxide |
| ROCK Type 2 Dominant Particle size: Colour: Strength: Apparent Porosity / Water Absorption: Reaction to dilute HCL (Dry Sample): Presence of Laminations in hand specimen Surface Coatings Staining Secondary Mineral Present Carbonate Mineralisation Sulphate Mineralisation | YES YES YES YES YES YES | | NO NO NO NO NO | | If YES, Laminar Spacing |
| ROCK Type 3 Dominant Particle size: Colour: Strength: Apparent Porosity / Water Absorption: Reaction to dilute HCL (Dry Sample): Presence of Laminations in hand specimen Surface Coatings Staining Secondary Mineral Present Carbonate Mineralisation Sulphate Mineralisation | YES YES YES YES YES YES | | NO NO NO NO NO | | If YES, Laminar Spacing |
| Selected Microscopy Images | | | | | |

Project No. 22000

Project Location:

PPK 3 Profile Park

Client: PM Group

Sample Ref No. AA123683
Sample Location: TP67 - 0.20m

Examination & Log by: J. Lawler BSc MSc P Geo

Date Logged: 30/10/18



Notes on sample preparation & examination: Sample reduced (riffled & quartered) in accordance with IS EN 932-2:1999. Sample examined and classified by IGSL Professional Geologist in accordance with IS EN 14689-1:2004, IS EN 932-3:1997 and IS 398;2013 Part 1, Testing & Categorization Protocol: Sample examined with hand lens and bionocular microscope.

Bulk Sample



Sample Description

Sample consists of metamorphosed sandstone and concrete and clay pipe with fine grained grey/dark brown coatings. No evidence of mineralogical changes, encrustations (e.g. gypsum) or calcareous mudstone. Sample in a damp state.

Riffled & Quartered Sub-Sample



Particle Sizes Estimation (mm):

| Max | Mean | Min. | | | |
|-----|------|------|--|--|--|
| 110 | 20 | 10 | | | |
| | | | | | |



Particle Shape:

Angular to subrounded

Nature of Fines:

Grey/dark brown, silt or clay size

Nature of Coatings:

Grey/dark brown, fine sand & silt / clay size

Image of Washed Fragments



Assessed Rock Types (lithologies) in Bulk Sample

| risesses risen types (mineregises) | |
|------------------------------------|-----------|
| Rock Types | % Present |
| Type 1: Metamorphosed Sandstone | 85% |
| Type 2: Concrete & clay pipe | 60% |
| | |
| | |

| Project No. 22000 | | SIM | Sheet 2 of 2 | | |
|--|--|--|----------------------------|-----------|---|
| ROCK Type 1 Dominant Particle size: Colour: Strength: Apparent Porosity / Water Absorption: Reaction to dilute HCL (Dry Sample): Presence of Laminations in hand specimen Surface Coatings Staining Secondary Mineral Present Carbonate Mineralisation Sulphate Mineralisation | YES YES YES YES YES YES | Metamorphosed Sandstone 10-80mm Blueish grey Very strong Low N/A | NO NO NO NO NO | PRCRIVED. | If YES, Laminar Spacing Clay/silt Local Slight Iron-Oxide |
| ROCK Type 2 Dominant Particle size: Colour: Strength: Apparent Porosity / Water Absorption: Reaction to dilute HCL (Dry Sample): Presence of Laminations in hand specimen Surface Coatings Staining Secondary Mineral Present Carbonate Mineralisation Sulphate Mineralisation | YES YES YES YES YES YES | | NO NO NO NO NO | | If YES, Laminar Spacing |
| ROCK Type 3 Dominant Particle size: Colour: Strength: Apparent Porosity / Water Absorption: Reaction to dilute HCL (Dry Sample): Presence of Laminations in hand specimen Surface Coatings Staining Secondary Mineral Present Carbonate Mineralisation Sulphate Mineralisation | YES YES YES YES YES YES | | NO NO NO NO NO | | If YES, Laminar Spacing |
| Selected Microscopy Images | | | | | |

Appendix 11

Soil Laboratory Test Records

PRICENED. 28/08/2024

IGSL Ltd Materials Laboratory Unit J5, M7 Business Park Newhall, Naas Co. Kildare 045 846176

Test Report

Determination of Moisture Content, Liquid & Plastic Limits



Tested in accordance with BS1377:Part 2:1990, clauses 3.2*, 4.3, 4.4 & 5.3

Report No. R106111 Contract No. 22000 Contract Name: PPK3 Profile Park

Customer PM Group

Samples Received: 19/09/19 Date Tested: 04/10/19

| | | • | • | | | | | | | | | | |
|--------------------|--------------|----------------|----------|--------|--------------|----------------|---------|------------|--------|-------------|--------------|----------------------------|--|
| BH/TP | Sample No. | Depth (m) | Lab. Ref | Sample | Moisture | Liquid | Plastic | Plasticity | % | Preparation | Liquid Limit | Classification (BS5930) | Description |
| | | | | Type | Content % | Limit % | Limit % | Index | <425µm | | Clause | (000000) | |
| Substation (Opt.2) |) | | | | | | | | | | | | |
| TP06 | AA113617 | 0.5 | A19/4342 | В | 25 | 41 | 20 | 21 | 87 | WS | 4.4 | СІ | Grey/brown slightly sandy, slightly gravelly, CLAY |
| TP09 | AA128699 | 0.6 | A19/4343 | В | 40 | 48 | NP | NP | 82 | WS | 4.4 | | Grey/brown slightly sandy, slightly gravelly, SILT |
| TP12 | AA113621 | 1.0 | A19/4344 | В | 28 | 42 | 22 | 20 | 87 | WS | 4.4 | СІ | Brown slightly sandy, slightly gravelly, CLAY |
| TP15 | AA113630 | 0.6 | A19/4345 | В | 21 | 46 | 24 | 22 | 64 | WS | 4.4 | СІ | Brown slightly sandy, slightly gravelly, CLAY |
| TP19 | AA113640 | 0.6 | A19/4346 | 0 | 29 | 45 | 23 | 22 | 78 | WS | 4.4 | СІ | Brown slightly sandy, slightly gravelly, CLAY |
| TP19 | AA113641 | 1.3 | A19/4347 | В | 22 | 42 | 22 | 20 | 67 | WS | 4.4 | СІ | Brown sandy, slightly gravelly, CLAY |
| Substation (Opt.1) |) | | | | | | | | | | | | |
| TP40 | AA128659 | 1.3 | A19/4386 | В | 8.9 | 30 | 19 | 11 | 33 | WS | 4.4 | CL | Mottled brown slightly sandy, gravelly, CLAY with many cobbles |
| TP41 | AA128653 | 1.0 | A19/4352 | В | 27 | 42 | 22 | 20 | 75 | WS | 4.4 | СІ | Grey/brown slightly sandy, slightly gravelly, CLAY |
| TP43 | AA123700 | 0.6 | A19/4354 | В | 18 | 42 | 19 | 23 | 75 | WS | 4.4 | СІ | Brown slightly sandy, slightly gravelly, CLAY |
| Fuelling Station | | | | | | | | | | | | | |
| TP47 | AA128666 | 1.4 | A19/4357 | В | 18 | 39 | 24 | 15 | 62 | WS | 4.4 | СІ | Brown slightly sandy, slightly gravelly, CLAY |
| TP48 | AA128666 | 1.2 | A19/4359 | В | 16 | 32 | NP | NP | 46 | WS | 4.4 | | Brown slightly sandy, slightly gravelly, SILT |
| TP49 | AA123695 | 0.6 | A19/4360 | В | 40 | 49 | 23 | 26 | 96 | WS | 4.4 | СІ | Grey/brown slightly sandy, slightly gravelly, CLAY |
| Notes: | Preparation: | WS - Wet sieve | ed | | Sample Type: | B - Bulk Distu | ırbed | Remarks: | | | - | | |

H Byrne (Laboratory Manager)

AR - As received

U - Undisturbed

NP - Non plastic

Results apply to the sample as received.

Liquid Limit 4.3 Cone Penetrometer definitive method Clause: 4.4 Cone Penetrometer one point method NOTE: *Clause 3.2 of BS1377 is a "withdrawn" standard due to publication of ISO17892-1:2014

Opinions and interpretations are outside the scope of accreditation.

The results relate to the specimens tested. Any remaining material will be retained for one month. Approved by

IGSL Ltd Materials Laboratory

Persons authorized to approve reports

A Byene

Date 05/11/19

1 of 1

Page

IGSL Ltd Materials Laboratory Unit J5, M7 Business Park Newhall, Naas Co. Kildare 045 846176

Test Report

Determination of Moisture Content, Liquid & Plastic Limits



Tested in accordance with BS1377:Part 2:1990, clauses 3.2*, 4.3, 4.4 & 5.3

Report No. R106112 Contract No. 22000 Contract Name: PPK3 Profile Park

Customer PM Group

Samples Received: 19/09/19 Date Tested: 04/10/19

| BH/TP | Sample No. | Depth (m) | Lab. Ref | Sample Type | Moisture Content % | Liquid Limit % | Plastic Limit % | Plasticity Index | % <425µm | Preparation | Liquid Limit Clause | Classification (BS5930) | Description |
|-------------|------------|-----------|----------|----------------|-----------------------|-------------------|--------------------|---------------------|-------------|-------------|------------------------|----------------------------|---|
| Data Centre | | | | | | | | | • | | | | |
| TP52 | AA128673 | 0.7 | A19/4362 | В | 32 | 50 | 25 | 25 | 84 | WS | 4.4 | СІ | Brown slightly sandy, slightly gravelly, CLAY |
| TP54 | AA123622 | 0.8 | A19/4364 | В | 3.8 | 39 | NP | NP | 17 | WS | 4.4 | | Grey/brown silty, sandy, GRAVEL |
| TP57 | AA123651 | 0.5 | A19/4367 | В | 7.8 | 36 | 20 | 16 | 36 | WS | 4.4 | СІ | Brown slightly sandy, gravelly, CLAY with some cobbles |
| TP57 | AA123653 | 1.0 | A19/4368 | 0 | 16 | 29 | 19 | 10 | 43 | WS | 4.4 | CL | Brown slightly sandy, gravelly, CLAY with many cobbles |
| TP59 | AA123692 | 0.6 | A19/4369 | В | 19 | 31 | NP | NP | 70 | WS | 4.4 | | Brown slightly sandy, gravelly, SILT |
| TP61 | AA123611 | 0.4 | A19/4371 | В | 24 | 46 | 23 | 23 | 78 | WS | 4.4 | СІ | Brown slightly sandy, slightly gravelly, CLAY |
| TP62 | AA123617 | 1.0 | A19/4372 | В | 3.7 | 40 | NP | NP | 20 | WS | 4.4 | | Brown silty, sandy, GRAVEL with some cobbles |
| TP64 | AA123687 | 1.0 | A19/4373 | В | 11 | 36 | 19 | 17 | 45 | WS | 4.4 | СІ | Brown slightly sandy, gravelly, CLAY with many cobbles |
| TP66 | AA123601 | 0.5 | A19/4374 | В | 11 | 41 | 22 | 19 | 36 | WS | 4.4 | СІ | Brown clayey, sandy, GRAVEL with some cobbles |
| TP66 | AA123602 | 1.4 | A19/4375 | В | 2.9 | 42 | 20 | 22 | 13 | WS | 4.4 | СІ | Brown slightly clayey, slightly sandy, GRAVEL with many cobbles |
| TP69 | AA123605 | 0.5 | A19/4378 | В | 7.6 | 44 | 21 | 23 | 45 | WS | 4.4 | СІ | Brown clayey, sandy, GRAVEL with some cobbles |
| TP69 | AA123607 | 1.5 | A19/4379 | В | 6.9 | 39 | 20 | 19 | 62 | WS | 4.4 | СІ | COBBLES with brown slightly sandy, gravelly, clay |
| TP70 | AA123603 | 0.8 | A19/4380 | В | 8.5 | 35 | 20 | 15 | 57 | WS | 4.4 | CL | Grey/brown clayey, sandy, GRAVEL with many cobbles |
| TP73 | AA123676 | 0.5 | A19/4383 | В | 26 | 48 | 24 | 24 | 79 | WS | 4.4 | СІ | Brown slightly sandy, slightly gravelly, CLAY |

Notes: Preparation: WS - Wet sieved Sample Type: B - Bulk Disturbed Remarks:

AR - As received U - Undisturbed Results apply to the sample as received.

NP - Non plastic

NOTE: *Clause 3.2 of BS1377 is a "withdrawn" standard due to publication of ISO17892-1:2014 Opinions and interpretations are outside the scope of accreditation. Liquid Limit 4.3 Cone Penetrometer definitive method

Clause: 4.4 Cone Penetrometer one point method The results relate to the specimens tested. Any remaining material will be retained for one month. Persons authorized to approve reports

IGSL Ltd Materials Laboratory

H Byrne (Laboratory Manager)

Approved by Date Page 05/11/19 1 of 1

R106112.PIB.xls Tmp: Pl.II Rev 02/10

IGSL Ltd Materials Laboratory Unit J5, M7 Business Park Newhall, Naas Co. Kildare 045 846176

Test Report

Determination of Moisture Content, Liquid & Plastic Limits



Tested in accordance with BS1377:Part 2:1990, clauses 3.2*, 4.3, 4.4 & 5.3

Report No. R106113 Contract No. 22000 Contract Name: PPK3 Profile Park

Customer PM Group

Samples Received: 19/09/19 Date Tested: 04/10/19

| BH/TP | Sample No. | Depth (m) | Lab. Ref | Sample Type | Moisture Content % | Liquid Limit % | Plastic Limit % | Plasticity Index | % <425µm | Preparation | Liquid Limit Clause | Classification (BS5930) | Description |
|---------------|------------|-----------|----------|----------------|-----------------------|-------------------|--------------------|---------------------|-------------|-------------|------------------------|----------------------------|---|
| TP74 | AA123628 | 0.7 | A19/4385 | В | 9.8 | 35 | 19 | 16 | 44 | WS | 4.4 | CL | Brown slightly sandy, very gravelly, CLAY with many cobbles |
| TP74 | AA123629 | 1.5 | A19/4386 | В | 13 | 37 | 21 | 16 | 38 | WS | 4.4 | СІ | Brown slightly sandy, gravelly, CLAY with many cobbles |
| CUB (Gen & DC | | | | | | | | | | | | | |
| TP76 | AA123635 | 0.7 | A19/4387 | В | 26 | 51 | NP | NP | 88 | WS | 4.4 | | Brown slightly sandy, slightly gravelly, SILT with many cobbles |
| TP78 | AA123679 | 0.8 | A19/4389 | В | 8.0 | 32 | NP | NP | 57 | WS | 4.4 | | Grey/brown silty, sandy, GRAVEL with many cobbles |
| TP80 | AA113555 | 0.5 | A19/4391 | В | 17 | 41 | 21 | 20 | 60 | WS | 4.4 | СІ | Brown slightly sandy, gravelly, CLAY |
| TP82 | AA113558 | 0.5 | A19/4392 | В | 15 | 43 | 22 | 21 | 53 | WS | 4.4 | СІ | Grey/brown slightly sandy, gravelly, CLAY |
| TP83 | AA113552 | 1.1 | A19/4393 | В | 15 | 37 | NP | NP | 32 | WS | 4.4 | | Brown sandy gravelly SILT |
| TP87 | AA113582 | 0.6 | A19/4394 | В | 25 | 44 | 23 | 21 | 78 | WS | 4.4 | СІ | Brown slightly sandy, slightly gravelly, CLAY |
| TP89 | AA111367 | 0.6 | A19/4396 | В | 24 | 51 | 24 | 27 | 79 | WS | 4.4 | СН | Brown slightly sandy, slightly gravelly, CLAY |
| TP93 | AA113571 | 0.5 | A19/4397 | В | 20 | 27 | NP | NP | 63 | WS | 4.4 | | Grey slightly sandy, slightly gravelly, SILT |
| TP95 | AA113587 | 1.2 | A19/4398 | В | 21 | 32 | NP | NP | 53 | WS | 4.4 | | Brown sandy, slightly gravelly, SILT with occasional cobbles |
| TP97 | AA113595 | 0.6 | A19/4399 | В | 14 | 40 | 20 | 20 | 46 | WS | 4.4 | СІ | Brown slightly sandy, gravelly, CLAY |
| TP99 | AA113591 | 0.6 | A19/4400 | В | 16 | 43 | 24 | 19 | 58 | WS | 4.4 | СІ | Brown slightly sandy, gravelly, CLAY |
| | | | | | | | | | | | | | |

WS - Wet sieved Notes: Preparation:

AR - As received

U - Undisturbed

Sample Type: B - Bulk Disturbed Remarks:

H Byrne (Laboratory Manager)

NP - Non plastic

Results apply to the sample as received.

Liquid Limit 4.3 Cone Penetrometer definitive method Clause: 4.4 Cone Penetrometer one point method NOTE: *Clause 3.2 of BS1377 is a "withdrawn" standard due to publication of ISO17892-1:2014

Opinions and interpretations are outside the scope of accreditation.

Approved by

The results relate to the specimens tested. Any remaining material will be retained for one month.

IGSL Ltd Materials Laboratory

Persons authorized to approve reports

Bypene

Date Page 05/11/19

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Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5 (note: Sedimentation stage not accredited)



18/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| particle | % | | | Contract No: | 22000 | Report No | . R106347 | | D. 78/06/2024 | |
|----------|---------|------------|---|---|---------------------------------|----------------------------|---|---------------------------------|------------------------------------|---|
| size | passing | | | Contract: | PPK3 Profile | Park | | | 70/ | |
| 75 | 100 | COBBLES | | BH/TP: | TP06 - Subs | tation Opt.2 | <u>)</u> | | 6 | |
| 63 | 100 | CODDLES | | Sample No. | AA113617 | Lab. Samp | ole No. | A19/4342 | ,05 | |
| 50 | 100 | | | Sample Type: | В | | | | * | |
| 37.5 | 100 | | | Depth (m) | 0.50 | Customer | : PM Group | | | |
| 28 | 100 | | | Date Received | 19/09/2019 | 9 Date Test | ing started | 11/10/2019 | | |
| 20 | 100 | | | Description: | Grey/brown | slightly sand | dy, slightly gravelly | , CLAY | | |
| 14 | 100 | GRAVEL | | | | | | | | |
| 10 | 99 | GIVAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have | been superseded by ISO17892-4:2016 . Resu | ts apply to sample as received. | | |
| 6.3 | 98 | | | | | | 5 53 | 1.3 425 1.6 1.8 | Ω. | τύ |
| 5 | 97 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 10 14 20 | 28 37. 50 53 53 |
| 3.35 | 95 | | 100 | | | | | | | |
| 2 | 93 | | 90 | | | | | | | |
| 1.18 | 91 | | 80 | | | | | | | |
| 0.6 | 88 | | <u>%</u> 70 | | | | | | | - |
| 0.425 | 87 | SAND | ig 60 | | | | | | | - |
| 0.3 | 85 | | <u>sa</u> 50 | | | | | | | |
| 0.15 | 79 | | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| 0.063 | 67 | | Sent Cent | | | | | | | |
| 0.037 | 55 | | Per 30 | | | 1111 | | | | |
| 0.027 | 49 | | 20 | | | | | | | |
| 0.017 | 44 | SILT/CLAY | 10 | + | | | | | | |
| 0.010 | 36 | SILTY SEAT | 0 | 1 | | | | | 1 | |
| 0.007 | 31 | | 0.0 | 0.0 | 01 | 0.01 | 0.1 | 1 | 10 | 100 |
| 0.005 | 25 | | | | CLAY | CII T | Sieve eize (mm) | SAND | CDAVEL | |
| 0.002 | 14 | | | | LLAT | SILT | Sieve size (mm) Approved by: | SAND | GRAVEL | |
| | | ICCL I + | | Date: | Page no: | | | | | |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)

| | $T \setminus V_{\mathbf{x}}$ | 150 17025 AB |
|---|------------------------------|-----------------|
| | | TESTING |
| , | DELVITED IN 2004E | REG NO 1331 |

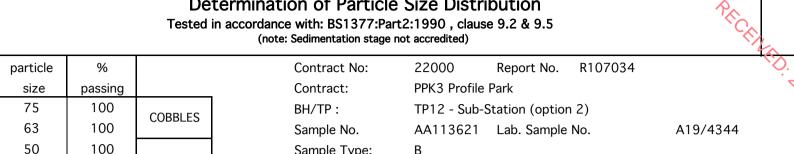
18/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| particle | % | | | Contract No: | 22000 | Report No. | R106348 | | *D. 28/06/2024 | |
|----------|---------|--------------|---|--|--|--------------------------------------|---|-----------------------------|------------------------------------|---------------------|
| size | passing | | _ | Contract: | PPK3 Profile | Park | | | 70 | |
| 75 | 100 | COBBLES | | BH/TP: | TP09 - Subs | tation Opt.2 | | | 6 | |
| 63 | 100 | CODDLLS | | Sample No. | AA128699 | Lab. Sample N | No. | A19/4343 | ,65 | |
| 50 | 100 | | | Sample Type: | В | | | | × | |
| 37.5 | 97 | | | Depth (m) | 0.60 | Customer: | PM Group | | | |
| 28 | 97 | | | Date Received | 19/09/2019 | 9 Date Testing | started | 11/10/2019 | | |
| 20 | 95 | | | Description: | Grey/brown | slightly sandy, s | slightly gravelly, | SILT | | |
| 14 | 93 | GRAVEL | | | | | | | | |
| 10 | 91 | GRAVLL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have been supr | erseded by ISO17892-4:2016 . Results ap | oply to sample as received. | | |
| 6.3 | 88 | | | | | | 5 5 | 8 22 | | 2 |
| 5 | 87 | | | | | | 0.063 | 0.425 0.6 0.6 | 2 3.35 6.3 10 20 28 | 37. 530. 533. |
| 3.35 | 85 | | 100 | | | | | | | |
| 2 | 82 | | 90 | | | | | | | |
| 1.18 | 79 | | _ 80 | | | | | | | |
| 0.6 | 76 | | <u>%</u> 70 | | | | | | | |
| 0.425 | 75 | SAND | is 60 | <u> </u> | | | | | | |
| 0.3 | 73 | | sed 50 | | | | | | | |
| 0.15 | 68 | | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| 0.063 | 58 | | sent 40 | | | | | | | |
| 0.037 | 48 | | 90 30 | 1 | | | | | | |
| 0.027 | 42 | | 20 | † | | | | | | |
| 0.017 | 37 | SILT/CLAY | 10 | + | | | | | | |
| 0.010 | 32 | JIL I / CLAI | 0 | | <u> </u> | | | | <u> </u> | |
| 0.007 | 25 | | 0.0 | 0001 0. | 001 | 0.01 | 0.1 | 1 | 10 | 100 |
| 0.005 | 20 | | | | C/ AV | CU T C | | CAND | CDAL (E) | |
| 0.002 | 10 | | | | CLAY | | ve size (mm) | SAND | GRAVEL | |
| | | | | | | | Approved by: | | Date: | Page no: |

Determination of Particle Size Distribution



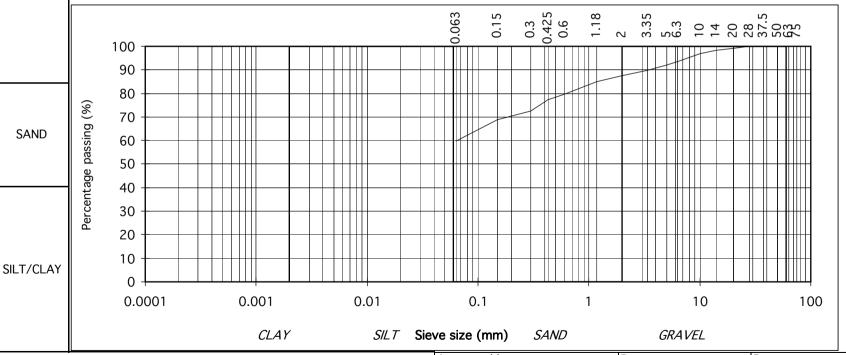
Sample Type:

Depth (m) 1.00 PM Group Customer:

19/09/2019 Date Testing started Date Received 22/10/2019

Brown slightly sandy, slightly gravelly, CLAY Description:

Remarks Note: Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISQ17892-4:2016. Results apply to sample as received Sample size did not meet the requirements of BS1377



IGSL Ltd Materials Laboratory

Approved by: Page no: Date: A Begane 05/11/19 1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

37.5

28

20

14

10

6.3

5

3.35

2

1.18

0.6

0.425

0.3

0.15

0.063

100

100

99

98

97

93

92

90

87

85

80

77

73

69

60

GRAVEL

SAND

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5

| (note: Sedimentation | n stage not accred | ited) |
|----------------------|--------------------|-------|
|----------------------|--------------------|-------|



| particle | % | | Contract No: 22000 Report No. R106428 Contract: PPK3 Profile Park BH/TP: TP 15 - Sub Station Opt.2 Sample No. AA113630 Lab. Sample No. A19/4345 Sample Type: B |
|----------|---------|---------------|--|
| size | passing | | Contract: PPK3 Profile Park |
| 75 | 100 | COBBLES | BH/TP: TP 15 - Sub Station Opt.2 |
| 63 | 100 | COBBLES | Sample No. AA113630 Lab. Sample No. A19/4345 |
| 50 | 100 | | Sample Type: B |
| 37.5 | 100 | | Depth (m) 0.60 Customer: PM Group |
| 28 | 100 | | Date Received 19/09/2019 Date Testing started 11/10/2019 |
| 20 | 97 | | Description: Brown slightly sandy, slightly gravelly, CLAY |
| 14 | 95 | GRAVEL | |
| 10 | 92 | GIVAVEL | Remarks Note: Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 . Results apply to sample as received. |
| 6.3 | 88 | | |
| 5 | 87 | | 0.063 0.425 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.8 3.35 5.3 6.3 6.3 6.3 6.3 |
| 3.35 | 85 | | |
| 2 | 82 | | 90 |
| 1.18 | 80 | | 80 + + + + + + + + + + + + + + + + + + + |
| 0.6 | 78 | | ⁸ 70 + |
| 0.425 | 77 | SAND | 60 + |
| 0.3 | 75 | | 8 50 |
| 0.15 | 71 | | 70 60 50 40 30 30 |
| 0.063 | 63 | | |
| 0.038 | 52 | | ğ 30 |
| 0.027 | 49 | | |
| 0.017 | 44 | SILT/CLAY | 10 + |
| 0.010 | 38 | OIL I / OL/AI | 0 + |
| 0.007 | 30 | | 0.0001 0.001 0.01 0.1 1 10 100 |
| 0.005 | 25 | | CLAV CUT Sieve sine (mm) CAND CRAVE |
| 0.002 | 17 | | CLAY SILT Sieve size (mm) SAND GRAVEL Approved by: Date: Page no: |

IGSL Ltd Materials Laboratory

 Approved by:
 Date:
 Page no:

 ₩ Љуше
 22/10/19
 1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5

(note: Sedimentation stage not accredited)



29/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| | _ | | | | | | | | <u> (</u> | |
|----------|---------|---------------|---|--|---------------------------------|-------------------------------|---|--------------------------------|--|----------|
| particle | % | | | Contract No: | 22000 | Report No | n. R106688 | | ************************************** | |
| size | passing | | _ | Contract: | PPK3 Profile | Park | | | 700 | |
| 75 | 100 | COBBLES | | BH/TP: | TP19 - Sub | Station Opt. | 2 | | 6 | |
| 63 | 100 | CODDLLS | | Sample No. | AA113641 | Lab. Sam | ole No. | A19/4347 | ,65 | |
| 50 | 100 | | | Sample Type: | В | | | | × | |
| 37.5 | 100 | | | Depth (m) | 0.60 | Customer | : PM Group | | | |
| 28 | 100 | | | Date Received | 19/09/2019 | 9 Date Test | ing started | 22/10/2019 | 1 | |
| 20 | 99 | | | Description: | Brown slight | ly sandy, sli | ghtly gravelly, CLA | Υ | | |
| 14 | 99 | CD AV/EI | | | | | | | | |
| 10 | 98 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | 5 of B\$1377:Part 2:1990 have | been superseded by ISO17892-4:2016 . Result | s apply to sample as received. | | |
| 6.3 | 98 | | | | | | 2 3 | - N | ۲۵ | 2 |
| 5 | 97 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 6.3 10 10 | |
| 3.35 | 97 | | 100 | | | | | | | |
| 2 | 95 | | 90 | + | | | | | | |
| 1.18 | 94 | | 80 | 1 | | | | | | |
| 0.6 | 93 | | § 70 | | | | | | | |
| 0.425 | 93 | SAND | sing 60 | | | | | | | |
| 0.3 | 92 | | bass 50 | | | | | | | |
| 0.15 | 89 | | age 10 | | | | | | | |
| 0.063 | 86 | | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | † | | | | | | |
| | | | ğ 30 | † | | | | | | |
| | | | 20 | + | | | | | | |
| | | CII T (CI A)(| 10 | + | | | | | | |
| | | SILT/CLAY | 0 | | | | | | | |
| | | | 0.0 | 0.0 | 01 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT | Sieve size (mm) | SAND | GRAVEL | |
| | I | | | | | | Approved by: | | Date: | Page no: |
| | | | d Matari | ala I abaratam | | | 1.4 | | | |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5 (note: Sedimentation stage not accredited)

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|--------------------------------|
| TESTING |
| DETAILED IN SCOPE REG NO. 1331 |

21/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

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|----------|---------|-----------|---|--|---------------------------------|----------------------------------|--|-----------------------------------|-------------------------------------|--|
| particle | % | | | Contract No: | 22000 | Report No. | R106396 | | 100 POPA | |
| size | passing | | | Contract: | PPK3 Profile | Park | | | 70/ | |
| 75 | 100 | COBBLES | | BH/TP: | TP19 - Sub 9 | Station Opt.2 | | | 6 | |
| 63 | 100 | COBBLES | | Sample No. | AA113640 | Lab. Sample | e No. | A19/4347 | ,05 | |
| 50 | 100 | | | Sample Type: | В | | | | × | |
| 37.5 | 100 | | | Depth (m) | 1.30 | Customer: | PM Group | | | |
| 28 | 100 | | | Date Received | 19/09/2019 | 9 Date Testing | g started | 11/10/2019 | | |
| 20 | 99 | | | Description: | Brown sandy | , slightly grav | elly, CLAY | | | |
| 14 | 99 | CD A V/EI | | | | | | | | |
| 10 | 98 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of B\$1377:Part 2:1990 have been | n superseded by ISO17892-4:2016 . Resi | ults apply to sample as received. | | |
| 6.3 | 97 | | | | | | ы О ГО | 8 2 | | 22 |
| 5 | 92 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 6.3 10 14 | 28 37. 530 53 |
| 3.35 | 86 | | 100 | | | | | | | |
| 2 | 80 | | 90 | + | | | | | | |
| 1.18 | 74 | | 80 | + | | | | | | |
| 0.6 | 69 | | § 70 | | | | | | | |
| 0.425 | 65 | SAND | sing 60 | | | | | | | |
| 0.3 | 59 | | bass 50 | | | | | | | |
| 0.15 | 48 | | age 10 | | | | | | | |
| 0.063 | 22 | | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| 0.038 | 17 | | ğ 30 | | | | | | | |
| 0.027 | 15 | | 20 | + | | | | | | |
| 0.017 | 13 | CILT/CLAY | 10 | + | | | | | | |
| 0.010 | 12 | SILT/CLAY | 0 | | | | | | | |
| 0.007 | 11 | | 0.0 | 0.0 | 01 | 0.01 | 0.1 | 1 | 10 | 100 |
| 0.005 | 9 | | | | | | _ | | | |
| 0.002 | 7 | | | | CLAY | SILT S | ieve size (mm) | SAND | <i>GRAVEL</i> | |
| | • | 1001 1 . | al Mara 1 | olo I oborotom | | | Approved by: | | Date: | Page no: |
| | | | | | | | | | | |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)



Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

| particle | % | | | Contract No: | 22000 | Report No. | R106689 | • | Ö. | |
|----------|---------|-------------|-------------|---|---------------------------------|------------------------------------|---|------------------------------|---|--|
| size | passing | | | Contract: | PPK3 Profile | Park | | | V. 78/06/2024 | |
| 75 | 85 | COBBLES | | BH/TP: | TP40 - Sub | Station Opt.1 | | | 65 | |
| 63 | 73 | COBBLES | | Sample No. | AA128659 | Lab. Sample | No. | A19/4350 | 05 | |
| 50 | 68 | | | Sample Type: | В | | | | × | |
| 37.5 | 64 | | | Depth (m) | 1.30 | Customer: | PM Group | | | |
| 28 | 53 | | | Date Received | 19/09/201 | 9 Date Testing | g started | 02/10/2019 | | |
| 20 | 48 | | | Description: | Mottled brow | wn slightly san | dy, gravelly, SILT | CLAY with man | y cobbles | |
| 14 | 44 | GRAVEL | | | | | | | | |
| 10 | 42 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | 5 of B\$1377:Part 2:1990 have been | superseded by ISO17892-4:2016 . Results | apply to sample as received. | Sample size did not meet the requirements of BS1377 | |
| 6.3 | 38 | | | | | | 5 53 | 8 | ις | rv. |
| 5 | 37 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 6.3 10 20 20 | 37.5 50 53 |
| 3.35 | 34 | | 100 | | | | | | | |
| 2 | 33 | | 90 |) | | | | | | |
| 1.18 | 31 | | _ 80 |) | | | | | | |
| 0.6 | 30 | | <u>%</u> 70 |) | | | | | | |
| 0.425 | 29 | SAND | 70 60 50 50 |) | | | | | | |
| 0.3 | 29 | | sed 50 | | | | | | | <u> </u> |
| 0.15 | 25 | | t age | | | | | | | |
| 0.063 | 22 | | 등 | | | | | | | |
| | | | Per 30 | | | | | | | |
| | | | 20 |) | | | | | | |
| | | SILT/CLAY | 10 |) | | | | | | |
| | | SIL 17 CLA1 | (|) | | | | | | |
| | | | 0 | .0001 0.0 | 001 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | S/LT Si | eve size (mm) | SAND | GRAVEL | |
| | l | 1001 1 : | 1.14 | | | | Approved by: | | Date: | Page no: |
| | | IGSL Lt | a mater | rials Laboratory | / | | A Berene | | 29/10/19 | 1 of 1 |

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Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)



Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

| particle | % | | | Contract No: | 22000 | Report No. | R106349 | | *D. 28/06/2024 | | |
|----------|--|-----------|--------------|--|---------------------------------|---------------------------------|---|------------------------------|------------------------------|--|--|
| size | passing | | - | Contract: | PPK3 Profile | Park | | | 70/ | | |
| 75 | 100 | COBBLES | | BH/TP: | TP41 - Subs | tation Opt.1 | | | 6,3 | | |
| 63 | 100 | COBBLES | | Sample No. | AA128653 | Lab. Sample | No. | A19/4352 | ,05 | | |
| 50 | 100 | | | Sample Type: | В | | | | * | | |
| 37.5 | 100 | | | Depth (m) | 1.00 | Customer: | PM Group | | | | |
| 28 | 98 | | | Date Received | 19/09/201 | 9 Date Testing | g started | 05/10/2019 | | | |
| 20 | 96 | | | Description: | Grey/brown | slightly sandy | , slightly gravelly | CLAY | | | |
| 14 | 91 | GRAVEL | | | | | | | | | |
| 10 | 90 | GIVAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have been | superseded by ISO17892-4:2016 . Results | apply to sample as received. | | | |
| 6.3 | 86 | | | | | | 5 53 | 8 2.2 | Δ. | | |
| 5 | 84 | | 100 | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 6.3 10 14 | 37.5 37.5 53 53 | |
| 3.35 | 82 | | 100 | | | | | | | | |
| 2 | 80 | | 90 | † | | | | | | | |
| 1.18 | 78 | | 80 | + | | | | | | +++++++ | |
| 0.6 | 76 | | § 70 | + | | | | | | | |
| 0.425 | 75 | SAND | is 60 | + | | | | | | | |
| 0.3 | 74 | | <u>sa</u> 50 | | | | | | | | |
| 0.15 | 70 | | t age | | | | | | | | |
| 0.063 | 62 | | ∥ 등 | | | | | | | | |
| 0.037 | 52 | | Pe 30 | | | | | | | | |
| 0.027 | 49 | | 20 | † | | | | | | | |
| 0.017 | 43 | SILT/CLAY | 10 | + | | | | | | +++++++ | |
| 0.010 | 35 | SILIT OLA | 0 | 1 | | | | | 1 | | |
| 0.007 | 26 | | 0.0 | 0.00 | 01 | 0.01 | 0.1 | 1 | 10 | 100 | |
| 0.005 | 20 | | | | CLAV | C// T | ove sime (mans) | CAND | CDAVEL | | |
| 0.002 | 12 | | | • | CLAY | S/LT Si | eve size (mm) | SAND | GRA VEL | | |
| | IGSL Ltd Materials Laboratory Approved by: Date: Page no: 18/10/19 1 of 1 | | | | | | | | | | |
| | | IUSE E | .u matell | ais Laboratory | | | A Begane | | 18/10/19 | 1 of 1 | |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5



18/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

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|----------|---------|-------------|---------------|--|---|--------------------------------|---|------------------------------|--|--|--|
| particle | % | | | Contract No: | 22000 | Report No. | R106350 | | D. 28/06/2024 | | |
| size | passing | | | Contract: | PPK3 Profile | Park | | | 700 | | |
| 75 | 100 | COBBLES | | BH/TP: | TP42 - Subs | tation Opt.1 | | | 65 | | |
| 63 | 100 | CODDLES | | Sample No. | AA128656 | Lab. Sampl | e No. | A19/4353 | ,05 | | |
| 50 | 93 | | | Sample Type: | В | | | | * | | |
| 37.5 | 80 | | | Depth (m) | 0.30 | Customer: | PM Group | | | | |
| 28 | 75 | | | Date Received | 19/09/2019 | 9 Date Testir | ng started | 04/10/2019 | | | |
| 20 | 64 | | | Description: | Grey/brown slightly clayey/silty, sandy, GRAVEL | | | | | | |
| 14 | 55 | GRAVEL | | | | | | | | | |
| 10 | 48 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of B\$1377:Part 2:1990 have be | een superseded by ISO17892-4:2016 . Results | apply to sample as received. | | | |
| 6.3 | 39 | | | | | | 5 33 | 8 8 | | 2 | |
| 5 | 34 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 10 14 20 | 28 37.5 50 93 | |
| 3.35 | 28 | | 100 | | | | | | | | |
| 2 | 22 | | 90 | | | | | | 1 11 1 1 1 1 1 1 | / | |
| 1.18 | 17 | | _ 80 | | | | | | | | |
| 0.6 | 13 | | <u>%</u> 70 | | | | | | | 4 | |
| 0.425 | 11 | SAND | is 60 | <u> </u> | | | | | 1 11 1 1 1 1 1 1 1 | | |
| 0.3 | 10 | | <u>sed</u> 50 | | | | | | | | |
| 0.15 | 7 | | tage 40 | | | | | | | | |
| 0.063 | 5 | | | | | | | | | | |
| | | | 96 30 | | | | | | | | |
| | | | 20 | † | | | | | 1 | | |
| | | SILT/CLAY | 10 | | | | | | | | |
| | | SIL 17 CLA1 | 0 | | | | | | | | |
| | | | 0.0 | 0.0 | 01 | 0.01 | 0.1 | 1 | 10 | 100 | |
| | | | | | CLAY | SILT | Sieve size (mm) | SAND | GRA VEL | | |
| | ı | 1001 1 - | -d Makawi | | Approved by: | | Date: | Page no: | | | |
| • | | | | | | | | | | | |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5

| uarice | with. | 00101 | 11.Fa | LZ. I | 330 | , cia |
|--------|--------|---------|-------|-------|--------|-------|
| (note: | Sedime | ntation | stage | not a | ccredi | ted) |



22/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

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|----------|---------|-----------|----------|---|---------------------------------|--------------------------------------|--|---------------------------------|---|---|
| particle | % | | | Contract No: | 22000 | Report No. | R106429 | | `````` | |
| size | passing | | - | Contract: | PPK3 Profile | Park | | | 70 | |
| 75 | 100 | COBBLES | | BH/TP: | TP 43 - Sub | Station Opt.1 | 1 | | 6 | |
| 63 | 100 | CODDLLO | | Sample No. | AA123700 | Lab. Sample | No. | A19/4354 | D. 28/06/2024 | |
| 50 | 100 | | | Sample Type: | В | | | | × | |
| 37.5 | 100 | <u>'</u> | | Depth (m) | 0.60 | Customer: | PM Group | | | |
| 28 | 99 | <u>'</u> | | Date Received | 19/09/2019 | 9 Date Testing | g started | 15/10/2019 |) | |
| 20 | 96 | <u>'</u> | | Description: | Brown slightl | ly sandy, sligh | ntly gravelly, SILT | CLAY | | |
| 14 | 93 | GRAVEL | | | | | | | | |
| 10 | 90 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have been | n superseded by ISO17892-4:2016 . Result | ts apply to sample as received. | | |
| 6.3 | 87 | <u>'</u> | | | | | | ₹. 8 | | 22 |
| 5 | 86 | <u>'</u> | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 6.3 10 14 20 | 28 37. 50 53 53 |
| 3.35 | 84 | <u>'</u> | 100 | | | | | | | |
| 2 | 80 | <u>'</u> | 90 | + | | | | | | ++++++++ |
| 1.18 | 77 | | 80 | 1 | | ++++++++++++++++++++++++++++++++++++ | | | | |
| 0.6 | 73 | <u>'</u> | § 70 | | | | | | | |
| 0.425 | 71 | SAND | gnis 60 | | | | | | | |
| 0.3 | 69 | <u>'</u> | ssed 50 | | | | | | | |
| 0.15 | 65 | <u>'</u> | % | | | | | | | |
| 0.063 | 57 | | Ob enta | | | | | | 1 11 11 11 11 | |
| 0.037 | 50 | <u>'</u> | 30 | + | | | | | | +++++++++++++++++++++++++++++++++++++++ |
| 0.027 | 42 | <u>'</u> | 20 | + | | | | | | ++++++++ |
| 0.018 | 33 | CILT/CLAY | 10 | + | | +++-+ | | | | |
| 0.010 | 25 | SILT/CLAY | 0 | | | | | | | |
| 0.007 | 21 | <u>'</u> | 0.0 | 0001 0.00 | 01 | 0.01 | 0.1 | 1 | 10 | 100 |
| 0.005 | 18 | <u>'</u> | | | | | | | | |
| 0.002 | 12 | <u>'</u> | | (| CLAY | SILT S | lieve size (mm) | SAND | <i>GRAVEL</i> | |
| | | | μ | | | | Approved by: | | Date: | Page no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)



Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

| | | | | | | | | • | | |
|----------|---------|-----------|---|--|---------------------------------|-----------------------------------|-------------------------------|--|------------------------------------|--|
| particle | % | | | Contract No: | 22000 | Report No. | R106690 | | D. 28/06/2024 | |
| size | passing | | - | Contract: | PPK3 Profile | Park | | | 70 | |
| 75 | 100 | COBBLES | | BH/TP: | TP47 - Fuelli | ing Station | | | 6,3 | |
| 63 | 100 | CODDLLS | | Sample No. | AA128665 | Lab. Sample | No. | A19/4356 | , O ² | |
| 50 | 100 | | | Sample Type: | В | | | | * | |
| 37.5 | 93 | | | Depth (m) | 0.70 | Customer: | PM Group | | | |
| 28 | 85 | | | Date Received | 19/09/2019 | 9 Date Testing | g started | 22/10/2019 | | |
| 20 | 72 | | | Description: | Grey clayey/ | /silty, sandy, (| GRAVEL | | | |
| 14 | 59 | GRAVEL | | | | | | | | |
| 10 | 53 | GIVAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | 5 of BS1377:Part 2:1990 have been | superseded by ISO17892-4:2016 | . Results apply to sample as received. | | |
| 6.3 | 43 | | | | | | 53 | 8 22 2 | | -z- |
| 5 | 40 | | 100 | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 6.3 10 20 20 | 37.5 37.5 63 63 |
| 3.35 | 32 | | 100 | | | | | | | |
| 2 | 26 | | 90 | | | | | | | |
| 1.18 | 22 | | 80 | | | | | | | |
| 0.6 | 18 | | <u>\$</u> 70 | | | | | | | |
| 0.425 | 17 | SAND | is 60 | + | | | | | | |
| 0.3 | 16 | | <u>8</u> 50 | | | | | | | |
| 0.15 | 14 | | tage 40 | | | | | | | |
| 0.063 | 12 | | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| | | | Per | | | | | | | |
| | | | 20 | † | | | | | | |
| | | SILT/CLAY | 10 | † | | | | | | |
| | | | 0 | 1 | | | | | | |
| | | | 0.0 | 0.00 |)1 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | (| CLAY | SILT S | ieve size (mm |) SAND | GRA VEL | |
| | · | 1001 1 : | -1 14-4-1 | -1-1-1 | | | Approved b | | Date: | Page no: |
| | | IGSL Lt | a Materia | als Laboratory | | | A Berei | - | 29/10/19 | 1 of 1 |

Bypene

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5

(note: Sedimentation stage not accredited)



05/11/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| particle | % | | | Contract No: | 22000 | Report No. | R107035 | | D. 28/06/2024 | |
|----------|---------|-------------|-------------|--|---------------------------------|---------------------------------|---|---------------------------------|---|--|
| size | passing | | _ | Contract: | PPK3 Profile | Park | | | 700 | |
| 75 | 100 | COBBLES | | BH/TP: | TP47 - Fuelii | ng Station | | | 6 | |
| 63 | 100 | COBBLES | | Sample No. | AA113621 | Lab. Sample | e No. | A19/4357 | , 65 1 | |
| 50 | 100 | | | Sample Type: | В | | | | * | |
| 37.5 | 96 | | | Depth (m) | 1.40 | Customer: | PM Group | | | |
| 28 | 90 | | | Date Received | 19/09/2019 | Date Testin | g started | 22/10/2019 |) | |
| 20 | 86 | | | Description: | Brown slight | ly sandy, sligh | ntly gravelly, CLA | ·Υ | | |
| 14 | 84 | GRAVEL | | | | | | | | |
| 10 | 81 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of B\$1377:Part 2:1990 have bee | n superseded by ISO17892-4:2016 . Resul | ts apply to sample as received. | Sample size did not meet the requirements of BS1377 | |
| 6.3 | 76 | | | | | | 5 5 | 8 57 | ις | Σ. |
| 5 | 73 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 6.3 10 10 20 20 | 37. 530. 53 |
| 3.35 | 70 | | 100 | | | | | | | |
| 2 | 66 | | 90 | | | | | | | |
| 1.18 | 63 | | <u> </u> | + | | | | | | |
| 0.6 | 58 | | <u>%</u> 70 | + | | | | | | |
| 0.425 | 56 | SAND | is 60 | | | | | | 1 | |
| 0.3 | 52 | | sed 50 | | | | | | | |
| 0.15 | 45 | | tage 04 | | | | | | | |
| 0.063 | 35 | | <u> </u> | | | | | | | |
| | | | 90 g | | | | | | | |
| | | | 20 | † | | | | | | |
| | | SILT/CLAY | 10 | + | | | | | | |
| | | SIL 17 CLAT | 0 | | | | | | | |
| | | | 0.0 | 0.00 |)1 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | C | CLAY | SILT S | sieve size (mm) | SAND | GRAVEL | |
| | | | al Matari | | | | Approved by: | | Date: | Page no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)



Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

| | | | | | | | | • | | |
|----------|---------|--------------|---|---|--|------------------------------------|-----------------------------------|-------------------------------------|---|--|
| particle | % | | | Contract No: | 22000 | Report No. | R106691 | | D. 28/06/2024 | |
| size | passing | | _ | Contract: | PPK3 Profile | e Park | | | 70/ | |
| 75 | 100 | COBBLES | | BH/TP: | TP 48 - Fue | lling Station | | | 62 | |
| 63 | 100 | CODDLLO | | Sample No. | AA128665 | Lab. Sample | No. | A19/4358 | , OS | |
| 50 | 84 | | | Sample Type: | В | | | | * | |
| 37.5 | 83 | | | Depth (m) | 0.50 | Customer: | PM Group | | | |
| 28 | 79 | | | Date Received | 19/09/201 | 9 Date Testing | g started | 22/10/2019 | | |
| 20 | 69 | | | Description: | grey clayey, | /silty, very san | ndy, GRAVEL | | | |
| 14 | 60 | GRAVEL | | | | | | | | |
| 10 | 53 | GIVAVLL | | Remarks | Note: Clause 9.2 and Clause 9. | .5 of BS1377:Part 2:1990 have been | superseded by ISO17892-4:2016 . R | esults apply to sample as received. | Sample size did not meet the requirements of BS1377 | |
| 6.3 | 44 | | | | | | 5 5 | 8 8 | Ω | 7. |
| 5 | 40 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 6.3 10 20 | 37. 50 53 |
| 3.35 | 36 | | 100 | | | | | | | |
| 2 | 32 | | 90 | | | | | | | |
| 1.18 | 27 | | 80 | | | | | | | |
| 0.6 | 22 | | × 70 | | | | | | | |
| 0.425 | 20 | SAND | Percentage passing (%) 09 09 09 09 09 09 09 09 09 09 09 09 09 | + | | | | | | |
| 0.3 | 18 | | <u>sa</u> 50 | | | | | | | |
| 0.15 | 15 | | tage 40 | | | | | | | |
| 0.063 | 12 | | Sent Sent | | | | | | | |
| | | | Pe 30 | | | | | | | |
| | | | 20 | | | | | | | |
| | | SILT/CLAY | 10 | + | | | | | | |
| | | 0.21, 02, 11 | 0 | 1 | | | | | <u> </u> | |
| | | | 0. | 0001 0. | 001 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT S | ieve size (mm) | SAND | GRA VEL | |
| | 1 | 1001 1 : | -1 1 4 | | | | Approved by | | Date: | Page no: |
| | | IGSL Lt | ta materi | als Laborator | У | | A Beren | | 29/10/19 | 1 of 1 |

Bypene

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5

(note: Sedimentation stage not accredited)



11/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| particle | % | | | Contract No: | 22000 | Report No. | R106199 | | D. 28/06/2024 | |
|----------|---------|-----------|---|---|--------------------------------|-----------------------------------|--|-----------------------------------|---|--|
| size | passing | | | Contract: | PPK3 Profile | Park | | | 70 | |
| 75 | 100 | COBBLES | | BH/TP: | TP48 - Fuell | ing Station | | | 6 | |
| 63 | 100 | COBBLES | | Sample No. | AA12866 | Lab. Sample | e No. | A19/4359 | 02 | |
| 50 | 82 | | | Sample Type: | В | | | | * | |
| 37.5 | 79 | | | Depth (m) | 1.20 | Customer: | PM Group | | | |
| 28 | 79 | | | Date Received | 19/09/201 | 9 Date Testin | g started | 04/10/2019 |) | |
| 20 | 76 | | | Description: | Brown slight | tly sandy, sligh | ntly gravelly, SIL ⁻ | Γ | | |
| 14 | 75 | GRAVEL | | | | | | | | |
| 10 | 73 | GIVAVLL | | Remarks | Note: Clause 9.2 and Clause 9. | 5 of BS1377:Part 2:1990 have been | n superseded by ISO17892-4:2016 . Resu | llts apply to sample as received. | Sample size did not meet requirements of BS1377 | |
| 6.3 | 72 | | | | | | 5 5 | 8 22 | ις | ι. |
| 5 | 71 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 6.3 10 10 20 20 | 37. 50 53 53 |
| 3.35 | 70 | | 100 | | | | | | | |
| 2 | 68 | | 90 | | | | | | | |
| 1.18 | 67 | | 80 | + | | | | | | |
| 0.6 | 65 | | § 70 | + | | | | | | |
| 0.425 | 65 | SAND | is 60 | + | | | | | | |
| 0.3 | 64 | | <u>8</u> 50 | | | | | | | |
| 0.15 | 61 | | t age 10 | 1 | | | | | | |
| 0.063 | 54 | | Percentage passing (%) 09 09 09 09 09 09 09 09 09 09 09 09 09 | | | | | | | |
| 0.037 | 50 | | Per | | | | | | | |
| 0.027 | 44 | | 20 | 1 | | | | | | |
| 0.018 | 29 | SILT/CLAY | 10 | † | | | | | | |
| 0.010 | 20 | | 0 | · | | | | | 1 11 1 11 11 11 1 1 1 1 | |
| 0.007 | 16 | | 0. | 0.00 | 01 | 0.01 | 0.1 | 1 | 10 | 100 |
| 0.005 | 13 | | | | CLAY | SILT S | ieve size (mm) | SAND | GRAVEL | |
| 0.002 | 8 | | | (| CLAI | JIL I | | | | |
| | | ICCL L | | ela I alcanatana | | | Approved by: | | Date: | Page no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5

| (note: | Sedimentation | stage | not | accredited) |
|--------|---------------|-------|-----|-------------|
|--------|---------------|-------|-----|-------------|



Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

| particle | % | | | Contract No: | 22000 | Report No. | R106351 | | *D. 28/06/2024 | |
|----------|---------|-----------|---|----------------|---------------------------------|----------------------------------|---|--------------------------------|------------------------------------|------------------------|
| size | passing | | | Contract: | PPK3 Profile | Park | | | 70 | |
| 75 | 100 | COBBLES | | BH/TP: | TP 49 - Fuell | ling Station | | | 6 | |
| 63 | 100 | CODDLES | | Sample No. | AA123695 | Lab. Sample | e No. | A19/4360 | 05 | |
| 50 | 100 | | | Sample Type: | В | | | | × | |
| 37.5 | 100 | | | Depth (m) | 0.60 | Customer: | PM Group | | | |
| 28 | 100 | | | Date Received | 19/09/2019 | Date Testin | g started | 04/10/2019 | | |
| 20 | 100 | | | Description: | Grey/brown | slightly sandy | , slightly gravelly | , CLAY | | |
| 14 | 100 | GRAVEL | | | | | | | | |
| 10 | 99 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of B\$1377:Part 2:1990 have been | n superseded by ISO17892-4:2016 . Results | s apply to sample as received. | | |
| 6.3 | 98 | | | | | | 5 53 | 8 22 | ω. | ι |
| 5 | 98 | | 400 | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 6.3 10 14 20 | 37.5 50 53 63 |
| 3.35 | 97 | | 100 | | | | | | | |
| 2 | 96 | | 90 | | | | | | | |
| 1.18 | 94 | | 80 | | | | | | | |
| 0.6 | 92 | | <u>%</u> 70 | | | | | | | |
| 0.425 | 91 | SAND | is 60 | | | | | | | |
| 0.3 | 90 | | <u>8</u> 50 | | | | | | | |
| 0.15 | 86 | | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| 0.063 | 80 | | 30 30 | | | | | | | |
| | | | Per | | | | | | | |
| | | | 20 | | | | | | | |
| | | SILT/CLAY | 10 | | | | | | | |
| | | | 0 | <u> </u> | | | | | | |
| | | | 0.0 | 0.00 |)1 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | C | CLAY | SILT S | Sieve size (mm) | SAND | GRAVEL | |
| | L | 1001 1 : | -1 14 | -1-1-1 | | | Approved by: | | Date: | Page no: |
| | | IGSL Lt | a Materia | als Laboratory | | | A Bejene | _ | 18/10/19 | 1 of 1 |

Determination of Particle Size Distribution

Tested in accord use 9.2 & 9.5

| ance | witn: | R213 | 11:Pa | irt∠: I | 990, | claus |
|-----------|--------|---------|-------|---------|---------|-------|
| (note: \$ | Sedime | ntation | stage | not a | ccredit | ed) |



11/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| particle | % | | | Contract No: | 22000 | Report No. | R106200 | | . 18/06/2024 | |
|----------|---------|-----------|--|---|---------------------------------|--------------------------------|---------------------------------------|------------------------------------|---|--|
| size | passing | | _ | Contract: | PPK3 Profile | Park | | | 70/ | |
| 75 | 100 | COBBLES | | BH/TP: | TP52 - Data | Centre | | | 6 | |
| 63 | 100 | CODDLLO | | Sample No. | AA128672 | Lab. Sample | e No. | A19/4361 | ,05 | |
| 50 | 100 | | | Sample Type: | В | | | | * | |
| 37.5 | 85 | | | Depth (m) | 0.30 | Customer: | PM Group | | | |
| 28 | 79 | | | Date Received | 19/09/2019 | Date Testin | g started | 04/10/2019 |) | |
| 20 | 66 | | | Description: | Grey clayey/ | silty, sandy, (| GRAVEL | | | |
| 14 | 57 | GRAVEL | | | | | | | | |
| 10 | 50 | GIVAVLL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have bee | en superseded by ISO17892-4:2016 . Re | sults apply to sample as received. | | |
| 6.3 | 42 | | | | | | 5 5 | 8 | | τύ. |
| 5 | 38 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 6.3 10 14 20 28 | 37.5 50 63 63 |
| 3.35 | 33 | | 100 | | | | | | | |
| 2 | 26 | | 90 | | | | | | | |
| 1.18 | 21 | | 80 | | | | | | | |
| 0.6 | 17 | | <u>%</u> 70 | | | | | | | |
| 0.425 | 15 | SAND | is 60 | | | | | | 1 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | |
| 0.3 | 14 | | Percentage passing (%) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | | | | | | | |
| 0.15 | 11 | | tage 0 | | | | | | | |
| 0.063 | 9 | | ent | | | | | | | |
| | | | Per 30 | | | | | | | |
| | | | 20 | | | | | | | |
| | | SILT/CLAY | 10 | + | | | | | | |
| | | SIL1/CLA1 | 0 | | | | | | | |
| | | | 0.0 | 0.0 | 01 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT S | Sieve size (mm) | SAND | <i>GRAVEL</i> | |
| | ı | 1001 1 - | | | | | Approved by | : | Date: F | Page no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5

(note: Sedimentation stage not accredited)



22/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| particle | % | | | Contract No | : | 22000 | Report N | o. R1064 | 130 | | \ <u>\</u> \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ | \$1061202× | |
|----------|---------|-----------|--|--------------|------|----------------------------|---------------------------------|-----------------------------|---------------------|---------------------------------|---|-----------------------|-----------------------|
| size | passing | | | Contract: | | PPK3 Profi | le Park | | | | 7 | 9 | |
| 75 | 100 | COBBLES | | BH/TP: | | TP52 - Da | ita Centre | | | | | 6,3 | |
| 63 | 100 | COBBLES | | Sample No. | | AA12867 | 3 Lab. Sam | ple No. | | A19/4362 | | , O2 | |
| 50 | 100 | | | Sample Type | e: | В | | | | | | × | |
| 37.5 | 100 | | | Depth (m) | | 0.70 | Custome | r: PM Gro | oup | | | | |
| 28 | 100 | | | Date Receive | ed | 19/09/20 | 19 Date Tes | ting started | l | 15/10/20 | 19 | | |
| 20 | 96 | | | Description: | | Brown slig | htly sandy, s | lightly grave | elly, CLA | Υ | | | |
| 14 | 95 | GRAVEL | | | | | | | | | | | |
| 10 | 93 | GRAVLL | | Remarks | | Note: Clause 9.2 and Claus | e 9.5 of B\$1377:Part 2:1990 ha | ve been superseded by ISO17 | 892-4:2016 . Result | ts apply to sample as received. | | | |
| 6.3 | 91 | | | | | | | | 2 | τς α | | | Ŋ |
| 5 | 90 | | | | | | | 0.063 | 0.15 | 0.3 0.425 0.6 | 2 3.35 | 5.3 10 14 20 | 28 37. 50 53 |
| 3.35 | 89 | | 100 | | | | | | | | | | |
| 2 | 87 | | 90 | + + | | | | | | | | | |
| 1.18 | 85 | | <u> </u> | + + + | | | | | | | | | |
| 0.6 | 83 | | <u>%</u> 70 | | | | | | | | | | |
| 0.425 | 82 | SAND | Percentage passing (%) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | + | | | | | | | | | |
| 0.3 | 81 | | sed 50 | | | | | | | | | | |
| 0.15 | 79 | | tage 040 | | | | | | | | | | |
| 0.063 | 76 | | ent | | | | | | | | | | |
| | | | Perc 30 | | | | | | | | | | |
| | | | 20 | | | | | | | | | | |
| | | SILT/CLAY | 10 | + + + | | | | | | | | | |
| | | SIL1/CLA1 | 0 | | | | | | | | | | |
| | | | 0.0 | 0001 | 0.00 | 1 | 0.01 | (|).1 | 1 | | 10 | 100 |
| | | | | | C | LAY | SILT | Sieve size | (mm) | SAND | | <i>GRAVEL</i> | |
| | | | | olo Loboro | | | | Appro | ved by: | | Date: | | Page no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)



11/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| | | | | | | | | | <u> </u> | |
|----------|---------|---------------|--|---|---------------------------------|-------------------------------|--|------------------------------|--|---|
| particle | % | | | Contract No: | 22000 | Report No | . R106201 | | *D. 78/06/2024 | |
| size | passing | | _ | Contract: | PPK3 Profile | Park | | | 70/ | |
| 75 | 100 | COBBLES | | BH/TP: | TP54 - Data | Centre | | | 6,3 | |
| 63 | 100 | CODDLLS | | Sample No. | AA123621 | Lab. Samp | ole No. | A19/4363 | ,65 | |
| 50 | 86 | | | Sample Type: | В | | | | × | |
| 37.5 | 78 | | | Depth (m) | 0.30 | Customer: | : PM Group | | | |
| 28 | 65 | | | Date Received | 19/09/2019 | 9 Date Test | ing started | 05/10/2019 | 1 | |
| 20 | 59 | | | Description: | Brown slight | ly sandy, gra | avelly, SILT/CLAY | | | |
| 14 | 55 | CDAV/EL | | | | | | | | |
| 10 | 51 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | 5 of B\$1377:Part 2:1990 have | been superseded by ISO17892-4:2016 . Result: | apply to sample as received. | Sample size did not meet the requirements of BS137 | 7 |
| 6.3 | 47 | | | | | | 2 3 | ω ω | | 22 |
| 5 | 46 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 6.3 10 14 | 28 37. 53 53 |
| 3.35 | 43 | | 100 | | | | | | | |
| 2 | 41 | | 90 | | | | | | | |
| 1.18 | 39 | | 80 | | | | | | | |
| 0.6 | 37 | | § 70 | | | | | | | |
| 0.425 | 37 | SAND | sing 60 | | | | | | | 4 |
| 0.3 | 36 | | bass 50 | | | | | | | |
| 0.15 | 34 | | age 30 | | | | | | | |
| 0.063 | 32 | | 04 euta | | | | | | | |
| | | | Percentage passing (%) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | + | | | | | | |
| | | | 20 | + | | | | | | |
| | | CII T (CI A)(| 10 | + | | | | | | |
| | | SILT/CLAY | 0 | | | | | | | |
| | | | 0.0 | 0.0 | 001 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT | Sieve size (mm) | SAND | <i>GRAVEL</i> | |
| | I | | • • • | | | | Approved by: | | Date: | Page no: |
| | | | d Matari | ala I abaratan | | | 1. 1. | | | |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5

(note: Sedimentation stage not accredited)



18/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| particle | % | | | Contract No: | 22000 | Report No. | R106352 | | D. 28/06/2024 | |
|----------|---------|-----------|---|---------------|---------------------------------|----------------------------------|--------------------------------------|-----------------------------------|---|--------------------|
| size | passing | | | Contract: | PPK3 Profile | Park | | | 70 | |
| 75 | 100 | COBBLES | | BH/TP: | TP 54 - Data | Centre | | | 6 | |
| 63 | 100 | COBBLES | | Sample No. | AA123622 | Lab. Sample | No. | A19/4364 | 05 | |
| 50 | 74 | | | Sample Type: | В | | | | × | |
| 37.5 | 67 | | | Depth (m) | 0.80 | Customer: | PM Group | | | |
| 28 | 54 | | | Date Received | 19/09/2019 | Date Testing | g started | 04/10/2019 | i | |
| 20 | 44 | | | Description: | Grey/brown | silty, sandy, G | GRAVEL | | | |
| 14 | 37 | GRAVEL | | | | | | | | |
| 10 | 33 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of B\$1377:Part 2:1990 have been | superseded by ISO17892-4:2016 . Resu | alts apply to sample as received. | Sample size did not meet the requirements of BS1377 | |
| 6.3 | 25 | | | | | | 5 5 | 5. 8 | . Ω . Ω | |
| 5 | 23 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 6.3 10 14 20 28 37.5 | 63 |
| 3.35 | 19 | | 100 | | | | | | | 7 11111 |
| 2 | 15 | | 90 | | | | | | | / |
| 1.18 | 12 | | <u> </u> | | | | | | | #### |
| 0.6 | 9 | | <u>%</u> 70 | | | | | | | |
| 0.425 | 9 | SAND | gnis 60 | | | | | | | |
| 0.3 | 8 | | sed 50 | | | | | | | |
| 0.15 | 6 | | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| 0.063 | 5 | | ent 40 | | | | | | | |
| | | | g 30 | | | | | | | |
| | | | 20 | | | | | | | |
| | | SILT/CLAY | 10 | | | | | | | ### |
| | | SIL1/CLA1 | 0 | | <u> </u> | | | | | <u> </u> |
| | | | 0.0 | 0.001 | 001 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT S | ieve size (mm) | SAND | GRAVEL | |
| | | | | | | | Approved by: | | Date: Page | no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)

|--|

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

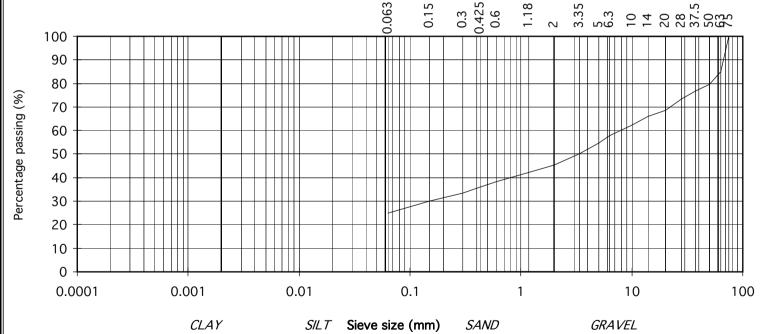
| ļ | | | | | | | | | <u> </u> | |
|----------|---------|--------------|---------------|----------------|---------------------------------|----------------------------------|--------------------------------------|-------------------------------------|--|--|
| particle | % | | | Contract No: | 22000 | Report No. | R106353 | | \ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ | |
| size | passing | | - | Contract: | PPK3 Profile | Park | | | . 28/06/2024 | |
| 75 | 100 | COBBLES | | BH/TP: | TP 55 - Data | a Centre | | | 6 | |
| 63 | 100 | COBBLES | | Sample No. | AA128667 | Lab. Sample | e No. | A19/4365 | ,05 | |
| 50 | 100 | | | Sample Type: | В | | | | * | |
| 37.5 | 100 | | | Depth (m) | 0.20 | Customer: | PM Group | | | |
| 28 | 98 | | | Date Received | 19/09/201 | 9 Date Testing | g started | 04/10/2019 | | |
| 20 | 89 | | | Description: | Grey/brown | clayey/silty, v | very sandy, GRA | AVEL | | |
| 14 | 76 | GRAVEL | | | | | | | | |
| 10 | 69 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of B\$1377:Part 2:1990 have been | n superseded by ISO17892-4:2016 . Re | esults apply to sample as received. | | |
| 6.3 | 57 | | | | | | 5 3 | 8 5 | ις | 2 |
| 5 | 52 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 6.3 10 20 20 | 37.5 50 53 53 |
| 3.35 | 45 | | 100 | | | | | | | |
| 2 | 36 | | 90 | | | | | | | |
| 1.18 | 30 | | 80 | | | | | | | |
| 0.6 | 23 | | <u>%</u> 70 ⋅ | | | | | | | |
| 0.425 | 21 | SAND | is 60 | | | | | | | |
| 0.3 | 18 | | <u>sa</u> 50 | | | | | | | |
| 0.15 | 14 | | t age | | | | | | | |
| 0.063 | 10 | | ∥ 등 | | | | | | | |
| | | | Per 30 | | | | | | | |
| | | | 20 | | | | | | | |
| | | SILT/CLAY | 10 | | | | | | | |
| | | 0.2.7, 02.7. | 0 | | | | | | <u> </u> | |
| | | | 0.0 | 0.00 | 01 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | C | CLAY | S/LT S | ieve size (mm) | SAND | GRAVEL | |
| | ı | 1001 1 - | | | | | Approved by | | Date: | Page no: |
| | | IGSL Lt | d Materia | als Laboratory | | | A Bergere | | 18/10/19 | 1 of 1 |

Bypure

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 . clause 9.2 & 9.5





IGSL Ltd Materials Laboratory

| Approved by: | Date: | Page no: |
|--------------|----------|----------|
| 4 Byene | 18/10/19 | 1 of 1 |

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1.18

0.6

0.425

0.3

0.15

0.063

42

38

36

33

30

25

SAND

SILT/CLAY

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5

| (note: | Sedimentation | stage | not | accredited) |
|--------|---------------|-------|-----|-------------|



| | | | | | | | | | 1.(1) | |
|----------|---------|-----------|---|---------------|---------------------------------|--------------------------------|---|--------------------------------|---|--|
| particle | % | | | Contract No: | 22000 | Report No. | R106354 | | D. 28/06/2024 | |
| size | passing | | _ | Contract: | PPK3 Profile | Park | | | 70 | |
| 75 | 78 | COBBLES | | BH/TP: | TP 57 - Data | Centre | | | 65 | |
| 63 | 63 | COBBLES | | Sample No. | AA123653 | Lab. Sample | e No. | A19/4368 | \Q | |
| 50 | 57 | | | Sample Type: | В | | | | × | |
| 37.5 | 57 | | | Depth (m) | 1.00 | Customer: | PM Group | | | |
| 28 | 53 | | | Date Received | 19/09/2019 | Date Testin | ng started | 04/10/2019 |) | |
| 20 | 51 | | | Description: | Brown slight | ly sandy, grav | velly, CLAY with n | nany cobbles | | |
| 14 | 49 | GRAVEL | | | | | | | | |
| 10 | 46 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have bee | en superseded by ISO17892-4:2016 . Result | s apply to sample as received. | Sample size did not meet the requirements of BS1377 | |
| 6.3 | 42 | | | | | | Σ τ | 8 22 | Ω | 2 |
| 5 | 40 | | | | | | 0.063 | 5. 5. 6. | 2 3.35 5.3 10 14 20 | 23.0 53.0 53.0 53.0 |
| 3.35 | 37 | | 100 | | | | | <u> </u> | | |
| 2 | 34 | | 90 | | | | | | | |
| 1.18 | 31 | | 80 | | | | | | | |
| 0.6 | 29 | | × 70 | | | | | | | |
| 0.425 | 28 | SAND | sing 60 | | | | | | | |
| 0.3 | 26 | | sed 50 | | | | | | | |
| 0.15 | 24 | | age 10 | | | | | | | |
| 0.063 | 21 | | euta 04 | | | | | | | |
| | | | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| | | | 20 | | | | | | | |
| | | | 10 | | | | | | | |
| | | SILT/CLAY | 0 | | | | | | | |
| | | | 0.0 | 0.0 | 01 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT S | Sieve size (mm) | SAND | <i>GRAVEL</i> | |
| | | 1001 1 | | | | | Approved by: | | Date: | Page no: |

IGSL Ltd Materials Laboratory

 Approved by:
 Date:
 Page no:

 18/10/19
 1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)



Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

| particle | % | | | Contract No: | 22000 | Report No. | R106202 | | D. 28/06/2024 | |
|----------|---------|-----------|---|--|---------------------------------|---------------------------------|---------------------------------------|-----------------------------------|---|--|
| size | passing | | - | Contract: | PPK3 Profile | Park | | | 70/ | |
| 75 | 100 | COBBLES | | BH/TP: | TP59 - Data | Centre | | | 62 | |
| 63 | 100 | CODDLLS | | Sample No. | AA106202 | Lab. Sample | e No. | A19/4369 | , O2 | |
| 50 | 93 | | | Sample Type: | В | | | | * | |
| 37.5 | 78 | | | Depth (m) | 0.60 | Customer: | PM Group | | | |
| 28 | 74 | | | Date Received | 19/09/2019 | 9 Date Testin | g started | 05/10/2019 | | |
| 20 | 71 | | | Description: | Brown slight | ly sandy, grav | elly, SILT | | | |
| 14 | 70 | GRAVEL | | | | | | | | |
| 10 | 68 | GIVAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have beer | n superseded by ISO17892-4:2016 . Res | ults apply to sample as received. | | |
| 6.3 | 65 | | | | | | 53 | 8 8 | 5.25 | τċ |
| 5 | 63 | | 100 | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 6.3 10 14 20 | 37.5 37.5 53 63 |
| 3.35 | 61 | | 100 | | | | | | | |
| 2 | 58 | | 90 | | | | | | | |
| 1.18 | 55 | | 80 | + | | | | | | |
| 0.6 | 52 | | 70 | + | | | | | | |
| 0.425 | 50 | SAND | ig 60 | + | | | | | | |
| 0.3 | 49 | | <u>8</u> 50 | | | | | | | |
| 0.15 | 46 | | tage 40 | | | | | | | |
| 0.063 | 42 | | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| | | | Per | | | | | | | |
| | | | 20 | | | | | | | |
| | | SILT/CLAY | 10 | † | | | | | | |
| | | | 0 | + | | | | | | |
| | | | 0.0 | 0.0 | 01 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT S | lieve size (mm) | SAND | GRAVEL | |
| | | | ral Markani | -1-1 | | | Approved by: | | Date: | Page no: |
| | | IGSL Lt | ta materi | als Laboratory | | | A Berene | | 11/10/19 | 1 of 1 |

Bypene

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)



Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

| | | | | | | | | 4 | | |
|----------|---------|--------------|---|---|---------------------------------|--------------------------------|---|---------------------------------|--|------------------------|
| particle | % | | | Contract No: | 22000 | Report No. | R106397 | | . 78/06/2024 | |
| size | passing | | _ | Contract: | PPK3 Profile | Park | | | 70/ | |
| 75 | 100 | COBBLES | | BH/TP: | TP 61 - Data | a Centre | | | 6 | |
| 63 | 100 | CODDLLS | | Sample No. | AA123611 | Lab. Sample | e No. | A19/4371 | ,05 | |
| 50 | 100 | | | Sample Type: | В | | | | * | |
| 37.5 | 100 | | | Depth (m) | 0.40 | Customer: | PM Group | | | |
| 28 | 97 | | | Date Received | 19/09/2019 | 9 Date Testin | ng started | 11/10/2019 | | |
| 20 | 96 | | | Description: | Brown slight | ly sandy, sligh | htly gravelly, CLA | Y | | |
| 14 | 95 | GRAVEL | | | | | | | | |
| 10 | 93 | GIVAVLL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have bee | en superseded by ISO17892-4:2016 . Result | ts apply to sample as received. | | |
| 6.3 | 91 | | | | | | 5 53 | 1.3 425 1.6 | Ω | τύ |
| 5 | 90 | | 100 | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.3 6.3 7 8 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 | 37.5 50 53 53 |
| 3.35 | 87 | | 100 | | | | | | | |
| 2 | 84 | | 90 | | | | | | | |
| 1.18 | 81 | | 80 | | | | | | | |
| 0.6 | 78 | | § 70 | | | | | | | |
| 0.425 | 77 | SAND | ig 60 | | | | | | | |
| 0.3 | 75 | | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| 0.15 | 71 | | tage 40 | | | | | | | |
| 0.063 | 64 | | sent 20 | | | | | | | |
| 0.037 | 58 | | Pe 30 | | | | | | | |
| 0.027 | 50 | | 20 | | | | | | | |
| 0.018 | 39 | SILT/CLAY | 10 | † | | | | | | |
| 0.010 | 32 | 3.2., 32. (1 | 0 | 1 | 4 1 1 1 1 1 | | | | 1 11 1 11 11 11 1 | |
| 0.007 | 26 | | 0.0 | 0001 0. | 001 | 0.01 | 0.1 | 1 | 10 | 100 |
| 0.005 | 22 | | | | CLAY | SILT S | Sieve size (mm) | SAND | GRAVEL | |
| 0.002 | 13 | <u> </u> | | | CLAT | JIL I | | JAIVU | | In . |
| | | IGSL I t | d Materi | als Laborator | V | | Approved by: | | Date: | Page no: |
| | | IOOL L | La Maconi | aio Laborator | J | | A Berene | _ | 21/10/19 | 1 of 1 |

Bypure

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 . clause 9.2 & 9.5

| aanoo man | 20.01.111 a | . c=:::000 , o.a. |
|---------------|----------------|-------------------|
| (note: Sedime | entation stage | not accredited) |



Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

| particle | % | | | Contract No: | 22000 | Report No. | R106355 | | *D. 28/06/2024 | |
|----------|---------|-----------|---|--|---------------------------------|---------------------------------|--|--------------------------------|---|---|
| size | passing | | | Contract: | PPK3 Profile | • | | | .49 | |
| 75 | 85 | CODDI EC |] | BH/TP: | TP 62 - Data | | | | 00/3 | |
| 63 | 85 | COBBLES | | Sample No. | AA123617 | Lab. Sample | e No. | A19/4372 | 705 | |
| 50 | 79 | | | Sample Type: | В | · | | | . X | |
| 37.5 | 70 | | | Depth (m) | 1.00 | Customer: | PM Group | | | |
| 28 | 52 | | | Date Received | 19/09/2019 | 9 Date Testin | g started | 11/10/2019 | | |
| 20 | 36 | | | Description: | Brown silty, | sandy, GRAVE | EL with some cob | bles | | |
| 14 | 31 | GRAVEL | | | | | | | | |
| 10 | 28 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have been | n superseded by ISO17892-4:2016 . Result | s apply to sample as received. | Sample size did not meet the requirements of BS1377 | |
| 6.3 | 23 | | | | | | 5 53 | 8 8 | ιō | ιύ |
| 5 | 23 | | 400 | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 6.3 10 14 20 28 | 37.5 50 63 |
| 3.35 | 20 | | 100 | | | | | | | |
| 2 | 17 | | 90 | | | | | | | |
| 1.18 | 14 | | 80 | | | | | | | |
| 0.6 | 12 | | <u>%</u> 70 | + | | | | | | |
| 0.425 | 11 | SAND | ig 60 | | | | | | | / |
| 0.3 | 10 | | <u>8</u> 50 | | | | | | | |
| 0.15 | 8 | | t age | | | | | | | |
| 0.063 | 6 | | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| | | | 20 20 | | | | | | | |
| | | | | | | | | | | |
| | | SILT/CLAY | 10 | <u>† </u> | | | | | | |
| | | | 0 | | | | | | | |
| | | | 0.0 | 0.00 |)1 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | (| CLAY | SILT S | lieve size (mm) | SAND | GRAVEL | |
| | | 1001 1 1 | al Mataut | -la I alacustaus | | | Approved by: | | Date: | Page no: |
| | | IGSL Lt | a materi | als Laboratory | | | A Bejene | _ | 18/10/19 | 1 of 1 |

Determination of Particle Size Distribution

Tested in acco 9.5

| ordance with: BS1377:Part2:1990, clause | 9.2 | & |
|--|-----|---|
| (note: Sedimentation stage not accredited) | | |



18/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| particle | % | | | Contract No: | 22000 | Report No. | R106356 | | *D29/06/2024 | |
|----------|---------|-----------|---|--|---------------------------------|-------------------------------|---|------------------------------|--|--|
| size | passing | | , | Contract: | PPK3 Profile | Park | | | 60 | |
| 75 | 100 | COBBLES | | BH/TP: | TP 64 - Data | Centre | | | 6 | |
| 63 | 100 | CODDEES | | Sample No. | AA123686 | Lab. Sampl | le No. | A19/4373 | ,05 | |
| 50 | 78 | | | Sample Type: | В | | | | * | |
| 37.5 | 68 | | | Depth (m) | 0.30 | Customer: | PM Group | | | |
| 28 | 59 | | | Date Received | 19/09/2019 | Date Testi | ng started | 05/10/2019 | | |
| 20 | 53 | | | Description: | Brown clayey | //silty, sandy | y, GRAVEL | | | |
| 14 | 45 | GRAVEL | | | | | | | | |
| 10 | 41 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have be | een superseded by ISO17892-4:2016 . Results | apply to sample as received. | Sample size did not meet the requirements of B\$1377 | |
| 6.3 | 34 | | | | | | ю rv | 8 5 | | 2 |
| 5 | 32 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 6.3 10 14 20 28 | 53. 53. 53. |
| 3.35 | 27 | | 100 | | | | | | | ППИПП |
| 2 | 23 | | 90 | + | | | | | + | |
| 1.18 | 20 | | 80 | | | | | | | |
| 0.6 | 17 | | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| 0.425 | 16 | SAND | sing 60 | | | | | | | |
| 0.3 | 15 | | ssed 50 | | | | | | | |
| 0.15 | 13 | | ge 30 | | | | | | | |
| 0.063 | 12 | | opt ag | 1 | | | | | | |
| | | | ğ 30 | + | | | | | | |
| | | | 20 | + | | | | | | |
| | | /2 | 10 | + | | | | | | |
| | | SILT/CLAY | 0 | | | | | | <u> </u> | |
| | | | II - | 0.001 | 001 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT | Sieve size (mm) | SAND | GRAVEL | |
| | l | | ļi. | | | | Approved by: | | Date: | Page no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5

(note: Sedimentation stage not accredited)



05/11/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| particle | % | | | Contract No: | 22000 | Report No. | R107037 | | D. 28/06/2024 | |
|----------|---------|-----------|--|--|--------------------------------|----------------------------------|---|--------------------------------|--|------------------------|
| size | passing | | _ | Contract: | PPK3 Profile | Park | | | 70 | |
| 75 | 100 | COBBLES | | BH/TP: | TP64 - Data | Centre | | | 6 | |
| 63 | 77 | CODDLLS | | Sample No. | AA123687 | Lab. Sample | e No. | A19/4372 | \Q_2 | |
| 50 | 77 | | | Sample Type: | В | | | | × | |
| 37.5 | 64 | | | Depth (m) | 1.00 | Customer: | PM Group | | | |
| 28 | 59 | | | Date Received | 19/09/201 | 9 Date Testir | ng started | 24/10/2019 |) | |
| 20 | 56 | | | Description: | Brown slight | ly sandy, gra | velly, CLAY with r | nany cobbles | | |
| 14 | 54 | GRAVEL | | | | | | | | |
| 10 | 51 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9. | 5 of B\$1377:Part 2:1990 have be | en superseded by ISO17892-4:2016 . Result | s apply to sample as received. | Sample size did not meet the requirements of BS1377 | |
| 6.3 | 48 | | | | | | 5 33 | 5 8 | - Ω Ω | |
| 5 | 46 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.3.3 10 10 14 17 20 20 20 37.3 | 50 93 |
| 3.35 | 43 | | 100 | | | | | | | |
| 2 | 40 | | 90 | | | | | | | |
| 1.18 | 37 | | 80 | + | | | | | | |
| 0.6 | 34 | | Percentage passing (%) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | | | | | | | / |
| 0.425 | 33 | SAND | sing 60 | 1 | | | | | | |
| 0.3 | 31 | | sed 50 | | | | | | | |
| 0.15 | 28 | | tage 05 | | | | | | | |
| 0.063 | 24 | | sent 40 | | | | | | | |
| | | | Per 30 | | | | | | | |
| | | | 20 | † | | | | | | |
| | | SILT/CLAY | 10 | + | | | | | | |
| | | SIL1/CLA1 | 0 | | | | | | | |
| | | | 0. | 0001 0. | 001 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT S | Sieve size (mm) | SAND | GRAVEL | |
| | | | al Matawi | | | | Approved by: | | Date: Pa | ge no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5 $\,$

(note: Sedimentation stage not accredited)



18/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| particle | % | | | Contract No: | 22000 | Report No. | R106357 | | D. 28/06/2024 | |
|----------|---------|--------------|---------------|--|---------------------------------|----------------------------------|--|-----------------------------------|---|---------|
| size | passing | | | Contract: | PPK3 Profile | Park | | | 70 | |
| 75 | 100 | COBBLES | | BH/TP: | TP 66 - Data | a Centre | | | 6 | |
| 63 | 83 | COPPLES | | Sample No. | AA123601 | Lab. Sample | e No. | A19/4374 | 6 | |
| 50 | 83 | | | Sample Type: | В | | | | × | |
| 37.5 | 79 | | | Depth (m) | 0.50 | Customer: | PM Group | | | |
| 28 | 66 | | | Date Received | 19/09/2019 | 9 Date Testing | g started | 04/10/2019 |) | |
| 20 | 56 | | | Description: | Brown clayey | y, sandy, GRA | VEL with some o | cobbles | | |
| 14 | 48 | GRAVEL | | | | | | | | |
| 10 | 42 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of B\$1377:Part 2:1990 have been | n superseded by ISO17892-4:2016 . Resu | ults apply to sample as received. | Sample size did not meet the requirements of BS1377 | |
| 6.3 | 36 | | | | | | 5 33 | 8 8 | <u>ν</u> π | n |
| 5 | 34 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 6.3 10 10 20 20 28 | 500 |
| 3.35 | 30 | | 100 | | | | | | | |
| 2 | 26 | | 90 | 1 | | | | | | |
| 1.18 | 24 | | _ 80 | + | | | | | | |
| 0.6 | 23 | | <u>%</u> 70 | | | | | | | |
| 0.425 | 23 | SAND | is 60 | <u> </u> | | | | | 1 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | |
| 0.3 | 23 | | <u>sed</u> 50 | | | | | | | |
| 0.15 | 22 | | tage 40 | | | | | | | |
| 0.063 | 20 | | | | | | | | | |
| 0.037 | 18 | | 96 30 | | | | | | | |
| 0.027 | 17 | | 20 | † | | | | | | |
| 0.017 | 14 | SILT/CLAY | 10 | + | | | | | | |
| 0.010 | 13 | JIL I / CLAI | 0 | 1 | | | | | | |
| 0.007 | 12 | | 0.0 | 0.00 |) 1 | 0.01 | 0.1 | 1 | 10 | 100 |
| 0.005 | 11 | | | | CL AV | C" T 2 | tana atau (m. N | CAND | CDAL (E) | |
| 0.002 | 8 | | | (| CLAY | SILT S | ieve size (mm) | SAND | GRA VEL | |
| | | 1001 1 1 | .al Nassaul | | | | Approved by: | | Date: Pa | age no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5 $\,$

(note: Sedimentation stage not accredited)



11/10/19

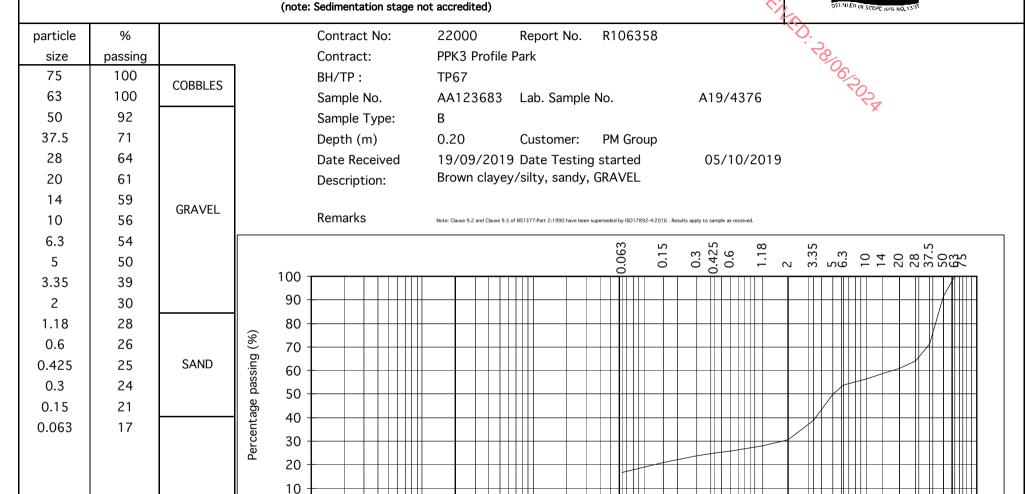
Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| particle | % | | | Contract No: | 22000 | Report No. | R106203 | | D. 28/06/2024 | |
|----------|---------|-----------|---|---|---------------------------------|-------------------------------|--|------------------------------|------------------------------------|--|
| size | passing | | _ | Contract: | PPK3 Profile | Park | | | 70 | |
| 75 | 100 | COBBLES | | BH/TP: | TP66 - Data | Centre | | | 6,3 | |
| 63 | 64 | COBBLES | | Sample No. | AA106203 | Lab. Sampl | e No. | A19/4375 | 02 | |
| 50 | 27 | | | Sample Type: | В | | | | × | |
| 37.5 | 16 | | | Depth (m) | 1.40 | Customer: | PM Group | | | |
| 28 | 10 | | | Date Received | 19/09/2019 | 9 Date Testir | ng started | 05/10/2019 |) | |
| 20 | 7 | | | Description: | Brown slight | ly clayey, slig | htly sandy, GRAVI | EL with many co | bbles | |
| 14 | 6 | GRAVEL | | | | | | | | |
| 10 | 5 | GIVAVLL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have be | en superseded by ISO17892-4:2016 . Results | apply to sample as received. | | |
| 6.3 | 4 | | | | | | 5 53 | 8 27.2 | Ω. | 7. |
| 5 | 4 | | 100 | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 10 14 20 | 28 37. 53 53 |
| 3.35 | 4 | | 100 | | | | | | | |
| 2 | 3 | | 90 | | | | | | | |
| 1.18 | 3 | | 80 | + | | | | | | |
| 0.6 | 3 | | § 70 | | | | | | | |
| 0.425 | 3 | SAND | ig 60 | + | | | | | | |
| 0.3 | 2 | | <u>8</u> 50 | | | | | | | |
| 0.15 | 2 | | Percentage passing (%) 09 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| 0.063 | 2 | | rcent 30 | | | | | | | |
| | | | Perc | | | | | | | |
| | | | 20 | | | | | | | |
| | | SILT/CLAY | 10 | + | | | | | | |
| | | | 0 | 1 | | | | | | |
| | | | 0.0 | 0.00 | 31 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT S | Sieve size (mm) | SAND | GRAVEL | |
| | • | 1001 1 . | | | | | Approved by: | | Date: | Page no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5



0.01

0.1

S/LT Sieve size (mm)

IGSL Ltd Materials Laboratory

0.0001

0.001

CLAY

 Approved by:
 Date:
 Page no:

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 18/10/19
 1 of 1

10

GRAVEL

100

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

SAND

SILT/CLAY

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)



21/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| particle | % | | | Contract No: | 22000 | Report No. | R106398 | | D. 28/06/2024 | |
|----------|---------|-----------|-------------|--|---------------------------------|--------------------------------|---|-----------------------------------|---|--|
| size | passing | | _ | Contract: | PPK3 Profile | Park | | | 700 | |
| 75 | 100 | COBBLES | | BH/TP: | TP 69 - Data | Centre | | | 6 | |
| 63 | 91 | COBBLES | | Sample No. | AA123605 | Lab. Sample | e No. | A19/4378 | , O2 | |
| 50 | 63 | | | Sample Type: | В | | | | × | |
| 37.5 | 55 | | | Depth (m) | 0.50 | Customer: | PM Group | | | |
| 28 | 43 | | | Date Received | 19/09/2019 | Date Testin | g started | 11/10/2019 | 1 | |
| 20 | 37 | | | Description: | Brown clayey | y, sandy, GRA | VEL with some o | cobbles | | |
| 14 | 33 | GRAVEL | | | | | | | | |
| 10 | 31 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have bee | en superseded by ISO17892-4:2016 . Resu | ults apply to sample as received. | | |
| 6.3 | 28 | | | | | | 5 3 | 5. 8 | | 2 |
| 5 | 27 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 6.3 10 14 20 28 | 37. 50 53 |
| 3.35 | 25 | | 100 | | | | | | | |
| 2 | 23 | | 90 | | | | | | | - - - - - - - - - - - - - - |
| 1.18 | 22 | | <u> </u> | + | | | | | | - |
| 0.6 | 20 | | <u>%</u> 70 | + | | | | | | - - / |
| 0.425 | 19 | SAND | is 60 | | | | | | | |
| 0.3 | 18 | | sed 50 | | | | | | | <i>_</i> |
| 0.15 | 17 | | tage 04 | | | | | | | <u> </u> |
| 0.063 | 16 | | <u>F</u> | | | | | | | |
| | | | 96 30 | | | | | | | |
| | | | 20 | † | | | | | | |
| | | SILT/CLAY | 10 | + | | | | | | |
| | | SIL1/CLA1 | 0 | | | | | | | |
| | | | 0.0 | 0.00 |)1 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | C | CLAY | SILT S | Sieve size (mm) | SAND | GRAVEL | |
| | | | al Matari | | | | Approved by: | | Date: | Page no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)



18/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| particle | % | | | Contract No: | 22000 | Report No. | R106359 | | D. 28/06/2024 | |
|----------|---------|--------------|--|--|--|--------------------------------|---|------------------------------|---|--|
| size | passing | | | Contract: | PPK3 Profile | Park | | | 700 | |
| 75 | 80 | COBBLES | | BH/TP: | TP69 | | | | 65 | |
| 63 | 48 | COBBLES | | Sample No. | AA123607 | Lab. Sampl | le No. | A19/4374 | 100 | |
| 50 | 42 | | | Sample Type: | В | | | | × | |
| 37.5 | 35 | | | Depth (m) | 1.50 | Customer: | PM Group | | | |
| 28 | 32 | | | Date Received | 19/09/2019 | Date Testi | ng started | 05/10/2019 | | |
| 20 | 30 | | | Description: | COBBLES wit | h brown slig | htly sandy, gravell | y, clay | | |
| 14 | 28 | GRAVEL | | | | | | | | |
| 10 | 28 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of B\$1377:Part 2:1990 have be | een superseded by ISO17892-4:2016 . Results | apply to sample as received. | Sample size did not meet the requirements of BS1377 | 7 |
| 6.3 | 26 | | | | | | 5 3 | 8 55 | Ω | 22 |
| 5 | 26 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 6.3 10 14 | 28 37. 50 53 |
| 3.35 | 25 | | 100 | | | | | | | |
| 2 | 25 | | 90 | | | | | | | |
| 1.18 | 24 | | <u> </u> | 1 | | | | | | |
| 0.6 | 24 | | 70 60 50 | | | | | | | |
| 0.425 | 24 | SAND | sing 60 | 1 | | | | | | |
| 0.3 | 23 | | sed 50 | | | | | | | |
| 0.15 | 23 | | Percentage 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | | | | | | | |
| 0.063 | 22 | | ent | | | | | | | |
| | | | Per 30 | | | | | | | |
| | | | 20 | + | | | | | | |
| | | SILT/CLAY | 10 | + | | | | | | |
| | | JIL I / CLAI | 0 | | | | | | | |
| | | | 0. | 0001 0. | .001 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT | Sieve size (mm) | SAND | GRAVEL | |
| | l | <u> </u> | 1 | | | | Approved by: | | Date: | Page no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5

(note: Sedimentation stage not accredited)



Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

| | | | | | | | | | 1.(1) | |
|----------|---------|-----------|---|--|---------------------------------|---------------------------------|--------------------------------------|------------------------------------|---|--|
| particle | % | | | Contract No: | 22000 | Report No. | R106281 | | D. 28/06/2024 | |
| size | passing | | - | Contract: | PPK3 Profile | Park | | | 70 | |
| 75 | 69 | COBBLES | | BH/TP: | TP 70 - Data | a Centre | | | 6,3 | |
| 63 | 61 | CODDLLO | | Sample No. | AA123805 | Lab. Sample | e No. | A19/4380 | , O2 | |
| 50 | 38 | | | Sample Type: | В | | | | * | |
| 37.5 | 33 | | | Depth (m) | 0.80 | Customer: | PM Group | | | |
| 28 | 33 | | | Date Received | 19/09/2019 | 9 Date Testin | g started | 04/10/2019 | | |
| 20 | 30 | | | Description: | Grey/brown | clayey, sandy | , GRAVEL with I | many cobbles | | |
| 14 | 29 | GRAVEL | | | | | | | | |
| 10 | 27 | GIVAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have beer | n superseded by ISO17892-4:2016 . Re | sults apply to sample as received. | Sample size did not meet the requirements of BS1377 | |
| 6.3 | 25 | | | | | | 53 | 8 22 2 | | 7. |
| 5 | 24 | | 100 | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 6.3 10 20 20 | 37.5 37.5 53 63 |
| 3.35 | 23 | | 100 | | | | | | | |
| 2 | 22 | | 90 | | | | | | | |
| 1.18 | 21 | | 80 | | | | | | | |
| 0.6 | 20 | | <u>\$</u> 70 | + | | | | | | |
| 0.425 | 19 | SAND | is 60 | | | | | | | |
| 0.3 | 19 | | <u>8</u> 50 | | | | | | | |
| 0.15 | 18 | | tage 40 | | | | | | | |
| 0.063 | 16 | | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| | | | Per | | | | | | | |
| | | | 20 | <u>† </u> | | | | | | |
| | | SILT/CLAY | 10 | † | | | | | | |
| | | | 0 | 1 | | | | | | |
| | | | 0.0 | 0.0 | 01 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT S | sieve size (mm) | SAND | GRA VEL | |
| | | | al Makeri | - - | | | Approved by | | Date: | Page no: |
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Bypene

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)



Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

| | 1 | 1 | | | | | | | *(*\ <u>`</u> | |
|----------|---------|-----------|--|--|---------------------------------|---------------------------------|--|-----------------------------------|--|---|
| particle | % | | | Contract No: | 22000 | Report No. | R106360 | | 10. 28/06/2024 | |
| size | passing | | | Contract: | PPK3 Profile | Park | | | 700 | |
| 75 | 100 | COBBLES | | BH/TP: | TP72 | | | | 6 | |
| 63 | 94 | CODDLLO | | Sample No. | AA123625 | Lab. Sample | e No. | A190/4382 | ,05 2 | |
| 50 | 87 | | | Sample Type: | В | | | | * | |
| 37.5 | 72 | | | Depth (m) | 0.35 | Customer: | PM Group | | | |
| 28 | 59 | | | Date Received | | 9 Date Testin | | 04/10/2019 | | |
| 20 | 49 | | | Description: | Brown slight | ly clayey/silty | , sandy, GRAVEI | L with some cobb | les | |
| 14 | 39 | GRAVEL | | | | | | | | |
| 10 | 31 | GIVAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have beer | n superseded by ISO17892-4:2016 . Resi | ults apply to sample as received. | | |
| 6.3 | 25 | | | | | | 53 | 8 27.22 | 2 | -Z- |
| 5 | 21 | | 100 | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 6.3 10 20 | 28 37.5 53 63 63 |
| 3.35 | 18 | | 100 | | | | | | | |
| 2 | 14 | | 90 | 1 | | | | | | |
| 1.18 | 12 | | © 80 | 1 | | | | | | / |
| 0.6 | 9 | | <u>8</u> 70 | 1 | | | | | | / |
| 0.425 | 8 | SAND | issi 60 | + | | | | | | // |
| 0.3 | 7 | | 50 8 | | | | | | | |
| 0.15 | 5 | | tage 04 | | | | | | | |
| 0.063 | 4 | | Percentage passing (%) 02 09 09 09 09 09 09 09 09 09 09 09 09 09 | | | | | | | |
| | | | Per | | | | | | | |
| | | | 20 | | | | | | | |
| | | SILT/CLAY | 10 | <u>† </u> | | | | | | |
| | | | 0 | | | | | | | |
| | | | 0.0 | 0.00 |)1 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | (| CLAY | SILT S | ieve size (mm) | SAND | <i>GRAVEL</i> | |
| | • | | al Matari | ala I ala auat a :- | | | Approved by: | | Date: | Page no: |
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Bypure

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5

(note: Sedimentation stage not accredited)



22/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| | | | | | | | | ' | 1 | |
|----------|---------|--------------|-------------|--|---------------------------------|------------------------------|---|--------------------------------|------------------------------------|---------------------------------|
| particle | % | | | Contract No: | 22000 | Report No | . R106431 | | D. 28/06/2024 | |
| size | passing | | _ | Contract: | PPK3 Profile | Park | | | 700 | |
| 75 | 100 | COBBLES | | BH/TP: | TP73 - Data | Centre | | | 6 | |
| 63 | 100 | COBBLES | | Sample No. | AA123676 | Lab. Samp | ole No. | A19/4383 | ,05 | |
| 50 | 100 | | | Sample Type: | В | | | | * | |
| 37.5 | 100 | | | Depth (m) | 0.50 | Customer: | PM Group | | | |
| 28 | 100 | | | Date Received | 19/09/2019 | Date Testi | ing started | 15/10/2019 | | |
| 20 | 100 | | | Description: | Brown slightl | ly sandy, sliç | ghtly gravelly, CLA | Υ | | |
| 14 | 100 | GRAVEL | | | | | | | | |
| 10 | 99 | GIVAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have I | been superseded by ISO17892-4:2016 . Result | s apply to sample as received. | | |
| 6.3 | 99 | | | | | | 5 5 | 8 22 | ıΩ | - N |
| 5 | 98 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 10 10 20 | 28 37.5 50 63 |
| 3.35 | 97 | | 100 | | | | | | | |
| 2 | 96 | | 90 | | | | | | | |
| 1.18 | 94 | | <u> </u> | | | | | | | - |
| 0.6 | 92 | | <u>%</u> 70 | | | | | | | |
| 0.425 | 90 | SAND | is 60 | | | | | | | |
| 0.3 | 88 | | sed 50 | | | | 4 | | | |
| 0.15 | 83 | | t age | | | | | | | |
| 0.063 | 74 | | ∥ 등 | | | | | | | |
| 0.037 | 62 | | Per 30 | | | | | | | |
| 0.027 | 55 | | 20 | † | | | | | | |
| 0.018 | 43 | SILT/CLAY | 10 | † | | | | | | |
| 0.010 | 37 | SIL I / CLAI | 0 | | | | | | | |
| 0.007 | 29 | | 0.0 | 0.00 | 01 | 0.01 | 0.1 | 1 | 10 | 100 |
| 0.005 | 24 | | | | CLAV | CU T | Ciava aima (ma) | CAMO | CDANEL | |
| 0.002 | 16 | | | | CLAY | SILT | Sieve size (mm) | SAND | GRAVEL | |
| | | ICCL LA | .al Nasaali | | | | Approved by: | | Date: | Page no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)



Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

| particle | % | | | Contract No: | 22000 | Report No. | R106399 | | D. 28/06/2024 | |
|----------|---------|-------------|---|---|---------------------------------|----------------------------------|--|--------------------------------|---|--|
| size | passing | | _ | Contract: | PPK3 Profile | Park | | | 70 | |
| 75 | 100 | COBBLES | | BH/TP: | TP 74 - Data | a Centre | | | 6,3 | |
| 63 | 57 | CODDLLS | | Sample No. | AA123628 | Lab. Sample | No. | A19/4385 | \Q_2 | |
| 50 | 52 | | | Sample Type: | В | | | | * | |
| 37.5 | 52 | | | Depth (m) | 0.70 | Customer: | PM Group | | | |
| 28 | 50 | | | Date Received | 19/09/2019 | 9 Date Testing | g started | 11/10/2019 | | |
| 20 | 47 | | | Description: | Brown slight | ly sandy, very | gravelly, CLAY v | vith many cobble | S | |
| 14 | 45 | GRAVEL | | | | | | | | |
| 10 | 43 | GRAVLL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of B\$1377:Part 2:1990 have been | superseded by ISO17892-4:2016 . Result | s apply to sample as received. | Sample size did not meet the requirements of BS1377 | |
| 6.3 | 40 | | | | | | 5 33 | 8 22 | ιζ | ιύ |
| 5 | 38 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 6.3 10 20 20 | 37.5 37.5 53 53 |
| 3.35 | 35 | | 100 | | | | | | | |
| 2 | 30 | | 90 | | | | | | | |
| 1.18 | 27 | | 80 | | | | | | | |
| 0.6 | 25 | | <u>%</u> 70 | 1 | | | | | | |
| 0.425 | 24 | SAND | is 60 | | | | | | | |
| 0.3 | 23 | | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| 0.15 | 22 | | tage 04 | | | | | | | |
| 0.063 | 21 | | sent | | | | | | | |
| 0.037 | 19 | | Pe 30 | | | | | | | |
| 0.027 | 17 | | 20 | † | | | | | | |
| 0.017 | 16 | SILT/CLAY | 10 | + | | | | | | |
| 0.010 | 14 | SIL 17 CLA1 | 0 | | | | | | | |
| 0.007 | 12 | | 0.0 | 0.0 | 01 | 0.01 | 0.1 | 1 | 10 | 100 |
| 0.005 | 11 | | | | CLAV | CUT C | ia aima (ma) | CAND | CDALIE | |
| 0.002 | 8 | | | | CLAY | SILT S | ieve size (mm) | SAND | GRA VEL | |
| | | ICCI I + | d Matari | als Laboratory | , | | Approved by: | | Date: | Page no: |
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Bypure

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5

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|----|---|----|-----|--------|-------|----|-------|-----|-----|-----|-----|----|----|---|
| ч | ı | νc | . э | cullic | ILALI | uu | Stauc | HOL | auc | .15 | sui | uc | ·u | , |



05/11/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| particle | % | | | Contract No: | 22000 | Report No. | . R107036 | | *D28/06/2024 | |
|----------|---------|-----------|---|---------------|---------------------------------|------------------------------|---|----------------------------------|--|---|
| size | passing | | 1 | Contract: | PPK3 Profile | Park | | | 70 | |
| 75 | 80 | COBBLES | | BH/TP: | TP74 - Data | Centre | | | 62 | |
| 63 | 80 | CODDLLS | | Sample No. | AA123629 | Lab. Samp | le No. | A19/4386 | ,05 | |
| 50 | 80 | | | Sample Type: | В | | | | * | |
| 37.5 | 65 | | | Depth (m) | 1.50 | Customer: | PM Group | | | |
| 28 | 58 | | | Date Received | 19/09/2019 | 9 Date Testi | ng started | 24/10/2019 | 9 | |
| 20 | 56 | | | Description: | Brown slight | ly sandy, gra | avelly, CLAY with r | many cobbles | | |
| 14 | 53 | GRAVEL | | | | | | | | |
| 10 | 51 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have b | peen superseded by ISO17892-4:2016 . Resu | Its apply to sample as received. | Sample size did not meet the requirements of B\$1377 | , |
| 6.3 | 48 | | | | | | 5 3 | ω 8 | | 22 |
| 5 | 47 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 10 14 20 | 28 37. 53 53 |
| 3.35 | 44 | | 100 | | | | | | | |
| 2 | 42 | | 90 | | | | | | | |
| 1.18 | 40 | | 80 | | | | | | | |
| 0.6 | 38 | | § 70 | | | | | | | <u> </u> |
| 0.425 | 37 | SAND | sing 60 | | | | | | | |
| 0.3 | 35 | | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | 1 |
| 0.15 | 31 | | ge 30 | | | | | | | |
| 0.063 | 26 | | ob auta | | | | | | | |
| | | | ğ 30 | | | | | | | |
| | | | 20 | + | | | | | | |
| | | | 10 | | | | | | | |
| | | SILT/CLAY | 0 | | | | | | | |
| | | | II - | 0001 0.0 | 001 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT | Sieve size (mm) | SAND | GRAVEL | |
| | l | <u>I</u> | <u>I</u> L | | | | Approved by: | | Date: | Page no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)



Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

| particle | % | | | Contract No: | 22000 | Report No. | R106361 | | D. 28/06/2024 | |
|----------|---------|-----------|---|--|---------------------------------|-----------------------------------|---------------------------------------|-----------------------------------|---|--|
| size | passing | | - | Contract: | PPK3 Profile | Park | | | 70/ | |
| 75 | 69 | COBBLES | | BH/TP: | TP76 - CUB | | | | 6 | |
| 63 | 69 | CODDEES | | Sample No. | AA123635 | Lab. Sample | No. | A19/4387 | , O ² | |
| 50 | 69 | | | Sample Type: | В | | | | * | |
| 37.5 | 69 | | | Depth (m) | 0.65 | Customer: | PM Group | | | |
| 28 | 67 | | | Date Received | | 9 Date Testing | - | 05/10/2019 | | |
| 20 | 67 | | | Description: | Brown slight | ly sandy, sligh | itly gravelly, SIL | T with many cobb | oles | |
| 14 | 67 | GRAVEL | | | | | | | | |
| 10 | 66 | GIVAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | 5 of BS1377:Part 2:1990 have been | n superseded by ISO17892-4:2016 . Res | ults apply to sample as received. | | |
| 6.3 | 65 | | | | | | 53 | 8 8 | | 75 |
| 5 | 65 | | 100 | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 6.3 10 14 20 28 | 37.5 37.5 93 |
| 3.35 | 64 | | 100 | | | | | | | |
| 2 | 63 | | 90 | 1 | | | | | | |
| 1.18 | 61 | | 80 | + | | | | | | (|
| 0.6 | 60 | | <u>8</u> 70 | + | | | | | | |
| 0.425 | 59 | SAND | ig 60 | + | | | | | | |
| 0.3 | 57 | | <u>8</u> 50 | | | | | | | |
| 0.15 | 53 | | tage 40 | | | | | | | |
| 0.063 | 46 | | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| | | | Per | | | | | | | |
| | | | 20 | | | | | | | |
| | | SILT/CLAY | 10 | † | | | | | | |
| | | | 0 | + | | | | | | |
| | | | 0.0 | 0.00 | 31 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT S | ieve size (mm) | SAND | GRAVEL | |
| | | | al Makad | -la I alaawat | | | Approved by: | | Date: | Page no: |
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Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)



18/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| | _ | | | | | | | | <u> </u> | |
|----------|---------|------------|-------------|---------------|--|----------------------------------|--|--------------------------------|---|--|
| particle | % | | | Contract No: | 22000 | Report No. | R106362 | | D. 28/06/2024 | |
| size | passing | | _ | Contract: | PPK3 Profile | Park | | | 70 | |
| 75 | 65 | COBBLES | | BH/TP: | TP78 - CUB | | | | 6 | |
| 63 | 53 | COBBLES | | Sample No. | AA123679 | Lab. Sample | e No. | A19/4389 | 6 | |
| 50 | 53 | | | Sample Type: | В | | | | × | |
| 37.5 | 51 | | | Depth (m) | 0.80 | Customer: | PM Group | | | |
| 28 | 49 | | | Date Received | 19/09/2019 | Date Testing | g started | 05/10/2019 | | |
| 20 | 45 | | | Description: | Grey/brown | silty, sandy, G | GRAVEL with mar | y cobbles | | |
| 14 | 43 | GRAVEL | | | | | | | | |
| 10 | 41 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of B\$1377:Part 2:1990 have been | superseded by ISO17892-4:2016 . Result | s apply to sample as received. | Sample size did not meet the requirements of BS1377 | |
| 6.3 | 38 | | | | | | 55 75 | δ. 8 | <u>ι</u> | |
| 5 | 36 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 6.3 10 14 20 28 77 | 550 53 53 |
| 3.35 | 34 | | 100 | | | | | | | |
| 2 | 31 | | 90 | | | | | | | |
| 1.18 | 29 | | 80 | | | | | | | |
| 0.6 | 26 | | × 70 | | | | | | | |
| 0.425 | 25 | SAND | sing 60 | | | | | | | |
| 0.3 | 24 | | sed 50 | | | | | | | |
| 0.15 | 22 | | ll e | | | | | | | |
| 0.063 | 19 | | 04 enta | | | | | | | |
| | | | يّ 30 30 | | | | | | | |
| | | | 20 | + | | | | | | |
| | | SILT/CLAY | 10 | + | | | | | | |
| | | SIL 1/CLAT | 0 | | | | | | | |
| | | | 0.0 | 0.001 | 001 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT Si | ieve size (mm) | SAND | GRAVEL | |
| | ı | | | | | | Approved by: | | Date: Pa | age no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5

| (note: Sedimenta | tion stage n | ot accredited) |
|------------------|--------------|----------------|
|------------------|--------------|----------------|



11/10/19

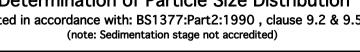
Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| | | | | | | | | | 14) | |
|----------|---------|--------------|-------------|---------------|---------------------------------|----------------------------|--|-----------------------------------|-------------------------------------|---|
| particle | % | | | Contract No: | 22000 | Report No | . R106204 | | D. 28/06/2024 | |
| size | passing | | | Contract: | PPK3 Profile | Park | | | 700 | |
| 75 | 100 | COBBLES | | BH/TP: | TP80 - CUB | | | | 6 | |
| 63 | 100 | CODDLLS | | Sample No. | AA113555 | Lab. Samp | ole No. | A19/4391 | ,65 | |
| 50 | 100 | | | Sample Type: | В | | | | * | |
| 37.5 | 97 | | | Depth (m) | 0.50 | Customer: | : PM Group | | | |
| 28 | 90 | | | Date Received | 19/09/2019 | 9 Date Test | ing started | 04/10/2019 |) | |
| 20 | 84 | | | Description: | Brown slightl | ly sandy, gra | avelly, CLAY | | | |
| 14 | 76 | GRAVEL | | | | | | | | |
| 10 | 70 | GIVAVLL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have | been superseded by ISO17892-4:2016 . Res | ults apply to sample as received. | | |
| 6.3 | 65 | | | | | | 5 53 | 8 8 | ıΩ | 2 |
| 5 | 63 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 6.3 10 14 | 28 37.5 53 63 63 |
| 3.35 | 61 | | 100 | | | | | | | |
| 2 | 59 | | 90 | | | | | | | |
| 1.18 | 57 | | _ 80 | | | | | | | |
| 0.6 | 55 | | <u>%</u> 70 | | | | | | | |
| 0.425 | 54 | SAND | is 60 | | | | | | | |
| 0.3 | 53 | | sed 50 | | | | | | | |
| 0.15 | 50 | | t age | | | | | | | |
| 0.063 | 44 | | ∥ ⊑ | | | | | | | |
| 0.037 | 38 | | Pe 30 | | | | | | | |
| 0.027 | 34 | | 20 | † | | 1111 | | | | |
| 0.017 | 30 | SILT/CLAY | 10 | | | | | | | |
| 0.010 | 26 | OIL I / CLAI | 0 | | | | | | | |
| 0.007 | 22 | | 0.0 | 0.00 | 01 | 0.01 | 0.1 | 1 | 10 | 100 |
| 0.005 | 18 | | | | CLAV | CII T | Cieva sine (nom) | CAND | CDANG | |
| 0.002 | 13 | | | (| CLAY | SILT | Sieve size (mm) | SAND | GRAVEL | |
| | | ICCL LA | اسمهما اما | | | | Approved by: | | Date: | Page no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5





| particle | % | | | Contract No: | 22000 | Report No. | R106363 | Š., | 000000000000000000000000000000000000000 | |
|----------|---------|-----------|---|---------------|---------------------------------|------------------------------------|---|--|---|---|
| size | passing | | _ | Contract: | PPK3 Profile | Park | | | 0 | |
| 75 | 100 | COBBLES | | BH/TP: | TP82 - CUB | | | | 6 | |
| 63 | 100 | CODDLLS | | Sample No. | AA113558 | Lab. Sample | No. | A19/4392 | \Q_2 | |
| 50 | 95 | | | Sample Type: | В | | | | × | |
| 37.5 | 86 | | | Depth (m) | 0.50 | Customer: | PM Group | | | |
| 28 | 75 | | | Date Received | 19/09/201 | 9 Date Testing | g started | 04/10/2019 | | |
| 20 | 69 | | | Description: | Grey/brown | slightly sandy | , gravelly, CLAY | | | |
| 14 | 64 | GRAVEL | | | | | | | | |
| 10 | 59 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | 5 of B\$1377:Part 2:1990 have been | superseded by ISO17892-4:2016 . Results | apply to sample as received. | | |
| 6.3 | 54 | | | | | | 5 5 | 5 8 5 | u | n |
| 5 | 53 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 2 3.35 | 5.3 1.0 1.4 2.0 2.8 2.8 | 5300.5 |
| 3.35 | 50 | | 100 | | | | | | | |
| 2 | 47 | | 90 | | | | | | | / |
| 1.18 | 45 | | 80 | | | | | | | |
| 0.6 | 44 | | § 70 | | | | | | | |
| 0.425 | 43 | SAND | Percentage passing (%) 09 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| 0.3 | 42 | | sed 50 | | | | | | | |
| 0.15 | 40 | | age 40 | | | | | | | |
| 0.063 | 37 | | 04 enta | | | | | | | |
| | | | 9 30 30 | | | | | | | |
| | | | 20 | + | | | | | | |
| | | SILT/CLAY | 10 | + | | | | | | |
| | | SIL1/CLA1 | 0 | | | | | | | |
| | | | 0.0 | 0001 0.0 | 001 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | <i>SILT</i> S i | ieve size (mm) | SAND | GRAVEL | |

IGSL Ltd Materials Laboratory

Approved by: Date: Page no: 18/10/19 1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)



Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

| | | | | | | | | | ペン | |
|----------|---------|-----------|---|----------------|---------------------------------|---------------------------------|--|--------------------------------|------------------------------|---|
| particle | % | | | Contract No: | 22000 | Report No. | R106364 | | ```` | |
| size | passing | | 1 | Contract: | PPK3 Profile | Park | | | 600 | |
| 75 | 100 | COBBLES | | BH/TP: | TP87 - CUB | | | | 62 | |
| 63 | 100 | COBBLEO | | Sample No. | AA113582 | Lab. Sample | e No. | A19/4394 | D. 28/06/2024 | |
| 50 | 100 | | | Sample Type: | В | | | | | |
| 37.5 | 100 | | | Depth (m) | 0.60 | Customer: | PM Group | | | |
| 28 | 98 | | | Date Received | 19/09/2019 | 9 Date Testing | g started | 05/10/2019 | | |
| 20 | 97 | | | Description: | Brown slight | ly sandy, sligh | ntly gravelly, CLA | Υ | | |
| 14 | 95 | GRAVEL | | | | | | | | |
| 10 | 93 | GIVAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have been | n superseded by ISO17892-4:2016 . Result | s apply to sample as received. | | |
| 6.3 | 91 | | | | | | 5 53 | 8 22 | ιΩ | τċ |
| 5 | 90 | | 400 | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 6.3 10 20 | 28 37.5 53 53 53 |
| 3.35 | 87 | | 100 | | | | | | | |
| 2 | 84 | | 90 | | | | | | | |
| 1.18 | 81 | | 80 | | | | | | | +++++++ |
| 0.6 | 77 | | § 70 | | | | | | | |
| 0.425 | 74 | SAND | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | 1 | | | | | | |
| 0.3 | 72 | | <u>8</u> 50 | | | | | | | |
| 0.15 | 65 | | t age 10 | | | | | | | |
| 0.063 | 52 | | sent o | | | | | | | |
| | | | 90 30 | | | | | | | |
| | | | 20 | † | | | | | | |
| | | SILT/CLAY | 10 | † | | | | | | ++++++++ |
| | | | 0 | 1 | | | | | | |
| | | | 0.0 | 0.00 |)1 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | (| CLAY | SILT S | ieve size (mm) | SAND | <i>GRAVEL</i> | |
| | | | | ala I alaawat | | | Approved by: | | Date: | Page no: |
| | | IGSL Lt | a materi | als Laboratory | | | A Begane | | 18/10/19 | 1 of 1 |

Bypure

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)



Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

| particle | % | | | Contract No: | 22000 | Report No. | R106365 | | *D. 28/06/2024 | |
|----------|---------|-----------|-------------|---|---------------------------------|----------------------------------|---|------------------------------|------------------------------------|--|
| size | passing | | _ | Contract: | PPK3 Profile | Park | | | 70 | |
| 75 | 100 | COBBLES | | BH/TP: | TP89 - CUB | | | | 63 | |
| 63 | 100 | CODDLLS | | Sample No. | AA113678 | Lab. Sample | No. | A19/4396 | ,05 | |
| 50 | 96 | | | Sample Type: | В | | | | * | |
| 37.5 | 91 | | | Depth (m) | 0.60 | Customer: | PM Group | | | |
| 28 | 88 | | | Date Received | 19/09/201 | 9 Date Testing | g started | 04/10/2019 | | |
| 20 | 87 | | | Description: | Brown slight | ly sandy, sligh | tly gravelly, CLA | Y | | |
| 14 | 84 | GRAVEL | | | | | | | | |
| 10 | 82 | GIVAVLL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of B\$1377:Part 2:1990 have been | superseded by ISO17892-4:2016 . Results | apply to sample as received. | | |
| 6.3 | 80 | | | | | | 5 53 | 8 27 | ω | -vi |
| 5 | 79 | | 100 | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 6.3 10 14 20 | 28 37.5 50 53 63 |
| 3.35 | 78 | | 100 | | | | | | | |
| 2 | 77 | | 90 | | | | | | | #11 |
| 1.18 | 76 | | 80 | + | | | | | | |
| 0.6 | 74 | | <u>⊗</u> 70 | | | | | | | |
| 0.425 | 73 | SAND | isi 60 | + | | | | | | |
| 0.3 | 72 | | <u>8</u> 50 | | | | | | | |
| 0.15 | 70 | | t age | | | | | | | |
| 0.063 | 66 | | ∥ 등 | | | | | | | |
| | | | Per 30 | | | | | | | |
| | | | 20 | | | | | | | |
| | | SILT/CLAY | 10 | + | | | | | | +++++++++++++++++++++++++++++++++++++++ |
| | | | 0 | 1 | | | | | | |
| | | | 0.0 | 0.00 | 01 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT S | ieve size (mm) | SAND | GRAVEL | |
| | 1 | 1001 1 - | | | | | Approved by: | | Date: | Page no: |
| | | IGSL Lt | a materi | als Laboratory | | | A Begane | | 18/10/19 | 1 of 1 |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5

| (note: Sedim | entation stage | not | accredited) |
|--------------|----------------|-----|-------------|
|--------------|----------------|-----|-------------|



29/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| particle | % | | | Contract No: | 22000 | Report No | . R106692 | | D. 28/08/2024 | |
|----------|---------|-----------|-------------|--|---------------------------------|-------------------------------|---|--------------------------------|----------------------------------|---------------------|
| size | passing | | 7 | Contract: | PPK3 Profile | Park | | | 700 | |
| 75 | 100 | COBBLES | | BH/TP: | TP 93 - CUB | | | | 65 | |
| 63 | 100 | CODDELS | | Sample No. | AA113571 | Lab. Samp | ole No. | A19/4397 | ,05 | |
| 50 | 100 | | | Sample Type: | В | | | | * | |
| 37.5 | 100 | | | Depth (m) | 0.50 | Customer: | PM Group | | | |
| 28 | 94 | | | Date Received | 19/09/2019 | 9 Date Testi | ing started | 22/10/2019 | | |
| 20 | 87 | | | Description: | Grey slightly | sandy, sligh | ntly gravelly, SILT | | | |
| 14 | 83 | GRAVEL | | | | | | | | |
| 10 | 79 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of B\$1377:Part 2:1990 have b | been superseded by ISO17892-4:2016 . Result | s apply to sample as received. | | |
| 6.3 | 75 | | | | | | 5 33 | δ. 8 | | 2 |
| 5 | 74 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2.3.3.5 6.3 10 20 28 | 37. 530. 530. |
| 3.35 | 70 | | 100 | | | | | | | |
| 2 | 66 | | 90 | 1 | | | | | | |
| 1.18 | 63 | | 80 | 1 | | | | | | |
| 0.6 | 59 | | § 70 | | | | | | | |
| 0.425 | 57 | SAND | sing 60 | 1 | | | | | | |
| 0.3 | 55 | | 50 sag | | | | | | | |
| 0.15 | 48 | | ll eg | | | | | | | |
| 0.063 | 42 | | 04 enta | | | | | | | |
| | | | <u>5</u> 30 | | | | | | | |
| | | | 20 | † | | | | | | |
| | | SILT/CLAY | 10 | + | | | | | | |
| | | SIL1/CLA1 | 0 | | | | | | | |
| | | | 0.0 | 0.0 | 01 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT | Sieve size (mm) | SAND | <i>GRAVEL</i> | |
| | l | | <u>I</u> L | | | | Approved by: | | Date: | Page no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5 (note: Sedimentation stage not accredited)



05/11/19

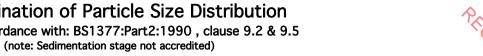
Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| particle | % | | | Contract No: | 22000 | Report No. | R107033 | | *D. 28/06/2024 | |
|----------|---------|-----------|---|--|---------------------------------|-------------------------------------|--|------------------------------|---|--|
| size | passing | | _ | Contract: | PPK3 Profile | Park | | | 70 | |
| 75 | 100 | COBBLES | | BH/TP: | TP95 - CUB | | | | 6 | |
| 63 | 100 | COBBLES | | Sample No. | AA113587 | Lab. Sample | No. | A19/4398 | , O ² | |
| 50 | 100 | | | Sample Type: | В | | | | × | |
| 37.5 | 100 | | | Depth (m) | 1.20 | Customer: | PM Group | | | |
| 28 | 94 | | | Date Received | 19/09/2019 | Date Testing | started | 24/10/2019 | | |
| 20 | 93 | | | Description: | Brown sandy | , slightly grave | lly, SILT with oc | casional cobbles | i | |
| 14 | 89 | GRAVEL | | | | | | | | |
| 10 | 87 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of B\$1377:Part 2:1990 have been su | uperseded by ISO17892-4:2016 . Results | apply to sample as received. | Sample size did not meet the requirements of BS1377 | |
| 6.3 | 83 | | | | | | 5 3 | 5. 8 | ω | r. |
| 5 | 81 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 6.3 10 14 20 28 | 37. 50. 53 53 |
| 3.35 | 80 | | 100 | | | | | | | |
| 2 | 76 | | 90 | | | | | | | +++++++ |
| 1.18 | 72 | | _ 80 | | | | | | | |
| 0.6 | 65 | | <u>%</u> 70 | | | | | | | |
| 0.425 | 63 | SAND | is 60 | | | | | | | |
| 0.3 | 59 | | <u>sed</u> 50 | | | | | | | |
| 0.15 | 49 | | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| 0.063 | 41 | | ent 40 | | | | | | | |
| | | | يّ 30 30 | | | | | | | 1111111 |
| | | | 20 | † | | | | | | ++++++ |
| | | SILT/CLAY | 10 | + | | | | | | |
| | | SIL1/CLA1 | 0 | | | | | | | |
| | | | 0.0 | 0.001 |)01 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT Sie | eve size (mm) | SAND | GRAVEL | |
| | L | 2 | <u>.</u> | | | | Approved by: | | Date: F | Page no: |

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990, clause 9.2 & 9.5





| particle | % | | | Contract No: | 22000 | Report No | . R106366 | | . 28/06/2024 | |
|----------|---------|-----------|-------------|---------------|---------------------------------|----------------------------|--|--------------------------------|---|--|
| size | passing | | _ | Contract: | PPK3 Profile | Park | | | 70 | |
| 75 | 100 | COBBLES | | BH/TP: | TP97 - CUB | | | | 63 | |
| 63 | 100 | COBBLES | | Sample No. | AA113595 | Lab. Samp | ole No. | A19/4399 | 02 | |
| 50 | 81 | | | Sample Type: | В | | | | * | |
| 37.5 | 77 | | | Depth (m) | 0.60 | Customer: | : PM Group | | | |
| 28 | 71 | | | Date Received | 19/09/2019 | Date Test | ing started | 05/10/2019 |) | |
| 20 | 62 | | | Description: | Brown slightl | y sandy, gra | avelly, CLAY | | | |
| 14 | 58 | CD AV/EI | | | | | | | | |
| 10 | 56 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have | been superseded by ISO17892-4:2016 . Results | s apply to sample as received. | Sample size did not meet the requirements of BS1377 | |
| 6.3 | 51 | | | | | | 5 3 | ω 8 | Δ | 2 |
| 5 | 49 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 5.3 6.3 10 14 | 28 37.5 50 63 63 |
| 3.35 | 46 | | 100 | | | | | | | |
| 2 | 42 | | 90 - | | | | | | | |
| 1.18 | 39 | | 80 | | | | | | | |
| 0.6 | 36 | | 8 70 · | | | | | | | |
| 0.425 | 34 | SAND | gnis 60 | | | | | | | |
| 0.3 | 33 | | ssed 50 | | | | | | | |
| 0.15 | 31 | |] B | | | | | | | |
| 0.063 | 27 | | enta 04 | | | | | | | |
| 0.038 | 23 | | <u>n</u> 30 | | | | | | | +++++++ |
| 0.027 | 21 | | 20 | | | | | | | +++++++ |
| 0.018 | 18 | | 10 - | | | | | | | |
| 0.010 | 15 | SILT/CLAY | 0 - | | | | | | | |
| 0.007 | 13 | | 0.0 | 0.0 | 01 | 0.01 | 0.1 | 1 | 10 | 100 |
| 0.005 | 11 | | | | | | | | | |
| 0.002 | 7 | | | | CLAY | SILT | Sieve size (mm) | SAND | GRA VEL | |
| | | • | • | | | | Approved by: | | Date: | Page no: |

IGSL Ltd Materials Laboratory

Approved by: Date: Page no: 18/10/19 1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5



18/10/19

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

1 of 1

| particle | % | | | Contract No: | 22000 | Report No | . R106367 | | 10. 2806/2024 | |
|----------|---------|--------------|---|--|---------------------------------|----------------------------|--|----------------------------------|-------------------------------------|--|
| size | passing | | • | Contract: | PPK3 Profile | Park | | | 700 | |
| 75 | 100 | COBBLES | | BH/TP: | TP99 - CUB | | | | 6,3 | |
| 63 | 100 | COBBLES | | Sample No. | AA113591 | Lab. Samp | ole No. | A19/4400 | , O2 | |
| 50 | 92 | | | Sample Type: | В | | | | * | |
| 37.5 | 81 | | | Depth (m) | 0.60 | Customer: | : PM Group | | | |
| 28 | 73 | | | Date Received | 19/09/2019 | Date Test | ing started | 04/10/2019 | 9 | |
| 20 | 64 | | | Description: | Brown slight | ly sandy, gra | avelly, CLAY | | | |
| 14 | 59 | GRAVEL | | | | | | | | |
| 10 | 56 | GRAVEL | | Remarks | Note: Clause 9.2 and Clause 9.5 | of BS1377:Part 2:1990 have | been superseded by ISO17892-4:2016 . Resul | Its apply to sample as received. | | |
| 6.3 | 52 | | | | | | Σ τ | .υ. 8 | | 2 |
| 5 | 50 | | | | | | 0.063 | 0.3 0.425 0.6 1.18 | 2 3.35 55.3 10 14 20 | 28 37. 53 53 53 |
| 3.35 | 48 | | 100 | | | | | | | |
| 2 | 46 | | 90 | | | | | | | |
| 1.18 | 45 | | 80 | | | | | | | + + + + + + + + + + + + + + + + + + + |
| 0.6 | 43 | | § 70 | | | | | | | 41111111 |
| 0.425 | 43 | SAND | Percentage passing (%) 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | | | | | |
| 0.3 | 42 | | bass 50 | | | | | | | |
| 0.15 | 41 | | ge 30 | | | | | | | |
| 0.063 | 38 | | 04 au | | | | | | | |
| | | | ğ 30 | | | | | | | |
| | | | 20 | + | | | | | | +++++++++++++++++++++++++++++++++++++++ |
| | | 011 T (01 A) | 10 | | | | | | | |
| | | SILT/CLAY | 0 | | | | | | | |
| | | | II - | 0.0001 | 001 | 0.01 | 0.1 | 1 | 10 | 100 |
| | | | | | CLAY | SILT | Sieve size (mm) | SAND | GRAVEL | |
| | 1 | | <u>I</u> L | | | | Approved by: | | Date: | Page no: |

IGSL Ltd Materials Laboratory Unit J5,M7 Business Park

Naas Co.Kildare

045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



Tested in accordance with BS1377:Part 4:1990, clause?

Report No. R106194 Contract PPK3 Profile Park

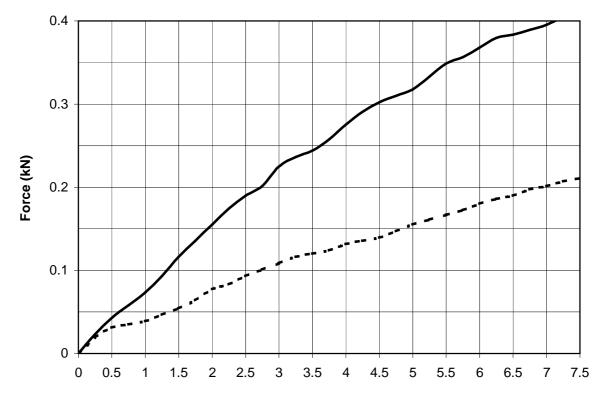
Contract No. 22000 Customer

PM Group

Date received 19/09/19 Date Tested 10/10/19

BH/TP No. TP06 - Sub Station (Opt.2) Sample No. AA113617 Type:

Depth (m) 0.50 Lab sample No. A19/4342



Penetration (mm)

Key: ----- Base

| Description: Grey/brown slightly sandy, slightly gravelly, CLAY | | | | | | |
|---|------------|------------------------------------|------|--|--|--|
| Initial Condition: | Unsoaked | | | | | |
| Moisture Content (%): | 25 | Bulk Density (Mg/m ³): | 1.92 | | | |
| Surcharge (kg): | 4 | Dry Density (Mg/m ³): | 1.53 | | | |
| % Material >20mm: | 0 | | | | | |
| Method of compaction: | Static Con | npaction Method 2 | | | | |

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 1.6 | 8.0 |
| Moisture | 25 | 25 |
| Content % | 20 | 20 |

Results apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

IGSL Ltd Materials Laboratory

Approved by
Date Page No.

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045 899324

Unit J5,M7 Business Park Naas Co.Kildare

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

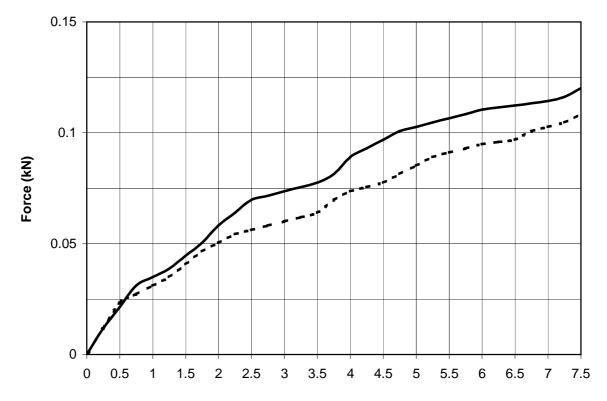
Report No. R106195 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 **Date Tested** 10/10/19

BH/TP No. Sample No. AA128699 Type: TP09 - Sub Station (Opt.2)

Depth (m) 0.60 Lab sample No. A19/4343



Penetration (mm)

Key: -Top ----- Base

| Description: Grey/brov | wn slightly s | andy, slightly gravelly, SILT | • | |
|------------------------|---------------|------------------------------------|------|--|
| Initial Condition: | Unsoaked | | | |
| Moisture Content (%): | 39 | Bulk Density (Mg/m ³): | 1.77 | |
| Surcharge (kg): | 4 | Dry Density (Mg/m ³): | 1.27 | |
| % Material >20mm: | 7.3 | | | |
| Method of compaction: | Static Cor | npaction Method 2 | | |

| Test Result | Тор | Base | |
|-------------|-----|------|--|
| CBR % | 0.5 | 0.4 | |
| Moisture | 39 | 40 | |
| Content % | 33 | 40 | |

tesults apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
|-------------|----------|----------|
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Unit J5,M7 Business Park

Naas Co.Kildare 045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

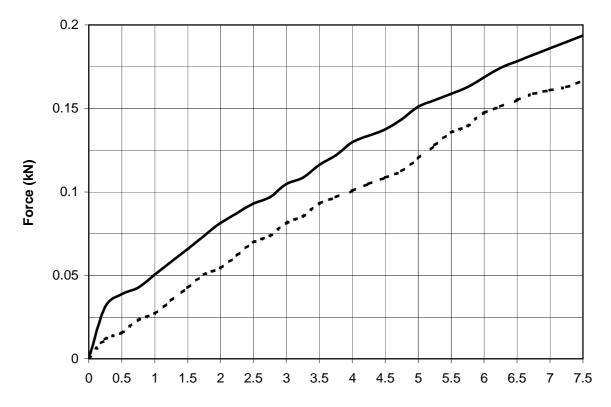
Report No. R106542 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 **Date Tested** 22/10/19

BH/TP No. TP12 Sample No. AA113621 Type:

Depth (m) 1.00 Lab sample No. A19/4344



Penetration (mm)

Key: -Top ----- Base

| Description: Brown slig | ghtly sandy, | slightly gravelly, CLAY | | |
|-------------------------|--------------|------------------------------------|------|--|
| Initial Condition: | Unsoaked | | | |
| Moisture Content (%): | 22 | Bulk Density (Mg/m ³): | 2.05 | |
| Surcharge (kg): | 4 | Dry Density (Mg/m ³): | 1.68 | |
| % Material >20mm: | 11 | | | |
| Method of compaction: | Static Cor | npaction Method 2 | | |

| Test Result | Тор | Base | |
|-------------|-----|------|--|
| CBR % | 0.8 | 0.6 | |
| Moisture | 22 | 22 | |
| Content % | 22 | 22 | |

Results apply to sample as received.

Persons authorized to approve reports J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Unit J5,M7 Business Park

Naas Co.Kildare

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TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

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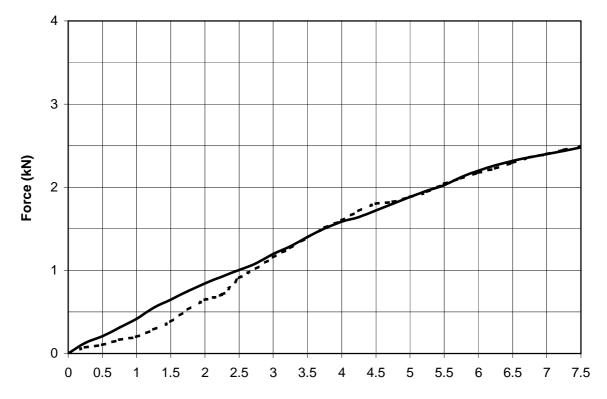
Report No. R106196 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 **Date Tested** 10/10/19

BH/TP No. TP15 - Sub Station (Opt.2) Sample No. AA113630 Type:

Depth (m) 0.60 Lab sample No. A19/4345



Penetration (mm)

Key: -Top ----- Base

| Description: Brown sli | ghtly sandy, | slightly gravelly, CLAY | | |
|------------------------|--------------|------------------------------------|------|--|
| Initial Condition: | Unsoaked | | | |
| Moisture Content (%): | 22 | Bulk Density (Mg/m ³): | 1.99 | |
| Surcharge (kg): | 4 | Dry Density (Mg/m ³): | 1.63 | |
| % Material >20mm: | 8.6 | | | |
| Method of compaction: | Static Cor | npaction Method 2 | | |

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 9.4 | 9.4 |
| Moisture | 22 | 22 |
| Content % | 22 | |

tesults apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager)

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IGSL Ltd Materials Laboratory Unit J5,M7 Business Park

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Naas Co.Kildare 045 899324

Tested in accordance with BS1377:Part 4:1990, clause?

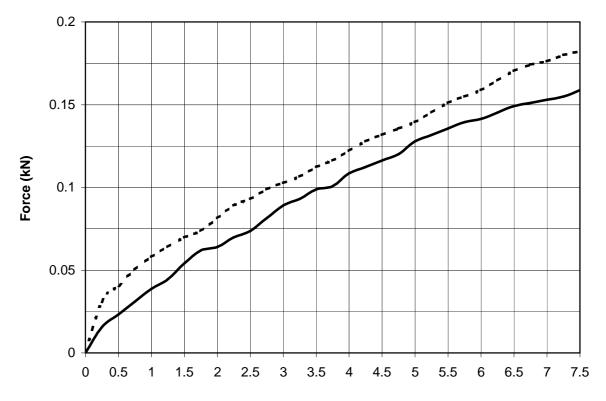
Report No. R106628 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 Date Tested 23/10/19

BH/TP No. TP19 - Sub Station Opt.2 Sample No. AA113640 Type:

Depth (m) 0.60 Lab sample No. A19/4347



Penetration (mm)

Key: ----- Base

| Description: Brown sli | ghtly sandy, | slightly gravelly, CLAY | | |
|------------------------|--------------|------------------------------------|------|--|
| Initial Condition: | Unsoaked | | | |
| Moisture Content (%): | 23 | Bulk Density (Mg/m ³): | 2.02 | |
| Surcharge (kg): | 4 | Dry Density (Mg/m ³): | 1.64 | |
| % Material >20mm: | 13 | | | |
| Method of compaction: | Static Con | npaction Method 2 | | |

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 0.6 | 0.7 |
| Moisture | 23 | 23 |
| Content % | 20 | 20 |

Results apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager)

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Unit J5,M7 Business Park

Naas Co.Kildare 045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

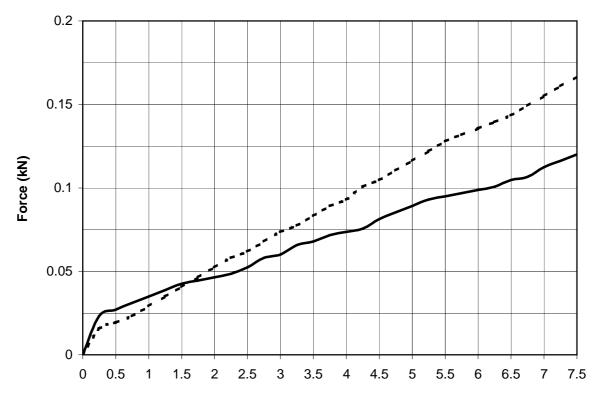
Report No. R106114 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 **Date Tested** 08/10/19

BH/TP No. Sample No. TP40 - Substation (Opt.1) AA128659 Type:

Depth (m) 1.30 Lab sample No. A19/4350



Penetration (mm)

Key: -Top ----- Base

| Description: Dark brow | wn sandy gra | avelly CLAY | | |
|------------------------|--------------|------------------------------------|------|--|
| Initial Condition: | Unsoaked | | | |
| Moisture Content (%): | 17 | Bulk Density (Mg/m ³): | 2.12 | |
| Surcharge (kg): | 4 | Dry Density (Mg/m ³): | 1.81 | |
| % Material >20mm: | 25 | | | |
| Method of compaction: | Static Cor | nnaction Method 2 | | |

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 0.5 | 0.6 |
| Moisture | 18 | 17 |
| Content % | 10 | 17 |

tesults apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Unit J5,M7 Business Park Naas Co.Kildare

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TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

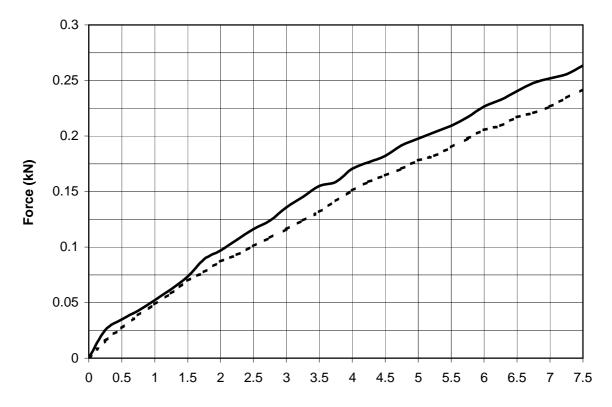
Report No. R106148 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 Date Tested 09/10/19

BH/TP No. TP43 - Substation (Option 1) Sample No. AA123700 Type:

Depth (m) 0.60 Lab sample No. A19/4354



Penetration (mm)

Key: ----- Base

| Description: Brown sli | ghtly sandy, | slightly gravelly, SILT/CLA | Y | |
|------------------------|--------------|------------------------------------|------|--|
| Initial Condition: | Unsoaked | | | |
| Moisture Content (%): | 19 | Bulk Density (Mg/m ³): | 2.08 | |
| Surcharge (kg): | 4 | Dry Density (Mg/m ³): | 1.75 | |
| % Material >20mm: | 4.2 | | | |
| Method of compaction: | Static Con | npaction Method 2 | | |

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 1.0 | 0.9 |
| Moisture | 19 | 19 |
| Content % | 13 | 13 |

Results apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager) H Byrne (Laboratory Manager)

IGSL Ltd Materials Laboratory

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Date

10/10/19

Page No.

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Naas Co.Kildare

045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



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Report No. R106629 Contract PPK3 Profile Park

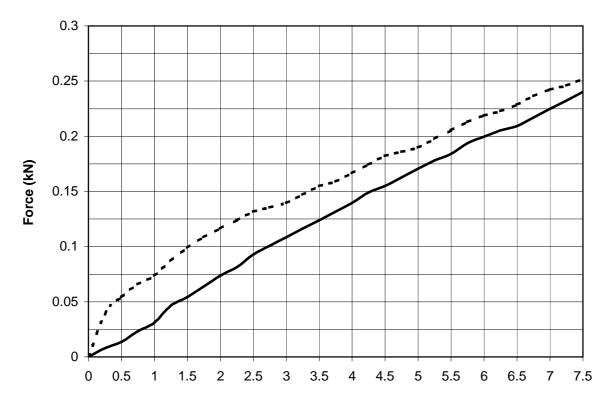
Contract No. 22000 Customer

PM Group

Date received 19/09/19 Date Tested 23/10/19

BH/TP No. TP47 - Fuelling Station Sample No. AA12866 Type:

Depth (m) 1.40 Lab sample No. A19/4357



Penetration (mm)

Key: ----- Base

Description: Brown slightly sandy, slightly gravelly, CLAY **Initial Condition:** Unsoaked Bulk Density (Mg/m³): 23 1.99 Moisture Content (%): Dry Density (Mg/m³): Surcharge (kg): 4 1.61 % Material >20mm: 7.8 Method of compaction: Static Compaction Method 2

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 0.9 | 1.0 |
| Moisture | 23 | 23 |
| Content % | 20 | 20 |

Results apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Naas Co.Kildare

045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



Tested in accordance with BS1377:Part 4:1990, clause?

Report No. R106149 Contract PPK3 Profile Park

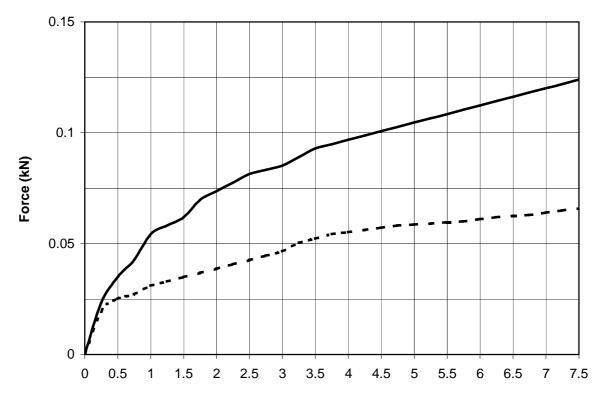
Contract No. 22000 Customer

PM Group

Date received 19/09/19 Date Tested 09/10/19

BH/TP No. TP49 - Fuelling Station Sample No. AA123695 Type:

Depth (m) 0.60 Lab sample No. A19/4360



Penetration (mm)

Key: ----- Base

| Description: Grey/brov | vn slightly sa | andy, slightly gravelly, CLA | Υ | |
|------------------------|----------------|------------------------------------|------|--|
| Initial Condition: | Unsoaked | | | |
| Moisture Content (%): | 41 | Bulk Density (Mg/m ³): | 1.79 | |
| Surcharge (kg): | 4 | Dry Density (Mg/m ³): | 1.27 | |
| % Material >20mm: | 0 | | | |
| Method of compaction: | Static Con | npaction Method 2 | | |

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 0.6 | 0.3 |
| Moisture | 40 | 43 |
| Content % | -0 | 73 |

Results apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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| A Byene | 10/10/19 | 1 of 1 |

Naas Co.Kildare

045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

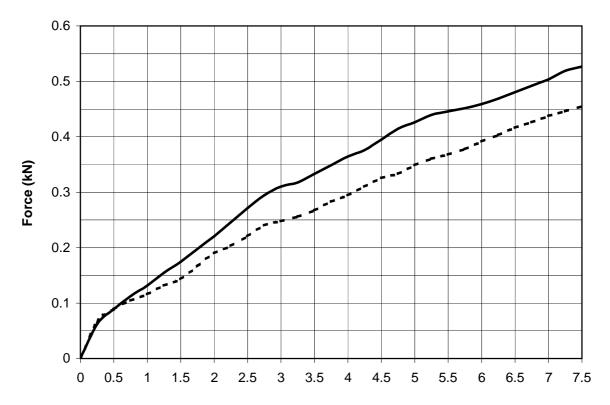
Report No. R106150 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 Date Tested 09/10/19

BH/TP No. TP52 - Data Centre Sample No. AA128673 Type:

Depth (m) 0.70 Lab sample No. A19/4362



Penetration (mm)

Key: ----- Base

| Description: Brown sli | ghtly sandy, | slightly gravelly, CLAY | | |
|------------------------|--------------|------------------------------------|------|--|
| Initial Condition: | Unsoaked | | | |
| Moisture Content (%): | 35 | Bulk Density (Mg/m ³): | 1.84 | |
| Surcharge (kg): | 4 | Dry Density (Mg/m ³): | 1.36 | |
| % Material >20mm: | 1.8 | | | |
| Method of compaction: | Static Cor | npaction Method 2 | | |

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 2.1 | 1.8 |
| Moisture | 36 | 35 |
| Content % | 50 | 55 |

Results apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
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| A Byene | 10/10/19 | 1 of 1 |

045 899324

Unit J5,M7 Business Park Naas Co.Kildare

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

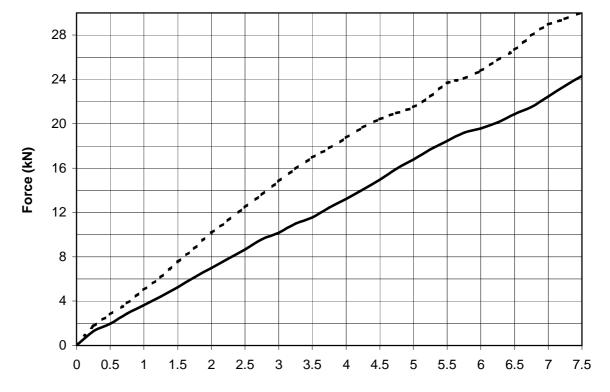
Report No. R106151 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 **Date Tested** 09/10/19

BH/TP No. Sample No. TP54 - Data Centre AA123622 Type:

Depth (m) 0.80 Lab sample No. A19/4364



Penetration (mm)

Key: Top ----- Base

Description: Grey/brown silty, sandy, GRAVEL **Initial Condition:** Unsoaked Bulk Density (Mg/m³): 6 2.33 Moisture Content (%): Dry Density (Mg/m³): Surcharge (kg): 4 2.20 % Material >20mm: 37 Method of compaction: Static Compaction Method 2

Top **Base** Test Result CBR % 84 108 Moisture 6.0 6.0

Content %

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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IGSL Ltd

Materials Laboratory Unit J5,M7 Business Park

Naas Co.Kildare 045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

Report No. R105964 Contract PPK3 Profile Park

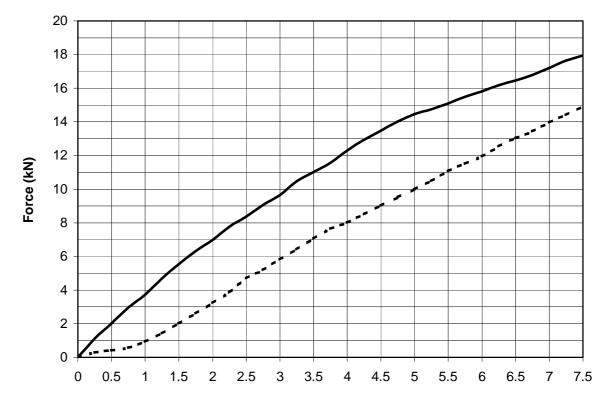
Contract No. 22000 Customer

> **Date Tested** 02/10/19

Date received 19/09/19

BH/TP No. TP57 - Data Center Sample No. AA123651 Type:

Depth (m) 0.50 Lab sample No. A19/4367



Penetration (mm)

Key: Top ----- Base

Description: Brown slightly sandy, gravelly, CLAY with some cobbles **Initial Condition:** Unsoaked Bulk Density (Mg/m³): 7 2.41 Moisture Content (%): Dry Density (Mg/m³): Surcharge (kg): 4 2.26 % Material >20mm: 42 Method of compaction: Static Compaction Method 2

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 72 | 50 |
| Moisture | 5.9 | 7.0 |
| Content % | 5. | 7.0 |

sults apply to sample as received

Persons authorized to approve reports

J Barrett (Quality Manager) H Byrne (Laboratory Manager)

Approved by Date Page No. 03/10/19 1 of 1

IGSL Ltd

Materials Laboratory Unit J5,M7 Business Park

Naas Co.Kildare 045 899324

TEST REPORT **Determination of California Bearing** Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause

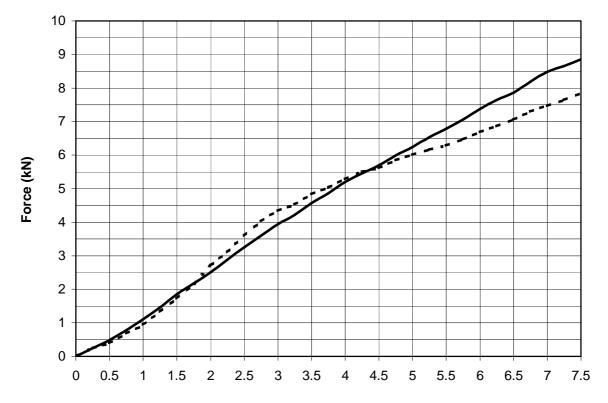
Report No. R106017 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 **Date Tested** 03/10/19

BH/TP No. Sample No. 357 - Data Center AA123653 Type:

Depth (m) 1.00 Lab sample No. A19/4368



Penetration (mm)

Key: Top ----- Base

Description: Brown slightly sandy, gravelly, CLAY with some cobbles **Initial Condition:** Unsoaked Bulk Density (Mg/m³): 12 2.23 Moisture Content (%): Dry Density (Mg/m³): Surcharge (kg): 4 1.99 % Material >20mm: 15 Method of compaction: Static Compaction Method 2

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 31 | 31 |
| Moisture | 12 | 12 |
| Content % | '~ | 12 |

sults apply to sample as received

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
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Unit J5,M7 Business Park Naas Co.Kildare

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

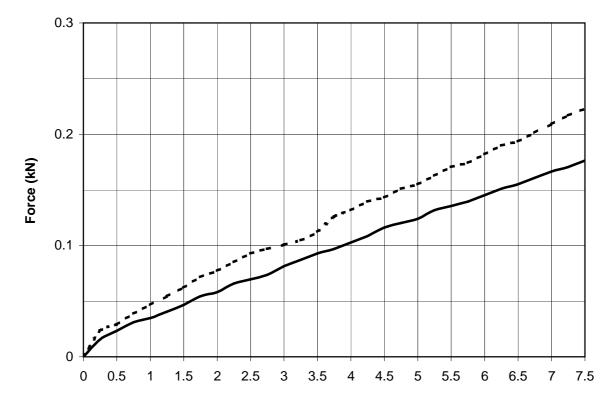
Report No. R106115 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 **Date Tested** 08/10/19

BH/TP No. TP59 - Data Centre Sample No. AA123692 Type:

Depth (m) 0.60 Lab sample No. A19/4369



Penetration (mm)

Key: -Top ----- Base

| Description: Brown slip | ghtly sandy, | gravelly, SILT | | |
|-------------------------|--------------|------------------------------------|------|--|
| Initial Condition: | Unsoaked | | | |
| Moisture Content (%): | 24 | Bulk Density (Mg/m ³): | 2.02 | |
| Surcharge (kg): | 4 | Dry Density (Mg/m ³): | 1.63 | |
| % Material >20mm: | 13 | | | |
| Method of compaction: | Static Con | nnaction Method 2 | | |

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 0.6 | 0.8 |
| Moisture | 25 | 23 |
| Content % | 20 | 20 |

tesults apply to sample as received.

Persons authorized to approve reports J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
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| A Ryane | 09/10/19 | 1 of 1 |

Naas Co.Kildare

045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

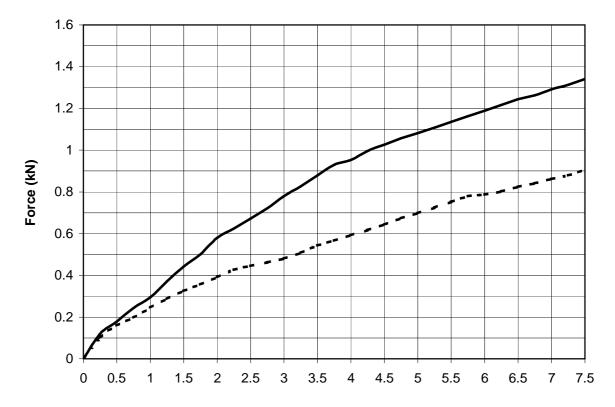
Report No. R106116 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 Date Tested 04/10/19

BH/TP No. TP61 - Data Centre Sample No. AA123611 Type: B

Depth (m) 0.40 Lab sample No. A19/4371



Penetration (mm)

Key: ----- Base

| Description: Brown slip | ghtly sandy, | slightly gravelly, CLAY | | |
|-------------------------|--------------|------------------------------------|------|--|
| Initial Condition: | Unsoaked | | | |
| Moisture Content (%): | 26 | Bulk Density (Mg/m ³): | 1.95 | |
| Surcharge (kg): | 4 | Dry Density (Mg/m ³): | 1.55 | |
| % Material >20mm: | 0 | | | |
| Method of compaction: | Static Cor | npaction Method 2 | | |

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 5.4 | 3.5 |
| Moisture | 26 | 26 |
| Content % | 20 | 20 |

Results apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

IGSL Ltd Materials Laboratory

Approved by

Date Page No. 09/10/19 1 of 1

Unit J5,M7 Business Park Naas Co.Kildare

045 899324

TEST REPORT **Determination of California Bearing** Ratio (CBR)



Tested in accordance with BS1377:Part 4:1990, clause

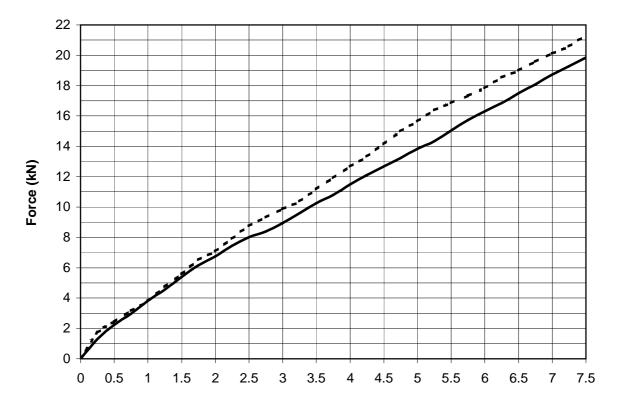
Report No. R106117 Contract PPK3 Profile Park

Contract No. 22000 Customer

PM Group Date received 19/09/19 **Date Tested** 08/10/19

BH/TP No. Sample No. TP62 - Data Centre AA123617 Type:

Depth (m) 1.00 Lab sample No. A19/4372



Penetration (mm)

Key: Top ----- Base

Description: Brown silty, sandy, GRAVEL with some cobbles **Initial Condition:** Unsoaked Bulk Density (Mg/m³): 6 2.30 Moisture Content (%): Dry Density (Mg/m³): Surcharge (kg): 4 2.16 % Material >20mm: 47 Method of compaction: Static Compaction Method 2

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 70 | 78 |
| Moisture | 6.1 | 6.4 |
| Content % | 0.1 | 0.4 |

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
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Unit J5,M7 Business Park

Naas Co.Kildare 045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause

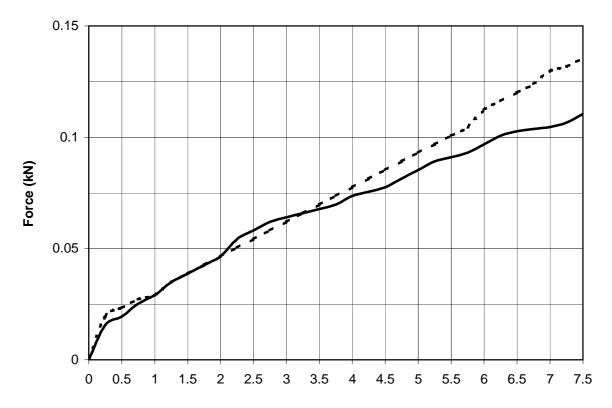
Report No. R106118 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 **Date Tested** 08/10/19

BH/TP No. TP64 - Data Centre Sample No. AA123687 Type:

Depth (m) 1.00 Lab sample No. AA123687



Penetration (mm)

Key: -Top ----- Base

| Description: Brown sli | ghtly sandy, | gravelly, CLAY with many | cobbles | |
|------------------------|--------------|------------------------------------|---------|--|
| Initial Condition: | Unsoaked | | | |
| Moisture Content (%): | 16 | Bulk Density (Mg/m ³): | 2.15 | |
| Surcharge (kg): | 4 | Dry Density (Mg/m ³): | 1.85 | |
| % Material >20mm: | 50 | | | |
| Method of compaction: | Static Con | npaction Method 2 | | |

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 0.4 | 0.5 |
| Moisture | 16 | 16 |
| Content % | 10 | 10 |

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Unit J5,M7 Business Park Naas Co.Kildare

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TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

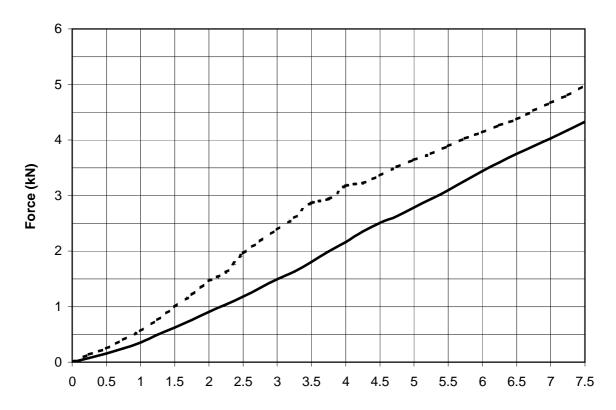
Report No. R106152 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 **Date Tested** 09/10/19

BH/TP No. TP66 - Data Centre Sample No. AA123601 Type:

Depth (m) 0.50 Lab sample No. A19/4374



Penetration (mm)

Key: Top ----- Base

Description: Brown clayey, sandy, GRAVEL with some cobbles **Initial Condition:** Unsoaked Bulk Density (Mg/m³): 15 2.19 Moisture Content (%): Dry Density (Mg/m³): Surcharge (kg): 4 1.91 % Material >20mm: 31 Method of compaction: Static Compaction Method 2

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 14 | 18 |
| Moisture | 15 | 14 |
| Content % | 13 | 17 |

sults apply to sample as received

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
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Unit J5,M7 Business Park

Naas Co.Kildare 045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

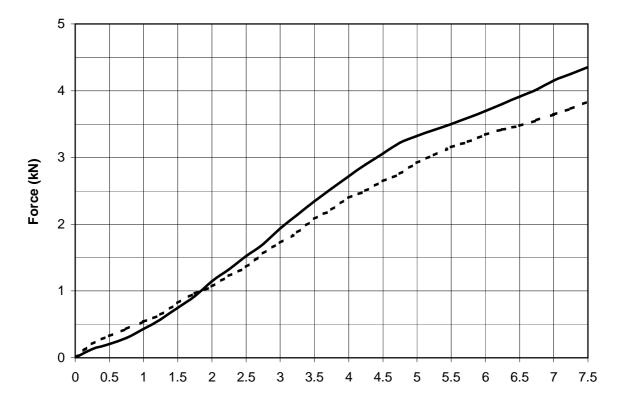
Report No. R106119 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 **Date Tested** 08/10/19

BH/TP No. Sample No. TP69 - Data Centre AA123605 Type:

Depth (m) 0.50 Lab sample No. A19/4378



Penetration (mm)

Key: -Top ----- Base

| Description: Brown cla | ayey, sandy, | GRAVEL with some cobble | es | |
|------------------------|--------------|------------------------------------|------|--|
| Initial Condition: | Unsoaked | | | |
| Moisture Content (%): | 15 | Bulk Density (Mg/m ³): | 2.13 | |
| Surcharge (kg): | 4 | Dry Density (Mg/m ³): | 1.85 | |
| % Material >20mm: | 30 | | | |
| Method of compaction: | Static Con | npaction Method 2 | | |

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 17 | 15 |
| Moisture | 15 | 15 |
| Content % | 10 | 1 |

Results apply to sample as received.

Persons authorized to approve reports J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
|-------------|----------|----------|
| A Byene | 09/10/19 | 1 of 1 |

Unit J5,M7 Business Park

Naas Co.Kildare 045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



Tested in accordance with BS1377:Part 4:1990, clause?

Report No. R106018 Contract PPK3 Profile Park

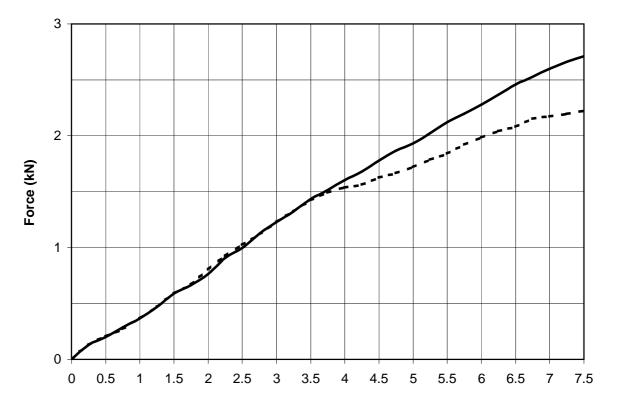
Contract No. 22000 Customer

PM Group

Date received 19/09/19 Date Tested 03/10/19

BH/TP No. TP 69 - Data Center Sample No. AA123607 Type:

Depth (m) 1.50 Lab sample No. A19/4379



Penetration (mm)

Key: ----- Base

Description: COBBLES with brown slightly sandy, gravelly, clay

Initial Condition: Unsoaked

Moisture Content (%): 16 Bulk Density (Mg/m³): 2.16

Surcharge (kg): 4 Dry Density (Mg/m³): 1.86

% Material >20mm: 46

Method of compaction: Static Compaction Method 2

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 10 | 9 |
| Moisture | 16 | 16 |
| Content % | '0 | 10 |

Results apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
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Unit J5,M7 Business Park Naas Co.Kildare

045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

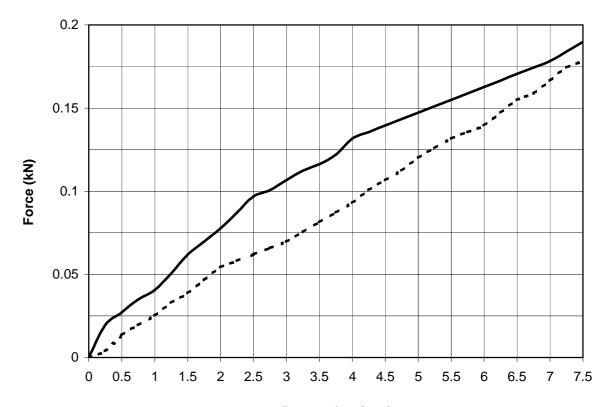
Report No. R106153 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 **Date Tested** 09/10/19

BH/TP No. TP70 - Data Centre Sample No. AA123603 Type:

Depth (m) 0.80 Lab sample No. A19/4380



Penetration (mm)

Key: · Top ----- Base

Description: Grey/brown clayey, sandy, GRAVEL with many cobbles Initial Condition: Unsoaked Bulk Density (Mg/m³): 18 2.12 Moisture Content (%): Dry Density (Mg/m³): Surcharge (kg): 4 1.80 % Material >20mm: 18 Method of compaction: Static Compaction Method 2

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 0.7 | 0.6 |
| Moisture | 18 | 18 |
| Content % | 10 | 10 |

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Naas Co.Kildare

045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

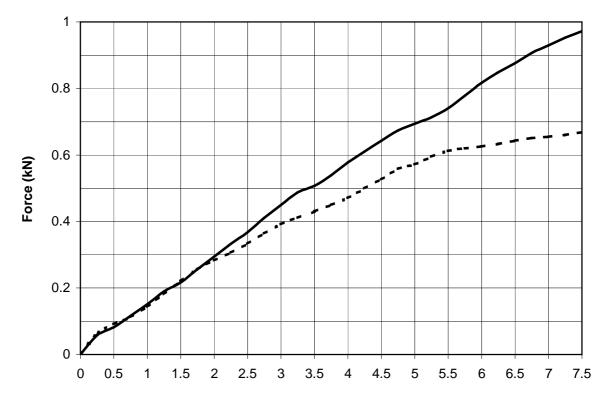
Report No. R106154 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 Date Tested 09/10/19

BH/TP No. TP73 - Data Cetre Sample No. AA123676 Type: B

Depth (m) 0.50 Lab sample No. A19/4383



Penetration (mm)

Key: ----- Base

| Description: Brown sli | ghtly sandy, | slightly gravelly, CLAY | | |
|------------------------|--------------|------------------------------------|------|--|
| Initial Condition: | Unsoaked | | | |
| Moisture Content (%): | 27 | Bulk Density (Mg/m ³): | 1.95 | |
| Surcharge (kg): | 4 | Dry Density (Mg/m ³): | 1.54 | |
| % Material >20mm: | 0 | | | |
| Method of compaction: | Static Con | npaction Method 2 | | |

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 3.5 | 2.9 |
| Moisture | 26 | 27 |
| Content % | 20 | 21 |

Results apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
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| A Byene | 11/10/19 | 1 of 1 |

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Naas Co.Kildare 045 899324

Tested in accordance with BS1377:Part 4:1990, clause

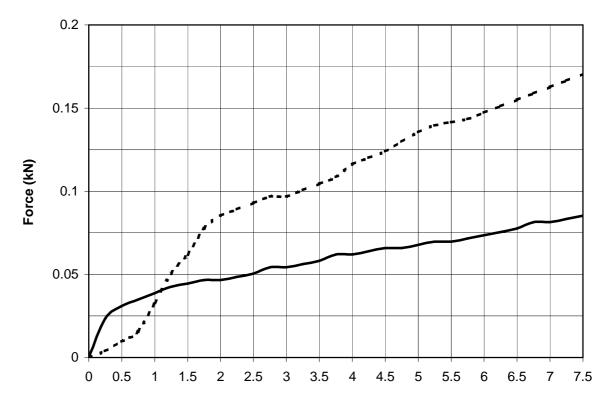
Report No. R106155 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 **Date Tested** 08/10/19

BH/TP No. TP74 - Data Centre Sample No. AA123628 Type:

Depth (m) 0.70 Lab sample No. A19/4385



Penetration (mm)

----- Base Key: Top

Description: Brown slightly sandy, very gravelly, CLAY with many cobbles **Initial Condition:** Unsoaked Bulk Density (Mg/m³): 20 2.09 Moisture Content (%): Dry Density (Mg/m³): Surcharge (kg): 4 1.74 % Material >20mm: 20 Method of compaction: Static Compaction Method 2

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 0.4 | 0.7 |
| Moisture | 18 | 22 |
| Content % | 10 | 22 |

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
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Unit J5,M7 Business Park Naas Co.Kildare

045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



Tested in accordance with BS1377:Part 4:1990, clause

Report No. R106156 Contract PPK3 Profile Park

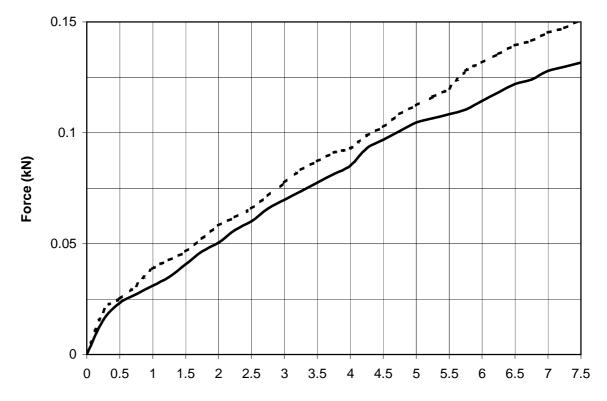
Contract No. 22000 Customer

> PM Group **Date Tested** 09/10/19

Date received 19/09/19

BH/TP No. TP74 - Data Centre Sample No. AA123629 Type:

Depth (m) 1.50 Lab sample No. A19/4386



Penetration (mm)

Key: Top ----- Base

Description: Brown slightly sandy, gravelly, CLAY with many cobbles Initial Condition: Unsoaked Bulk Density (Mg/m³): 19 2.06 Moisture Content (%): Dry Density (Mg/m³): Surcharge (kg): 4 1.73 % Material >20mm: 24 Method of compaction: Static Compaction Method 2

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 0.5 | 0.6 |
| Moisture | 19 | 19 |
| Content % | 10 | 13 |

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
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IGSL Ltd

Materials Laboratory Unit J5,M7 Business Park

Naas Co.Kildare 045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause

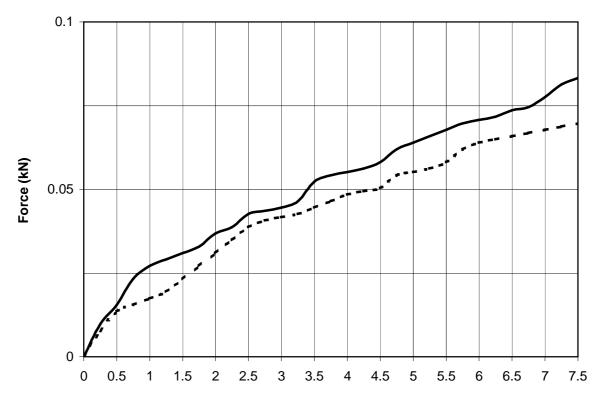
Report No. R106019 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 **Date Tested** 03/10/19

BH/TP No. TP 76 - CUB Sample No. AA123635 Type:

Depth (m) 0.65 Lab sample No. A19/4387



Penetration (mm)

----- Base Key: Top

Description: Brown slightly sandy, slightly gravelly, SILT with many cobbles Initial Condition: Unsoaked Bulk Density (Mg/m³): 40 Moisture Content (%): 1.77 Dry Density (Mg/m³): Surcharge (kg): 4 1.27 % Material >20mm: 27 Method of compaction: Static Compaction Method 2

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 0.3 | 0.3 |
| Moisture | 40 | 39 |
| Content % | 40 | 33 |

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
|-------------|----------|----------|
| A Byene | 04/10/19 | 1 of 1 |

Unit J5,M7 Business Park

Date received

Naas Co.Kildare 045 899324

TEST REPORT **Determination of California Bearing** Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause

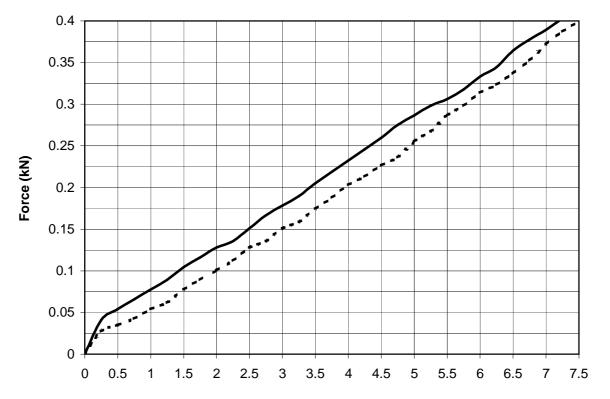
Report No. R106120 Contract PPK3 Profile Park

Contract No. 22000 Customer

> 19/09/19 **Date Tested** 08/10/19

BH/TP No. TP78 - CUB Sample No. AA106120 Type:

Depth (m) 0.80 Lab sample No. A19/4389



Penetration (mm)

Key: -Top ----- Base

Description: Grey/brown silty, sandy, GRAVEL with many cobbles Initial Condition: Unsoaked Bulk Density (Mg/m³): 15 2.21 Moisture Content (%): Dry Density (Mg/m³): Surcharge (kg): 4 1.92 % Material >20mm: 13 Method of compaction: Static Compaction Method 2

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 1.4 | 1.3 |
| Moisture | 16 | 15 |
| Content % | 10 | 10 |

sults apply to sample as received

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
|-------------|----------|----------|
| A Byene | 09/10/19 | 1 of 1 |

Naas Co.Kildare 045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

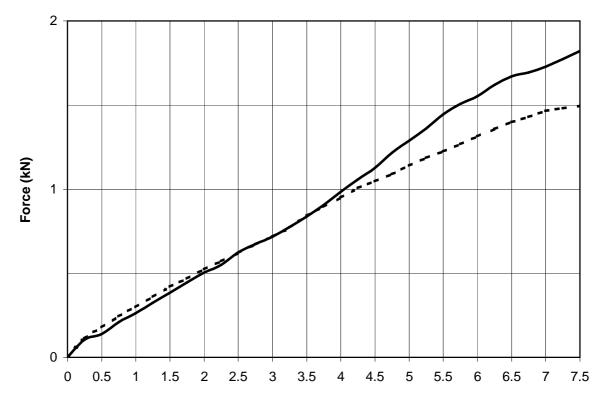
Report No. R105965 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 Date Tested 01/10/19

BH/TP No. TP80 - CUB Sample No. AA113555 Type: B

Depth (m) 0.50 Lab sample No. A19/4391



Penetration (mm)

Key: ----- Base

Description: Brown slightly sandy, gravelly, CLAY

Initial Condition: Unsoaked

Moisture Content (%): 23 Bulk Density (Mg/m³): 1.96

Surcharge (kg): 4 Dry Density (Mg/m³): 1.60

% Material >20mm: 8

Method of compaction: Static Compaction Method 2

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 6.5 | 5.7 |
| Moisture | 24 | 22 |
| Content % | 24 | 22 |

Results apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager) H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
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| A Byene | 03/10/19 | 1 of 1 |

IGSL Ltd

Materials Laboratory Unit J5,M7 Business Park

Naas Co.Kildare 045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

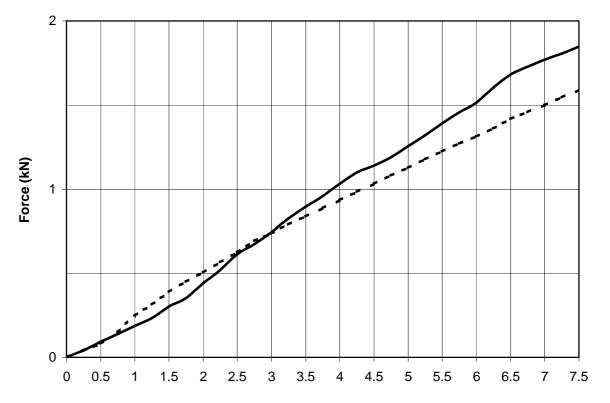
Report No. R105966 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 **Date Tested** 02/10/19

BH/TP No. TP82 - CUB Sample No. AA113558 Type:

Depth (m) 0.50 Lab sample No. A19/4392



Penetration (mm)

Key: Top

Description: Grey/brown slightly sandy, gravelly, CLAY Initial Condition: Unsoaked Bulk Density (Mg/m³): 17 2.13 Moisture Content (%): Dry Density (Mg/m³): Surcharge (kg): 4 1.81 % Material >20mm: 29 Method of compaction: Static Compaction Method 2

Top **Base** Test Result CBR % 6.3 5.7 Moisture 17 18

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

IGSL Ltd Materials Laboratory

Content %

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Unit J5,M7 Business Park

Naas Co.Kildare 045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

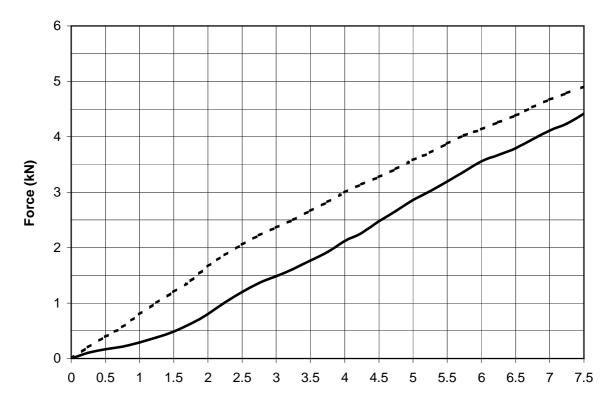
Report No. R106197 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 Date Tested 10/10/19

BH/TP No. TP83 - CUB Sample No. AA113552 Type:

Depth (m) 1.10 Lab sample No. A19/4393



Penetration (mm)

Key: ----- Base

Description: Brown sandy gravelly SILT **Initial Condition:** Unsoaked Bulk Density (Mg/m³): 14 2.16 Moisture Content (%): 4 Dry Density (Mg/m³): Surcharge (kg): 1.89 % Material >20mm: 26 Method of compaction: Static Compaction Method 2

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 14 | 18 |
| Moisture | 14 | 15 |
| Content % | '- | |

Results apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager) H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
|-------------|----------|----------|
| A Ryene | 11/10/19 | 1 of 1 |

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Naas Co.Kildare 045 899324

Tested in accordance with BS1377:Part 4:1990, clause?

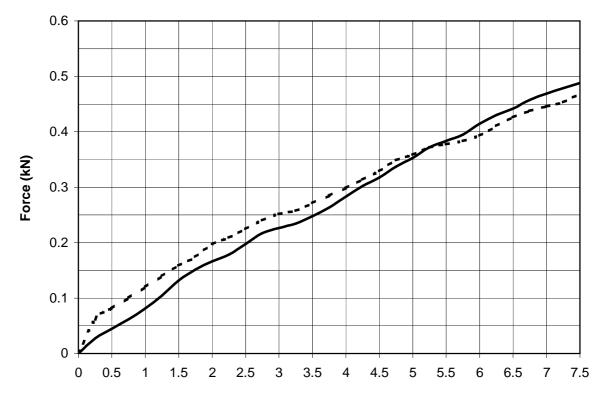
Report No. R106198 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 **Date Tested** 10/10/19

BH/TP No. TP87 - CUB Sample No. AA113562 Type:

Depth (m) 0.60 Lab sample No. A19/4394



Penetration (mm)

Key: -Top ----- Base

| Description: Brown sli | ghtly sandy, | slightly gravelly, CLAY | | |
|------------------------|--------------|------------------------------------|------|--|
| Initial Condition: | Unsoaked | | | |
| Moisture Content (%): | 25 | Bulk Density (Mg/m ³): | 1.97 | |
| Surcharge (kg): | 4 | Dry Density (Mg/m ³): | 1.58 | |
| % Material >20mm: | 4.8 | | | |
| Method of compaction: | Static Cor | mpaction Method 2 | | |

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 1.4 | 1.8 |
| Moisture | 24 | 25 |
| Content % | 27 | 25 |

tesults apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager) H Byrne (Laboratory Manager)

Approved by Date Page No. **IGSL Ltd Materials Laboratory** 11/10/19 1 of 1

Unit J5,M7 Business Park

Naas Co.Kildare 045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

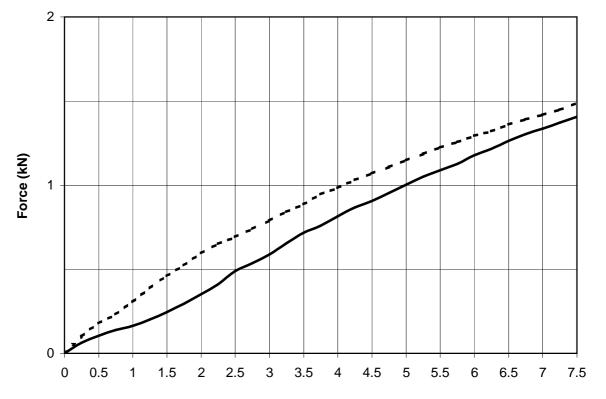
Report No. R105967 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 Date Tested 02/10/19

BH/TP No. TP89 - CUB Sample No. AA113678 Type: B

Depth (m) 0.60 Lab sample No. A19/4395



Penetration (mm)

Key: ----- Base

| Description: Brown slightly sandy, slightly gravelly, CLAY | | | | |
|--|----------|------------------------------------|------|--|
| Initial Condition: | Unsoaked | | | |
| Moisture Content (%): | 27 | Bulk Density (Mg/m ³): | 2.02 | |
| Surcharge (kg): | 4 | Dry Density (Mg/m ³): | 1.59 | |
| % Material >20mm: | 0 | | | |
| Method of compaction: Static Compaction Method 2 | | | | |

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 5.0 | 5.8 |
| Moisture | 27 | 27 |
| Content % | 21 | 21 |

Results apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager) H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
|-------------|----------|----------|
| A Byene | 03/10/19 | 1 of 1 |

Naas Co.Kildare 045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

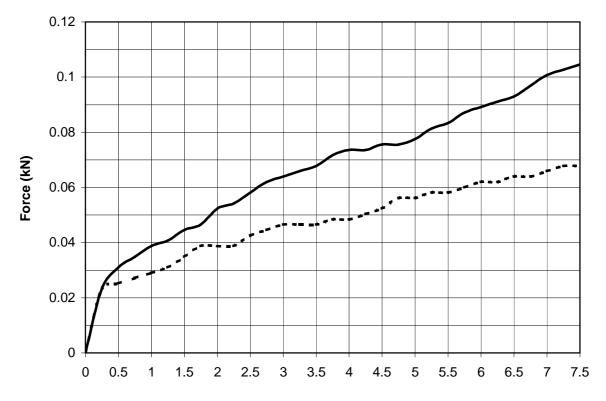
Report No. R106630 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 Date Tested 23/10/19

BH/TP No. TP93 - CUB Sample No. AA113571 Type: B

Depth (m) 0.50 Lab sample No. A19/4397



Penetration (mm)

Key: ----- Base

Description: Grey slightly sandy, slightly gravelly, SILT/CLAY **Initial Condition:** Unsoaked Bulk Density (Mg/m³): 21 2.08 Moisture Content (%): Dry Density (Mg/m³): Surcharge (kg): 4 1.72 % Material >20mm: 8.5 Method of compaction: Static Compaction Method 2

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 0.4 | 0.3 |
| Moisture | 21 | 20 |
| Content % | | 20 |

Results apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
|-------------|----------|----------|
| # Byene | 24/10/19 | 1 of 1 |

Unit J5,M7 Business Park

Naas Co.Kildare 045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

Report No. R106631 Contract PPK3 Profile Park

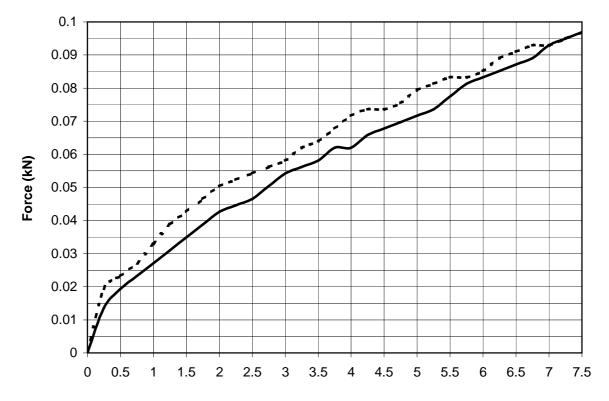
Contract No. 22000 Customer

> 19/09/19 **Date Tested** 23/10/19

Date received

BH/TP No. TP95 - CUB Sample No. AA113587 Type:

Depth (m) 1.20 Lab sample No. A19/4398



Penetration (mm)

Key: Top ----- Base

Description: Brown sandy, slightly gravelly, SILT with occasional cobbles **Initial Condition:** Unsoaked Bulk Density (Mg/m³): 22 2.04 Moisture Content (%): Dry Density (Mg/m³): Surcharge (kg): 4 1.67 % Material >20mm: 4.8 Method of compaction: Static Compaction Method 2

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 0.4 | 0.4 |
| Moisture | 22 | 22 |
| Content % | | |

sults apply to sample as received

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
|-------------|----------|----------|
| A Ryene | 24/10/19 | 1 of 1 |

Unit J5,M7 Business Park

Naas Co.Kildare 045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

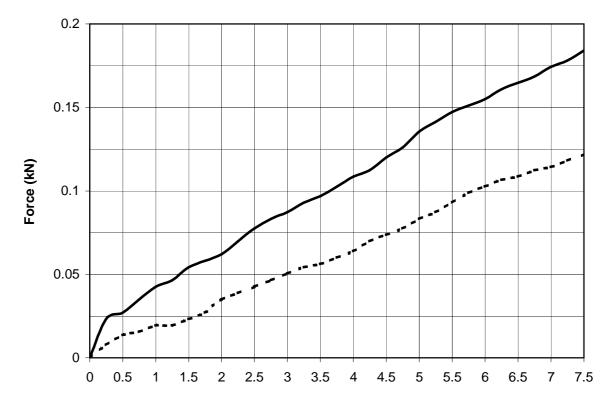
Report No. R106121 Contract PPK3 Profile Park

Contract No. 22000 Customer

Date received 19/09/19 Date Tested 07/10/19

BH/TP No. TP97 - CUB Sample No. AA113595 Type:

Depth (m) 0.60 Lab sample No. A19/4399



Penetration (mm)

Key: ----- Base

| Description: Dark brov | vn sandy gra | velly CLAY | |
|------------------------|--------------|------------------------------------|------|
| Initial Condition: | Unsoaked | | |
| Moisture Content (%): | 18 | Bulk Density (Mg/m ³): | 2.09 |
| Surcharge (kg): | 4 | Dry Density (Mg/m ³): | 1.77 |
| % Material >20mm: | 20 | | |
| Method of compaction: | Static Con | paction Method 2 | |

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 0.7 | 0.4 |
| Moisture | 18 | 18 |
| Content % | 10 | 10 |

Results apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

IGSL Ltd Materials Laboratory

Approved by

Date Page No.

09/10/19 1 of 1

Unit J5,M7 Business Park

Date received

Naas Co.Kildare 045 899324

TEST REPORT Determination of California Bearing Ratio (CBR)



PM Group

Tested in accordance with BS1377:Part 4:1990, clause?

Report No. R105965 Contract PPK3 Profile Park

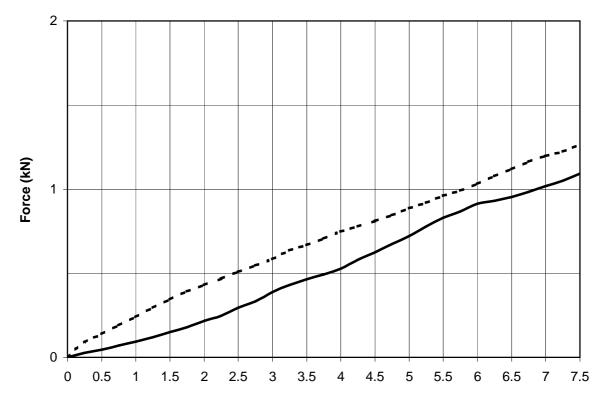
Contract No. 22000 Customer

19/09/19

Date Tested 02/10/19

BH/TP No. TP99 - CUB Sample No. AA113591 Type: B

Depth (m) 0.60 Lab sample No. A19/4400



Penetration (mm)

Key: ----- Base

Description: Brown slightly sandy, gravelly, CLAY Initial Condition: Unsoaked Bulk Density (Mg/m³): 21 2.04 Moisture Content (%): Dry Density (Mg/m³): Surcharge (kg): 4 1.69 % Material >20mm: 28 Method of compaction: Static Compaction Method 2

| Test Result | Тор | Base |
|-------------|-----|------|
| CBR % | 3.6 | 4.5 |
| Moisture | 22 | 20 |
| Content % | 22 | 20 |

Results apply to sample as received.

Persons authorized to approve reports

J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

H Byrne (Laboratory Manager)

| Approved by | Date | Page No. |
|-------------|----------|----------|
| A Byene | 03/10/19 | 1 of 1 |

Naas Co. Kildare 045 899324

Test Report

Determination of Moisture Condition Value at Natural Moisture Content



Tested in accordance with BS1377:Part 4:1990, clause 5.4

Report No. R106276

Contract No. 22000

Contract Name: PPK3 Profile Park

Customer: PM Group

BH/TP TP09

Sample No. AA128699

Depth (m) 0.60

Sample Type: B

Lab Sample No. A19/4343

Source (if applicable) unknown

Material Type (if applicable):

Sample Received: 19/09/19

Date Tested: 11/10/19

Sample Cert: N/A

Moisture Content (%): 40

% Particles > 20mm

(By dry mass):

MCV: 3.2

Interpretation of Plot: Steepest Straight Line

Description of Soil: Grey/brown slightly sandy, slightly gravelly, SILT

0

The result applies to the sample as received.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Co. Kildare 045 899324

Naas

Test Report

Determination of Moisture Condition Value at Natural Moisture Content



Tested in accordance with BS1377:Part 4:1990, clause 5.4

Report No. R106632

Contract No. 22000

Contract Name: PPK Profile Park

Customer: PM Group

BH/TP TP 19 - Substation Opt.2

Sample No. AA113640

Depth (m) 0.60

Sample Type: B

Lab Sample No. A19/4347

Source (if applicable) unknown

Material Type (if applicable): B

Sample Received: 19/09/19

Date Tested: 23/10/19

Sample Cert: N/A

Moisture Content (%): 22

% Particles > 20mm

(By dry mass):

MCV: 5.2

Interpretation of Plot: Steepest Straight Line

Description of Soil: Brown slightly sandy, slightly gravelly, CLAY

0

The result applies to the sample as received.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

IGSL Ltd Materials Laboratory

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Naas Co. Kildare 045 899324

Test Report

Determination of Moisture Condition Value at Natural Moisture Content



Tested in accordance with BS1377:Part 4:1990, clause 5.4

Report No. R106368

Contract No. 22000

Contract Name: PPK3 Profile Park

Customer: PM Group

BH/TP TP43 Sub Station Opt.1

Sample No. AA123700

Depth (m) 0.60

Sample Type: B

Lab Sample No. A19/4354

Source (if applicable) unknown

Material Type (if applicable):

Sample Received: 19/09/19

Date Tested: 16/10/19

Sample Cert: N/A

Moisture Content (%): 18

% Particles > 20mm

(By dry mass):

MCV: 7.7

Interpretation of Plot: Steepest Straight Line

Description of Soil: Brown slightly sandy, slightly gravelly, SILT/CLAY

0

The result applies to the sample as received.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Naas Co. Kildare 045 899324

Test Report

Determination of Moisture Condition Value at Natural Moisture Content



Tested in accordance with BS1377:Part 4:1990, clause 5.4

Report No. R106633

Contract No. 22000

Contract Name: PPK Profile Park

Customer: PM Group

BH/TP TP47 - Fuelling Station

Sample No. AA128666

Depth (m) 1.40

Sample Type: B

Lab Sample No. A19/4357

Source (if applicable) unknown

Material Type (if applicable):

Sample Received: 19/09/19

Date Tested: 23/10/19

Sample Cert: N/A

Moisture Content (%): 22

% Particles > 20mm

(By dry mass):

MCV: 5.8

Interpretation of Plot: Steepest Straight Line

Description of Soil: Brown slightly sandy, slightly gravelly, CLAY

The result applies to the sample as received.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Naas Co. Kildare 045 899324

Test Report

Determination of Moisture Condition Value at Natural Moisture Content



Tested in accordance with BS1377:Part 4:1990, clause 5.4

Report No. R106369

Contract No. 22000

Contract Name: PPK3 Profile Park

Customer: PM Group

BH/TP TP 52 - Data Centre

Sample No. AA128673

Depth (m) 0.70

Sample Type: B

Lab Sample No. A19/4362

Source (if applicable) unknown

Material Type (if applicable):

Sample Received: 19/09/19

Date Tested: 16/10/19

Sample Cert: N/A

Moisture Content (%): 25

% Particles > 20mm (By dry mass):

MCV: 8.2

Interpretation of Plot: Steepest Straight Line

Description of Soil: Brown slightly sandy, slightly gravelly, CLAY

0

The result applies to the sample as received.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Naas Co. Kildare 045 899324

Test Report

Determination of Moisture Condition Value at Natural Moisture Content



Tested in accordance with BS1377:Part 4:1990, clause 5,4

Report No. R107039

Contract No. 22000

Contract Name: PPK3 Profile Park

Customer: PM Group

BH/TP TP 57 - Data Centre

Sample No. AA123651

Depth (m) 0.50

Sample Type:

Lab Sample No. A19/4367

Source (if applicable) unknown

Material Type (if applicable):

19/09/19 Sample Received:

Date Tested: 16/10/19

Sample Cert: N/A

Moisture Content (%): 9.3

% Particles > 20mm 12

(By dry mass):

MCV: 12.3

Interpretation of Plot: Steepest Straight Line

Description of Soil: Brown slightly sandy, gravelly, CLAY with some

cobbles

The result applies to the sample as received.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve reports J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Naas Co. Kildare 045 899324

Test Report

Determination of Moisture Condition Value at Natural Moisture Content



Tested in accordance with BS1377:Part 4:1990, clause 5.4

Report No. R106277

Contract No. 22000

Contract Name: PPK3 Profile Park

Customer: PM Group

BH/TP TP61

Sample No. AA123611

Depth (m) 0.40

Sample Type: B

Lab Sample No. A19/4371

Source (if applicable) unknown

Material Type (if applicable):

Sample Received: 19/09/19

Date Tested: 11/10/19

Sample Cert: N/A

Moisture Content (%): 25

% Particles > 20mm

(By dry mass):

MCV: 11.6

Interpretation of Plot: Steepest Straight Line

Description of Soil: Brown slightly sandy, slightly gravelly, CLAY

0

The result applies to the sample as received.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Naas Co. Kildare 045 899324

Test Report

Determination of Moisture Condition Value at Natural Moisture Content



Tested in accordance with BS1377:Part 4:1990, clause 5.4

Report No. R106278

Contract No. 22000

Contract Name: PPK Profile Park

Customer: PM Group

BH/TP TP69

Sample No. AA123605

Depth (m) 0.50

Sample Type: B

Lab Sample No. A19/4378

Source (if applicable) unknown

Material Type (if applicable):

Sample Received: 19/09/19

Date Tested: 11/10/19

Sample Cert: N/A

Moisture Content (%): 14

% Particles > 20mm 0

(By dry mass):

MCV: 11.6

Interpretation of Plot: Steepest Straight Line

Description of Soil: Brown clayey, sandy, GRAVEL with some cobbles

The result applies to the sample as received.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve reports

J Barrett (Quality Manager)

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Naas Co. Kildare 045 899324

Test Report

Determination of Moisture Condition Value at Natural Moisture Content



Tested in accordance with BS1377:Part 4:1990, clause 5,4

Report No. R106370

Contract No. 22000

Contract Name: PPK3 Profile Park

Customer: PM Group

BH/TP TP 73 - Data Centre

Sample No. AA123676

Depth (m) 0.50

Sample Type:

Lab Sample No. A19/4383

Source (if applicable) unknown

Material Type (if applicable):

19/09/19 Sample Received:

Date Tested: 16/10/19

Sample Cert: N/A

Moisture Content (%): 19

% Particles > 20mm

(By dry mass):

MCV: 9.8

Interpretation of Plot: Steepest Straight Line

Description of Soil: Brown slightly sandy, slightly gravelly, CLAY

The result applies to the sample as received.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve reports

J Barrett (Quality Manager) H Byrne (Laboratory Manager)

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Naas Co. Kildare 045 899324

Test Report

Determination of Moisture Condition Value at Natural Moisture Content



Tested in accordance with BS1377:Part 4:1990, clause 5,4

Report No. R106693

Contract No. 22000

PPK Profile Park Contract Name:

Customer: PM Group

BH/TP TP 74 - Data Centre

Sample No. AA123629

Depth (m) 1.50

Sample Type:

Lab Sample No. A19/4386

Source (if applicable) unknown

Material Type (if applicable):

Sample Received: 19/09/19

Date Tested: 24/10/19

Sample Cert: N/A

Moisture Content (%): 23

% Particles > 20mm 0

(By dry mass):

MCV: 10.2

Interpretation of Plot: Steepest Straight Line

Description of Soil: Brown slightly sandy, gravelly, CLAY with many

cobbles

The result applies to the sample as received.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve reports J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Co. Kildare 045 899324

Test Report

Determination of Moisture Condition Value at Natural Moisture Content



Tested in accordance with BS1377:Part 4:1990, clause 5.4

Report No. R106279

Contract No. 22000

Contract Name: PPK Profile Park

Customer: PM Group

BH/TP TP78

Sample No. AA123679

Depth (m) 0.80

Sample Type: B

Lab Sample No. A19/4389

Source (if applicable) unknown

Material Type (if applicable):

Sample Received: 19/09/19

Date Tested: 11/10/19

Sample Cert: N/A

Moisture Content (%): 14

% Particles > 20mm (By dry mass):

MCV: 6.8

Interpretation of Plot: Steepest Straight Line

Description of Soil: Grey/brown silty, sandy, GRAVEL with many cobbles

The result applies to the sample as received.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Naas Co. Kildare 045 899324

Test Report

Determination of Moisture Condition Value at Natural Moisture Content



Tested in accordance with BS1377:Part 4:1990, clause 5.4

Report No. R106280

Contract No. 22000

Contract Name: PPK Profile Park

Customer: PM Group

BH/TP TP83

Sample No. AA113552

Depth (m) 1.10

Sample Type: B

Lab Sample No. A19/4393

Source (if applicable) unknown

Material Type (if applicable):

Sample Received: 19/09/19

Date Tested: 11/10/19

Sample Cert: N/A

Moisture Content (%): 13

% Particles > 20mm 19

(By dry mass):

MCV: 11

Interpretation of Plot: Steepest Straight Line

Description of Soil: Brown sandy gravelly SILT

The result applies to the sample as received.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve reports

J Barrett (Quality Manager)

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Naas Co. Kildare 045 899324

Test Report

Determination of Moisture Condition Value at Natural Moisture Content



Tested in accordance with BS1377:Part 4:1990, clause 5.4

Report No. R106634

Contract No. 22000

Contract Name: PPK Profile Park

Customer: PM Group

BH/TP TP93 - CUB

Sample No. AA113571

Depth (m) 0.50

Sample Type: B

Lab Sample No. A19/4397

Source (if applicable) unknown

Material Type (if applicable):

Sample Received: 19/09/19

Date Tested: 23/10/19

Sample Cert: N/A

Moisture Content (%): 21

% Particles > 20mm

(By dry mass):

MCV: <1

Interpretation of Plot: Steepest Straight Line

Description of Soil: Grey slightly sandy, slightly gravelly, SILT/CLAY

The result applies to the sample as received.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

| Approved by | Date | Page |
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Naas Co. Kildare 045 899324

Test Report

Determination of Moisture Condition Value at Natural Moisture Content



Tested in accordance with BS1377:Part 4:1990, clause 5.4

Report No. R106205

Contract No. 22000

Contract Name: PPK Profile Park

Customer: PM Group

BH/TP TP99

Sample No. AA113591

Depth (m) 0.60

Sample Type: B

Lab Sample No. A19/4400

Source (if applicable) unknown

Material Type (if applicable):

Sample Received: 19/09/19

Date Tested: 10/10/19

Sample Cert: N/A

Moisture Content (%): 18

% Particles > 20mm 0

(By dry mass):

MCV: 10.6

Interpretation of Plot: Steepest Straight Line

Description of Soil: Brown slightly sandy, gravelly, CLAY

The result applies to the sample as received.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve reports

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

erpretations are outside the scope of accreditation.

H Byrne (Laboratory Manager)

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Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle 11. 20/06/2024 Probe

Report No. R106557

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

Sample No. AA113617

TP6 0.5m Location

Soil description Yellow brown slightly sandy slightly gravelly CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 07/10/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R |
|----------|------------------------|-----------------------|
| | (W/m.k) | |
| 1 | 0.9569 | 1.0451 |
| 2 | 1.3232 | 0.7558 |
| 3 | 1.1586 | 0.8631 |
| 4 | 1.3794 | 0.7250 |
| 5 | 1.0392 | 0.9623 |
| | | |
| Average | 1.1715 | 0.87026 |

| Bulk density (Mg/m3) | 2.00 |
|----------------------------|------|
| Dry density (Mg/m3) | 1.60 |
| Water Content (%) | 24.9 |
| Porosity | 0.39 |
| Particle density (assumed) | 2.65 |

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)

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Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle N. Rolos Ro. A Probe

Report No. R106558

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

Sample No. AA128699

TP9 0.6m Location

Soil description Brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 08/10/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R |
|----------|------------------------|-----------------------|
| | (W/m.k) | |
| 1 | 1.1442 | 0.8739 |
| 2 | 1.1427 | 0.8751 |
| 3 | 1.0575 | 0.9456 |
| 4 | 1.0676 | 0.9367 |
| 5 | 1.1680 | 0.8562 |
| | | |
| Average | 1.1160 | 0.8975 |

Bulk density (Mg/m3) 1.80 Dry density (Mg/m3) 1.27 Water Content (%) 41.7 Porosity 0.52 Particle density (assumed) 2.65

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)

H Byrne (Laboratory Manager) Data Page Approved by

| | Approved by | Date | rage |
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| IGSL Materials Laboratory | Je Tre | 23/10/19 | 1 of 1 |
| | | | |

Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle 10.28/06/2024 Probe

Report No. R106936

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

Sample No. AA113621

TP12 1.0m Location

Soil description Brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 06/11/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R |
|----------|------------------------|-----------------------|
| | (W/m.k) | |
| 1 | 1.5115 | 0.6616 |
| 2 | 1.4276 | 0.7005 |
| 3 | 1.2967 | 0.7712 |
| 4 | 1.4240 | 0.7023 |
| 5 | 1.1698 | 0.8549 |
| | | |
| Average | 1.3659 | 0.7381 |

| Bulk density (Mg/m3) 1.9 | |
|--------------------------------|---|
| Dry density (Mg/m3) 1.5 | 5 |
| Water Content (%) 27. | 9 |
| Porosity 0.4 | 2 |
| Particle density (assumed) 2.6 | 5 |

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

IGSL Materials Laboratory

Date Page TR-180 07/11/19 1 of 1

Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle N. Rolos Ro. A Probe

R106559 Report No.

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

Sample No. AA113630

TP15 0.6m Location

Soil description Brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 08/10/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R |
|----------|------------------------|-----------------------|
| | (W/m.k) | |
| 1 | 0.8831 | 1.1323 |
| 2 | 0.9085 | 1.1007 |
| 3 | 0.9286 | 1.0769 |
| 4 | 0.7928 | 1.2613 |
| 5 | 0.7797 | 1.2826 |
| | | |
| Average | 0.8585 | 1.1708 |

| Bulk density (Mg/m3) | 1.68 |
|----------------------------|------|
| Dry density (Mg/m3) | 1.36 |
| Water Content (%) | 23.3 |
| Porosity | 0.49 |
| Particle density (assumed) | 2.65 |

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle 10.28/06/2024 Probe

R106560 Report No.

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

Sample No. AA113640

TP19 0.6m Location

Soil description Brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 07/10/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R |
|----------|------------------------|-----------------------|
| | (W/m.k) | |
| 1 | 1.1705 | 0.8543 |
| 2 | 1.4181 | 0.7052 |
| 3 | 1.3233 | 0.7557 |
| 4 | 1.2498 | 0.8001 |
| 5 | 1.3933 | 0.7177 |
| | | |
| Average | 1.3110 | 0.7666 |

| 2.03 |
|------|
| 1.64 |
| 23.6 |
| 0.38 |
| 2.65 |
| |

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

IGSL Materials Laboratory

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Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle 11. 28/06/2024 Probe

Report No. R106937

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

Sample No. AA113641

Location TP19 1.3m

Soil description Brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 06/11/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R |
|----------|------------------------|-----------------------|
| | (W/m.k) | |
| 1 | 1.4519 | 0.6888 |
| 2 | 1.4495 | 0.6899 |
| 3 | 1.2532 | 0.7980 |
| 4 | 1.3041 | 0.7668 |
| 5 | 1.1922 | 0.8388 |
| | | |
| Average | 1.3302 | 0.7565 |

Bulk density (Mg/m3) 2.00 Dry density (Mg/m3) 1.54 Water Content (%) 29.7 Porosity 0.42 Particle density (assumed) 2.65

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

Doto Bogo

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle 10.28/06/2024 Probe

R106561 Report No.

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

Sample No. AA128659

TP40 1.3m Location

Soil description Grey brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 18/10/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R |
|----------|------------------------|-----------------------|
| | (W/m.k) | |
| 1 | 1.6886 | 0.5922 |
| 2 | 1.5951 | 0.6269 |
| 3 | 1.5492 | 0.6455 |
| 4 | 1.6276 | 0.6144 |
| 5 | 1.3745 | 0.7275 |
| | | |
| Average | 1.5670 | 0.6413 |

| Bulk density (Mg/m3) | 1.91 |
|----------------------------|------|
| Dry density (Mg/m3) | 1.63 |
| Water Content (%) | 17.3 |
| Porosity | 0.39 |
| Particle density (assumed) | 2.65 |

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager) H Byrne (Laboratory Manager)

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|---------------------------|-------|----------|--------|
| | | | |

Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle 10.28/06/2024 Probe

R106843 Report No.

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

Sample No. AA128653

TP41 1.0m Location

Soil description Brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 24/10/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R |
|----------|------------------------|-----------------------|
| | (W/m.k) | |
| 1 | 1.4506 | 0.6894 |
| 2 | 1.3969 | 0.7159 |
| 3 | 1.3557 | 0.7376 |
| 4 | 1.3001 | 0.7692 |
| 5 | 1.3203 | 0.7574 |
| | | |
| Average | 1.3647 | 0.7339 |

| Dry density (Mg/m3) 1.59 Water Content (%) 26.6 Porosity 0.40 Particle density (assumed) 2.65 | Bulk density (Mg/m3) | 2.01 |
|---|----------------------------|------|
| Porosity 0.40 | Dry density (Mg/m3) | 1.59 |
| , | Water Content (%) | 26.6 |
| Particle density (assumed) 2.65 | Porosity | 0.40 |
| | Particle density (assumed) | 2.65 |

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle 12. 2006 202 A Probe

Report No. R106562

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

Sample No. AA123700

TP43 0.6m Location

Soil description Grey brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 14/10/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R |
|----------|------------------------|-----------------------|
| | (W/m.k) | |
| 1 | 1.4759 | 0.6775 |
| 2 | 1.2586 | 0.7945 |
| 3 | 1.5152 | 0.6600 |
| 4 | 1.6402 | 0.6097 |
| 5 | 1.6205 | 0.6171 |
| | | |
| Average | 1.5021 | 0.6718 |

| Bulk density (Mg/m3) | 2.12 |
|----------------------------|------|
| Dry density (Mg/m3) | 1.77 |
| Water Content (%) | 19.7 |
| Porosity | 0.33 |
| Particle density (assumed) | 2.65 |

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle 10.28/06/2024 Probe

Report No. R106563

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

Sample No. AA123698

TP44 0.6m Location

Soil description Grey brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 14/10/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R |
|----------|------------------------|-----------------------|
| | (W/m.k) | |
| 1 | 1.4933 | 0.6697 |
| 2 | 1.5573 | 0.6421 |
| 3 | 1.5093 | 0.6625 |
| 4 | 1.2384 | 0.8075 |
| 5 | 1.4249 | 0.7018 |
| | | |
| Average | 1.4446 | 0.6967 |

| Bulk density (Mg/m3) 2 | 2.12 |
|----------------------------|------|
| Dry density (Mg/m3) | 1.78 |
| Water Content (%) | 19.3 |
| Porosity | 0.33 |
| Particle density (assumed) | 2.65 |

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle N. Rolos Ro. A Probe

R106564 Report No.

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

Sample No. AA123673

TP52 0.7m Location

Soil description Brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 14/10/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R |
|----------|------------------------|-----------------------|
| | (W/m.k) | |
| 1 | 1.0738 | 0.9313 |
| 2 | 1.0111 | 0.9890 |
| 3 | 1.0920 | 0.9157 |
| 4 | 1.2597 | 0.7938 |
| 5 | 1.1887 | 0.8413 |
| | | |
| Average | 1.1251 | 0.8942 |

| Bulk density (Mg/m3) | 1.77 |
|----------------------------|------|
| Dry density (Mg/m3) | 1.32 |
| Water Content (%) | 34.2 |
| Porosity | 0.50 |
| Particle density (assumed) | 2.65 |

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

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Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle 10.28/06/2024 Probe

R106844 Report No.

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

Sample No. AA123687

TP64 1.0m Location

Soil description Brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 24/10/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R |
|----------|------------------------|-----------------------|
| | (W/m.k) | |
| 1 | 1.4291 | 0.6998 |
| 2 | 1.5500 | 0.6452 |
| 3 | 1.4570 | 0.6863 |
| 4 | 1.5783 | 0.6336 |
| 5 | 1.6375 | 0.6107 |
| | | |
| Average | 1.5304 | 0.6551 |

| Dry density (Mg/m3) 1.8 | 0 |
|--------------------------------|---|
| Water Content (%) 18. | 6 |
| Porosity 0.3 | 2 |
| Particle density (assumed) 2.6 | 5 |

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)

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Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle 10.28/06/2024 Probe

R106565 Report No.

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

Sample No. AA123676

TP73 0.5m Location

Soil description Brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 14/10/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R |
|----------|------------------------|-----------------------|
| | (W/m.k) | |
| 1 | 1.1244 | 0.8894 |
| 2 | 1.0166 | 0.9836 |
| 3 | 1.0482 | 0.9540 |
| 4 | 1.1260 | 0.8881 |
| 5 | 1.0885 | 0.9187 |
| | | |
| Average | 1.0807 | 0.9268 |

| | _ |
|--------------------------------|---|
| Dry density (Mg/m3) 1.3 | 2 |
| Water Content (%) 25. | 9 |
| Porosity 0.5 | 0 |
| Particle density (assumed) 2.6 | 5 |

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)

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Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle N. Rolos Ro. A Probe

Report No. R106566

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

Sample No. AA123629

TP74 1.5m Location

Soil description Brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 14/10/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R | | | |
|----------|------------------------|-----------------------|--|--|--|
| | (W/m.k) | | | | |
| 1 | 1.4492 | 0.6900 | | | |
| 2 | 1.6313 | 0.6130 | | | |
| 3 | 1.3176 | 0.7590 | | | |
| 4 | 1.3733 | 0.7282 | | | |
| 5 | 1.6154 | 0.6191 | | | |
| | | | | | |
| Average | 1.4774 | 0.6819 | | | |

| Bulk density (Mg/m3) | 1.97 |
|----------------------------|------|
| Dry density (Mg/m3) | 1.59 |
| Water Content (%) | 23.9 |
| Porosity | 0.40 |
| Particle density (assumed) | 2.65 |

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

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Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle N. Rolos Ro. A Probe

Report No. R106845

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

AA123679 Sample No.

Location TP78 0.8m

Soil description Grey brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 24/10/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R | | |
|----------|------------------------|-----------------------|--|--|
| | (W/m.k) | | | |
| 1 | 1.5845 | 0.6311 | | |
| 2 | 1.5481 | 0.6460 | | |
| 3 | 1.4747 | 0.6781 | | |
| 4 | 1.4202 | 0.7041 | | |
| 5 | 1.6240 | 0.6158 | | |
| | | | | |
| Average | 1.5303 | 0.6550 | | |

Bulk density (Mg/m3) 2.20 Dry density (Mg/m3) 1.92 Water Content (%) 14.7 Porosity 0.28 Particle density (assumed) 2.65

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

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Persons authorised to approve report

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Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle 12000 200 A Probe

Report No. R106846

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

Sample No. AA113582

TP87 0.6m Location

Soil description Brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 24/10/2019

| Test No. Thermal Conductivity K | | Thermal Resistivity R |
|---------------------------------|---------|-----------------------|
| | (W/m.k) | |
| 1 | 1.5741 | 0.6353 |
| 2 | 1.5731 | 0.6357 |
| 3 | 1.3136 | 0.7615 |
| 4 | 1.3132 | 0.7615 |
| 5 | 1.3649 | 0.7327 |
| | | |
| Average | 1.4278 | 0.7053 |

| Bulk density (Mg/m3) | 2.01 |
|----------------------------|------|
| Dry density (Mg/m3) | 1.58 |
| Water Content (%) | 26.8 |
| Porosity | 0.40 |
| Particle density (assumed) | 2.65 |

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

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Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle N. Rolos Ro. A Probe

Report No. R106567

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

AA113584 Sample No.

Location TP91 0.5m

Soil description Brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 14/10/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R | | |
|----------|------------------------|-----------------------|--|--|
| | (W/m.k) | | | |
| 1 | 0.9206 | 1.0863 | | |
| 2 | 1.1849 | 0.8440 | | |
| 3 | 1.1655 | 0.8580 | | |
| 4 | 1.1565 | 0.8647 | | |
| 5 | 1.2402 | 0.8063 | | |
| | | | | |
| Average | 1.1335 | 0.8919 | | |

Bulk density (Mg/m3) 2.01 Dry density (Mg/m3) 1.56 Water Content (%) 28.7 Porosity 0.41 Particle density (assumed) 2.65

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)

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Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle 11. 20/06/2024 Probe

Report No. R106938

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

Sample No. AA113571

Location TP93 0.5m

Soil description Brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 06/11/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R | | |
|----------|------------------------|-----------------------|--|--|
| | (W/m.k) | | | |
| 1 | 1.2429 | 0.8046 | | |
| 2 | 1.3351 | 0.7490 | | |
| 3 | 1.3017 | 0.7682 | | |
| 4 | 1.4902 | 0.6711 | | |
| 5 | 1.3225 | 0.7562 | | |
| | | | | |
| Average | 1.3385 | 0.7498 | | |

Bulk density (Mg/m3) 1.98 Dry density (Mg/m3) 1.55 Water Content (%) 27.6 Porosity 0.41 Particle density (assumed) 2.65

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager) H Byrne (Laboratory Manager)

Approved by Date Page

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|---|---------------------------|-------------|----------|--------|
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Naas Co. Kildare

Test Report

Determination of Thermal Conductivity of Soil by Thermal Needle N. Rolos Ro. A Probe

Report No. R106939

Contract No. 22000

Contract Name: PPk-3 Profile Park

Client: PM Group

AA113595 Sample No.

TP97 0.6m Location

Soil description Brown slightly sandy slightly gravelly SILT/CLAY

Preparation <8mm material remoulded into container at as received

water content

Date Tested: 06/11/2019

| Test No. | Thermal Conductivity K | Thermal Resistivity R |
|----------|------------------------|-----------------------|
| | (W/m.k) | |
| 1 | 1.3656 | 0.7323 |
| 2 | 1.3905 | 0.7192 |
| 3 | 1.3621 | 0.7341 |
| 4 | 1.2707 | 0.7870 |
| 5 | 1.2135 | 0.8241 |
| | | |
| Average | 1.3205 | 0.7593 |

Bulk density (Mg/m3) 2.00 Dry density (Mg/m3) 1.58 Water Content (%) 26.9 Porosity 0.41 Particle density (assumed) 2.65

Notes: Water content measured in accordance with ISO 17892-1:2014. Bulk density measured by linear measurement. Porosity calculated (voids ratio/1+voids ratio). Thermal measurements undertake using a TEMPOS and TR3 probe (manufactured by METER Group).

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)

H Byrne (Laboratory Manager)

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Appendix 12

Rock Laboratory Test Records

PRICENED. 28/08/2024

Contract: PPK3 Profile Park

Sample Type: Core

Contract no. 22000

| <u>.</u> | (1) | 1 |
|----------|------|---|
| 0 | lesi | / |

| Date of test | | | | | | | | • | - |
|----------------------------|----------------|--------------|------------------|--------|---------------------|--------------------|--------|----------------|---------------|
| RC No. | Depth | D (Diameter) | P (failure load) | F | Is (index strength) | ls(50) (index | *UCS | | 000 |
| | m | mm | kN | | Мра | strength) Mpa | MPa | Type | Orienation |
| RC01 | 3.0 | 78 | 26.0 | 1.222 | 4.27 | 5.22 | 104 | d | // 2 |
| | 4.7 | 78 | 14.0 | 1.222 | 2.30 | 2.81 | 56 | d | // 🔀 |
| | 5.3 | 78 | 4.0 | 1.222 | 0.66 | 0.80 | 16 | d | // |
| | 5.7 | 78 | 25.0 | 1.222 | 4.11 | 5.02 | 100 | d | // |
| | 6.0 | 78 | 16.0 | 1.222 | 2.63 | 3.21 | 64 | d | // |
| | 7.5 | 78 | 2.0 | 1.222 | 0.33 | 0.40 | 8 | d | // |
| RC02 | 3.3 | 78 | 20.0 | 1.222 | 3.29 | 4.02 | 80 | d | // |
| | 3.7 | 78 | 23.0 | 1.222 | 3.78 | 4.62 | 92 | d | // |
| | 5.3 | 78 | 17.0 | 1.222 | 2.79 | 3.41 | 68 | d | // |
| | 6.6 | 78 | 26.0 | 1.222 | 4.27 | 5.22 | 104 | d | // |
| | 8.1 | 78 | 7.0 | 1.222 | 1.15 | 1.41 | 28 | d | // |
| RC03 | 3.2 | 78 | 2.0 | 1.222 | 0.33 | 0.40 | 8 | d | // |
| | 4.6 | 78 | 5.0 | 1.222 | 0.82 | 1.00 | 20 | d | // |
| | 4.8 | 78 | 8.0 | 1.222 | 1.31 | 1.61 | 32 | d | // |
| | 5.8 | 78 | 7.0 | 1.222 | 1.15 | 1.41 | 28 | d | // |
| | 6.9 | 78 | 19.0 | 1.222 | 3.12 | 3.81 | 76 | d | // |
| RC04 | 3.3 | 78 | 16.0 | 1.222 | 2.63 | 3.21 | 64 | d | // |
| | 4.1 | 78 | 8.0 | 1.222 | 1.31 | 1.61 | 32 | d | // |
| | 6.6 | 78 | 2.0 | 1.222 | 0.33 | 0.40 | 8 | d | // |
| | 7.4 | 78 | 22.0 | 1.222 | 3.62 | 4.42 | 88 | d | // |
| | 9.1 | 78 | 24.0 | 1.222 | 3.94 | 4.82 | 96 | d | // |
| | 10.6 | 78 | 31.0 | 1.222 | 5.10 | 6.22 | 124 | d | // |
| Statis | tical Summa | ry Data | ls(50) | UCS* | *UCS Normal | Distribution Curve | е | Ab | breviations |
| Number of S | amples Test | ed | 22 | | 0.25 | | | i | irregular |
| Minimum | | | 0.40 | | | | | а | axial |
| Average | | | 2.96 | 59 | 0.2 | | | b | block |
| Maximum | | | 6.22 | | 0.15 | | | d | diametral |
| Standard Dev. | | 1.85 | 37 | 0.13 / | | | | | |
| Upper 95% Confidence Limit | | 6.59 | | 0.1 | | | approx | orientation to | |
| Lower 95% | Confidence L | imit | -0.68 | -13.57 | / | \ | | ŗ | olanes of |
| | | | | | 0.05 | | | weak | ness/bedding |
| Comments: | | | | | 0 | | | U | unknown |
| *UCS taken a | as k x Point L | oad Is(50): | k= | 20 | | 2000 | | Р | perpendicular |
| | | | | | 0 100 | 200 | 300 | // | parallel |

Contract: PPK3 Profile Park Contract no. 22000

| E | 5 |
|-----|----|
| (IG | SL |

| Date of test | : 17/10/19 | | | | | | | | - |
|----------------------------|----------------|--------------|--------|--------|---------------------|--------------------|------|---------------|------------------|
| RC No. | Depth | D (Diameter) | | F | Is (index strength) | ls(50) (index | *UCS | | 000 |
| | m | mm | kN | | Мра | strength) Mpa | MPa | Type | Orienation |
| RC05 | 3.2 | 78 | 30.0 | 1.222 | 4.93 | 6.02 | 120 | d | 11.65 |
| | 4.1 | 78 | 4.0 | 1.222 | 0.66 | 0.80 | 16 | d | // × |
| | 6.5 | 78 | 26.0 | 1.222 | 4.27 | 5.22 | 104 | d | // |
| | 6.8 | 78 | 2.0 | 1.222 | 0.33 | 0.40 | 8 | d | // |
| | 7.0 | 78 | 32.0 | 1.222 | 5.26 | 6.42 | 128 | d | // |
| RC06 | 3.3 | 78 | 29.0 | 1.222 | 4.77 | 5.82 | 116 | d | // |
| | 4.6 | 78 | 20.0 | 1.222 | 3.29 | 4.02 | 80 | d | // |
| | 6.4 | 78 | 5.0 | 1.222 | 0.82 | 1.00 | 20 | d | // |
| | 6.5 | 78 | 18.0 | 1.222 | 2.96 | 3.61 | 72 | d | // |
| | 7.2 | 78 | 41.0 | 1.222 | 6.74 | 8.23 | 165 | d | // |
| RC07 | 2.8 | 78 | 32.0 | 1.222 | 5.26 | 6.42 | 128 | d | // |
| | 3.9 | 78 | 8.0 | 1.222 | 1.31 | 1.61 | 32 | d | // |
| | 5.1 | 78 | 11.0 | 1.222 | 1.81 | 2.21 | 44 | d | // |
| | 7.8 | 78 | 4.0 | 1.222 | 0.66 | 0.80 | 16 | d | // |
| | 8.5 | 78 | 29.0 | 1.222 | 4.77 | 5.82 | 116 | d | // |
| | 9.4 | 78 | 4.0 | 1.222 | 0.66 | 0.80 | 16 | d | // |
| | 10.1 | 78 | 12.0 | 1.222 | 1.97 | 2.41 | 48 | d | // |
| RC08 | 3.1 | 78 | 11.0 | 1.222 | 1.81 | 2.21 | 44 | d | // |
| | 4.6 | 78 | 19.0 | 1.222 | 3.12 | 3.81 | 76 | d | // |
| | 6.3 | 78 | 15.0 | 1.222 | 2.47 | 3.01 | 60 | d | // |
| | 6.7 | 78 | 9.0 | 1.222 | 1.48 | 1.81 | 36 | d | // |
| | 7.3 | 78 | 15.0 | 1.222 | 2.47 | 3.01 | 60 | d | // |
| | tical Summa | | ls(50) | UCS* | | Distribution Curve | е | Abbreviations | |
| | amples Test | ed | 22 | | 0.25 | | | i | irregular |
| Minimum | | | 0.40 | | 0.2 | | | а | axial |
| Average | | | 3.43 | 69 | 0.2 | | | b | block |
| Maximum | | | 8.23 | | 0.15 | | | d | diametral |
| Standard Dev. | | | 2.28 | | 0.13 / | \ | | | |
| | | | 7.90 | | 0.1 +/ | \ | | | . orientation to |
| Lower 95% Confidence Limit | | | -1.03 | -20.68 | / | | | | olanes of |
| | | | | | 0.05 | | | weakı | ness/bedding |
| Comments: | | | | | 0 | | | U | unknown |
| *UCS taken a | as k x Point L | ₋oad Is(50): | k= | 20 | - ' | 300 | 300 | Р | perpendicular |
| | | | | | 0 100 | 200 | 300 | // | parallel |

Contract: PPK3 Profile Park

| Contract no. | | | | | | | | | Magr) |
|----------------------------|----------------|--------------|------------------|--------|---------------------|-------------------|------|----------------|--------------|
| | : 17/10/19 | | | | | | | | 20 |
| RC No. | Depth | D (Diameter) | P (failure load) | F | Is (index strength) | ls(50) (index | *UCS | | 0/0- |
| | m | mm | kN | | Мра | strength) Mpa | MPa | Type | Orienation |
| RC09 | 4.9 | 78 | 11.0 | 1.222 | 1.81 | 2.21 | 44 | d | // |
| | 5.1 | 78 | 4.0 | 1.222 | 0.66 | 0.80 | 16 | d | // |
| | 5.3 | 78 | 8.0 | 1.222 | 1.31 | 1.61 | 32 | d | // |
| | 5.9 | 78 | 26.0 | 1.222 | 4.27 | 5.22 | 104 | d | // |
| | 7.9 | 78 | 10.0 | 1.222 | 1.64 | 2.01 | 40 | d | // |
| RC10 | 3.8 | 78 | 11.0 | 1.222 | 1.81 | 2.21 | 44 | d | // |
| | 4.0 | 78 | 13.0 | 1.222 | 2.14 | 2.61 | 52 | d | // |
| | 4.8 | 78 | 20.0 | 1.222 | 3.29 | 4.02 | 80 | d | // |
| | 5.2 | 78 | 8.0 | 1.222 | 1.31 | 1.61 | 32 | d | // |
| | 6.2 | 78 | 4.0 | 1.222 | 0.66 | 0.80 | 16 | d | // |
| | 7.4 | 78 | 18.0 | 1.222 | 2.96 | 3.61 | 72 | d | // |
| | 7.9 | 78 | 8.0 | 1.222 | 1.31 | 1.61 | 32 | d | // |
| | 8.0 | 78 | 21.0 | 1.222 | 3.45 | 4.22 | 84 | d | // |
| RC11 | 3.2 | 78 | 18.0 | 1.222 | 2.96 | 3.61 | 72 | d | // |
| | 4.4 | 78 | 2.0 | 1.222 | 0.33 | 0.40 | 8 | d | // |
| | 5.6 | 78 | 6.0 | 1.222 | 0.99 | 1.20 | 24 | d | // |
| | 7.5 | 78 | 15.0 | 1.222 | 2.47 | 3.01 | 60 | d | // |
| | 7.9 | 78 | 2.0 | 1.222 | 0.33 | 0.40 | 8 | d | // |
| RC12 | 3.1 | 78 | 4.0 | 1.222 | 0.66 | 0.80 | 16 | d | // |
| | 4.3 | 78 | 8.0 | 1.222 | 1.31 | 1.61 | 32 | d | // |
| | 4.4 | 78 | 19.0 | 1.222 | 3.12 | 3.81 | 76 | d | // |
| | 6.3 | 78 | 22.0 | 1.222 | 3.62 | 4.42 | 88 | d | // |
| | 6.4 | 78 | 28.0 | 1.222 | 4.60 | 5.62 | 112 | d | // |
| | 7.2 | 78 | 8.0 | 1.222 | 1.31 | 1.61 | 32 | d | // |
| | 7.8 | 78 | 4.0 | 1.222 | 0.66 | 0.80 | 16 | d | // |
| | tical Summar | | ls(50) | UCS* | | Distribution Curv | е | Abl | breviations |
| Number of S | amples Test | ed | 25 | _ | 0.35 | | | i | irregular |
| Minimum | | | 0.40 | | 0.3 | | | а | axial |
| Average | | | 2.39 | 48 | 0.25 | | | b | block |
| Maximum | | | 5.62 | | 0.2 | | | d | diametral |
| Standard De | | | 1.54 | - | | | | | |
| Upper 95% Confidence Limit | | 5.41 | 108.10 | 0.15 | | | | x. orientation | |
| Lower 95% Confidence Limit | | imit | -0.62 | -12.37 | 0.1 | | | | planes of |
| | | | | | 0.05 | | | | ness/bedding |
| Comments: | | | | | 0 | | | U | unknown |
| *UCS taken a | as k x Point L | oad Is(50): | k= | 20 | | 200 | 300 | Р | perpendicula |
| | | | | | 0 100 | 200 | 300 | // | parallel |

Contract: PPK3 Profile Park

| Contract no. | | | | | | | | | Magr) |
|----------------------------|----------------|--------------|------------------|-------|---------------------|-------------------|-------|----------------|---------------|
| Date of test | | | | | | | | | 20 |
| RC No. | Depth | D (Diameter) | P (failure load) | F | Is (index strength) | ls(50) (index | *UCS | | 0/0- |
| | m | mm | kN | | Мра | strength) Mpa | MPa | Type | Orienation |
| RC13 | 3.6 | 78 | 21.0 | 1.222 | 3.45 | 4.22 | 84 | d | // |
| | 4.6 | 78 | 22.0 | 1.222 | 3.62 | 4.42 | 88 | d | // |
| | 5.6 | 78 | 19.0 | 1.222 | 3.12 | 3.81 | 76 | d | // |
| | 6.3 | 78 | 12.0 | 1.222 | 1.97 | 2.41 | 48 | d | // |
| | 6.6 | 78 | 20.0 | 1.222 | 3.29 | 4.02 | 80 | d | // |
| RC14 | 3.0 | 78 | 21.0 | 1.222 | 3.45 | 4.22 | 84 | d | // |
| | 4.4 | 78 | 26.0 | 1.222 | 4.27 | 5.22 | 104 | d | // |
| | 5.8 | 78 | 19.0 | 1.222 | 3.12 | 3.81 | 76 | d | // |
| | 6.1 | 78 | 22.0 | 1.222 | 3.62 | 4.42 | 88 | d | // |
| | 6.6 | 78 | 8.0 | 1.222 | 1.31 | 1.61 | 32 | d | // |
| | 7.2 | 78 | 26.0 | 1.222 | 4.27 | 5.22 | 104 | d | // |
| RC15 | 3.2 | 78 | 28.0 | 1.222 | 4.60 | 5.62 | 112 | d | // |
| | 4.3 | 78 | 12.0 | 1.222 | 1.97 | 2.41 | 48 | d | // |
| | 4.9 | 78 | 2.0 | 1.222 | 0.33 | 0.40 | 8 | d | // |
| | 6.2 | 78 | 12.0 | 1.222 | 1.97 | 2.41 | 48 | d | // |
| | 7.3 | 78 | 24.0 | 1.222 | 3.94 | 4.82 | 96 | d | // |
| | 9.4 | 78 | 4.0 | 1.222 | 0.66 | 0.80 | 16 | d | // |
| RC16 | 3.5 | 78 | 18.0 | 1.222 | 2.96 | 3.61 | 72 | d | // |
| | 3.6 | 78 | 21.0 | 1.222 | 3.45 | 4.22 | 84 | d | // |
| | 4.5 | 78 | 20.0 | 1.222 | 3.29 | 4.02 | 80 | d | // |
| | 5.1 | 78 | 14.0 | 1.222 | 2.30 | 2.81 | 56 | d | // |
| | 5.9 | 78 | 26.0 | 1.222 | 4.27 | 5.22 | 104 | d | // |
| | 7.9 | 78 | 2.0 | 1.222 | 0.33 | 0.40 | 8 | d | // |
| | 9.3 | 78 | 17.0 | 1.222 | 2.79 | 3.41 | 68 | d | // |
| Statis | tical Summar | y Data | ls(50) | UCS* | | Distribution Curv | е | Ab | breviations |
| | amples Teste | ed | 24 | | 0.35 | | | i | irregular |
| Minimum | | | 0.40 | - | 0.3 | | | а | axial |
| Average | | | 3.48 | 70 | 0.25 | | | b | block |
| Maximum | | | 5.62 | 112 | / / | | | d | diametral |
| Standard De | v. | | 1.52 | | 0.2 | | | | |
| Upper 95% Confidence Limit | | 6.46 | 129.21 | 0.15 | | | appro | x. orientation | |
| Lower 95% Confidence Limit | | | 0.50 | 9.99 | 0.1 | \ | | | planes of |
| | | | | | 0.05 | | | weakı | ness/bedding |
| Comments: | | | | | 0.03 | | | U | unknown |
| *UCS taken a | as k x Point L | oad Is(50): | k= | 20 | - | 200 | 200 | Р | perpendicular |
| | | | | | 0 100 | 200 | 300 | // | parallel |

Contract: PPK3 Profile Park

Sample Type: Core

Contract no. 22000 Date of test: 17/10/19

| Date of test: | | | | | | | | | 2 |
|----------------------------|----------------|--------------|------------------|-------|---------------------|-------------------|------|----------------|---------------|
| RC No. | Depth | D (Diameter) | P (failure load) | F | Is (index strength) | Is(50) (index | *UCS | | 0 |
| | m | mm | kN | | Мра | strength) Mpa | MPa | Туре | Orienation |
| RC21 | 3.5 | 78 | 16.0 | 1.222 | 2.63 | 3.21 | 64 | d | // 🔻 |
| | 4.2 | 78 | 5.0 | 1.222 | 0.82 | 1.00 | 20 | d | // |
| | 4.3 | 78 | 10.0 | 1.222 | 1.64 | 2.01 | 40 | d | // |
| | 5.9 | 78 | 22.0 | 1.222 | 3.62 | 4.42 | 88 | d | // |
| | 6.7 | 78 | 6.0 | 1.222 | 0.99 | 1.20 | 24 | d | // |
| | 7.0 | 78 | 12.0 | 1.222 | 1.97 | 2.41 | 48 | d | // |
| RC22 | 2.8 | 78 | 35.0 | 1.222 | 5.75 | 7.03 | 141 | d | // |
| | 5.4 | 78 | 9.0 | 1.222 | 1.48 | 1.81 | 36 | d | // |
| | 6.2 | 78 | 21.0 | 1.222 | 3.45 | 4.22 | 84 | d | // |
| | 6.9 | 78 | 6.0 | 1.222 | 0.99 | 1.20 | 24 | d | // |
| | 7.9 | 78 | 22.0 | 1.222 | 3.62 | 4.42 | 88 | d | // |
| RC23 | 3.0 | 78 | 22.0 | 1.222 | 3.62 | 4.42 | 88 | d | // |
| | 3.3 | 78 | 27.0 | 1.222 | 4.44 | 5.42 | 108 | d | // |
| | 5.0 | 78 | 23.0 | 1.222 | 3.78 | 4.62 | 92 | d | // |
| | 5.6 | 78 | 13.0 | 1.222 | 2.14 | 2.61 | 52 | d | // |
| | 7.2 | 78 | 29.0 | 1.222 | 4.77 | 5.82 | 116 | d | // |
| RC24 | 4.5 | 78 | 18.0 | 1.222 | 2.96 | 3.61 | 72 | d | // |
| | 5.2 | 78 | 9.0 | 1.222 | 1.48 | 1.81 | 36 | d | // |
| | 5.3 | 78 | 9.0 | 1.222 | 1.48 | 1.81 | 36 | d | // |
| | 5.5 | 78 | 24.0 | 1.222 | 3.94 | 4.82 | 96 | d | // |
| | 6.7 | 78 | 2.0 | 1.222 | 0.33 | 0.40 | 8 | d | // |
| | 7.8 | 78 | 26.0 | 1.222 | 4.27 | 5.22 | 104 | d | // |
| Statist | tical Summar | ry Data | ls(50) | UCS* | *UCS Normal | Distribution Curv | е | Abl | breviations |
| Number of Sa | amples Teste | ed | 22 | 22 | 0.3 | | | i | irregular |
| Minimum | | | 0.40 | 8 | 0.25 | | а | axial | |
| Average | | | 3.34 | 67 | | | | | block |
| Maximum | | 7.03 | 141 | | | | | diametral | |
| Standard Dev. | | 1.82 | 36 | 0.15 | | | | | |
| Upper 95% Confidence Limit | | 6.90 | | 0.1 | | | | x. orientation | |
| Lower 95% Confidence Limit | | | -0.22 | -4.36 | 0.1 | | | | planes of |
| | | | | | 0.05 | \rightarrow | | | ness/bedding |
| Comments: | | | | | 0 | | | U | unknown |
| *UCS taken a | as k x Point L | _oad Is(50): | k= | 20 | - · | 300 | 200 | Р | perpendicular |
| | | | | | 0 100 | 200 | 300 | // | parallel |

Contract: PPK3 Profile Park Contract no. 22000

| Date of test: | 17/10/19 | | | | | | | | 2 |
|----------------------------|----------------|--------------|------------------|-------|---------------------|-------------------|------|------|----------------|
| RC No. | Depth | D (Diameter) | P (failure load) | F | Is (index strength) | Is(50) (index | *UCS | | 0/0- |
| | m | mm | kN | | Мра | strength) Mpa | MPa | Type | Orienation |
| RC25 | 3.6 | 78 | 25.0 | 1.222 | 4.11 | 5.02 | 100 | d | // |
| | 4.2 | 78 | 18.0 | 1.222 | 2.96 | 3.61 | 72 | d | // |
| | 5.2 | 78 | 26.0 | 1.222 | 4.27 | 5.22 | 104 | d | // |
| | 7.0 | 78 | 16.0 | 1.222 | 2.63 | 3.21 | 64 | d | // |
| RC26 | 2.4 | 78 | 16.0 | 1.222 | 2.63 | 3.21 | 64 | d | // |
| | 3.6 | 78 | 4.0 | 1.222 | 0.66 | 0.80 | 16 | d | // |
| | 4.1 | 78 | 18.0 | 1.222 | 2.96 | 3.61 | 72 | d | // |
| | 5.2 | 78 | 24.0 | 1.222 | 3.94 | 4.82 | 96 | d | // |
| | 6.7 | 78 | 6.0 | 1.222 | 0.99 | 1.20 | 24 | d | // |
| RC27 | 2.6 | 78 | 26.0 | 1.222 | 4.27 | 5.22 | 104 | d | // |
| | 3.6 | 78 | 14.0 | 1.222 | 2.30 | 2.81 | 56 | d | // |
| | 5.2 | 78 | 11.0 | 1.222 | 1.81 | 2.21 | 44 | d | // |
| | 6.3 | 78 | 20.0 | 1.222 | 3.29 | 4.02 | 80 | d | // |
| | 7.7 | 78 | 9.0 | 1.222 | 1.48 | 1.81 | 36 | d | // |
| RC28 | 2.9 | 78 | 2.0 | 1.222 | 0.33 | 0.40 | 8 | d | // |
| | 4.7 | 78 | 20.0 | 1.222 | 3.29 | 4.02 | 80 | d | // |
| | 5.5 | 78 | 18.0 | 1.222 | 2.96 | 3.61 | 72 | d | // |
| | 6.9 | 78 | 20.0 | 1.222 | 3.29 | 4.02 | 80 | d | // |
| | 7.9 | 78 | 24.0 | 1.222 | 3.94 | 4.82 | 96 | d | // |
| | ical Summar | | ls(50) | UCS* | | Distribution Curv | е | Abl | previations |
| Number of Sa | amples Test | ed | 19 | 19 | 0.3 | | | i | irregular |
| Minimum | | | 0.40 | | 0.25 | | | а | axial |
| Average | | | 3.35 | | | | | b | block |
| Maximum | | | 5.22 | | 0.2 | | | d | diametral |
| Standard Dev | | | 1.48 | | 0.15 | | | | |
| Upper 95% Confidence Limit | | | 6.25 | | 0.1 | | | | x. orientation |
| Lower 95% Confidence Limit | | | 0.45 | 8.98 | / \ | \ | | | planes of |
| | | | | | 0.05 | | | | ness/bedding |
| Comments: | | | | | 0 / | | | U | unknown |
| *UCS taken a | ıs k x Point L | oad Is(50): | k= | 20 | 0 100 | 200 | 300 | Р | perpendicular |
| | | | | | 0 100 | , 200 | 300 | // | parallel |

Contract: PPK3 Profile Park

| | KS FIUITIE FA | II K | Sample Type. Col | C | | | | | WESL/ |
|----------------------------|----------------|--------------|------------------|-------|--------------------------------|---------------|-------|----------------|---------------|
| Contract no. | | | | | | | | | The state of |
| Date of test: | | 1 | | | | T | | | 20 |
| RC No. | • | D (Diameter) | P (failure load) | F | Is (index strength) | Is(50) (index | *UCS | _ | 00 |
| | m | mm | kN | | Мра | strength) Mpa | MPa | Type | Orienation |
| RC29 | 2.9 | 78 | 2.0 | 1.222 | 0.33 | 0.40 | 8 | d | // |
| | 3.5 | 78 | 21.0 | 1.222 | 3.45 | 4.22 | 84 | d | // |
| | 4.9 | 78 | 11.0 | 1.222 | 1.81 | 2.21 | 44 | d | // |
| | 5.6 | 78 | 18.0 | 1.222 | 2.96 | 3.61 | 72 | d | // |
| | 7.0 | 78 | 21.0 | 1.222 | 3.45 | 4.22 | 84 | d | // |
| RC30 | 3.5 | 78 | 12.0 | 1.222 | 1.97 | 2.41 | 48 | d | // |
| | 4.6 | 78 | 36.0 | 1.222 | 5.92 | 7.23 | 145 | d | // |
| | 4.8 | 78 | 32.0 | 1.222 | 5.26 | 6.42 | 128 | d | // |
| | 6.3 | 78 | 29.0 | 1.222 | 4.77 | 5.82 | 116 | d | // |
| | 7.8 | 78 | 8.0 | 1.222 | 1.31 | 1.61 | 32 | d | // |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Statist | tical Summar | y Data | ls(50) | UCS* | *UCS Normal Distribution Curve | | Abl | oreviations | |
| Number of Sa | amples Teste | ed | 10 | 10 | 0.1 | | | i | irregular |
| Minimum | | | 0.40 | 8 | | | | а | axial |
| Average | | | 3.81 | 76 | 0.08 | | | b | block |
| Maximum | | | 7.23 | 145 | 0.06 | \ | | d | diametral |
| Standard Dev | / . | | 2.21 | 44 | 0.06 | | | | |
| Upper 95% Confidence Limit | | 8.15 | | 0.04 | | | appro | x. orientation | |
| Lower 95% Confidence Limit | | -0.52 | | | | | | planes of | |
| | | • | 0.02 | | 0.02 | \rightarrow | | | ness/bedding |
| Comments: | | | | | | | | U | unknown |
| *UCS taken a | ns k x Point I | oad Is(50): | k= | 20 | 0 + | _ | | P | perpendicular |
| oco takon a | | | •• | | 0 100 | 200 | 300 | // | parallel |

IGSL Ltd Unit J5, Materials Laboratory M7 Business Park Naas Co. Kildare 045-899324

Test Report

Resistance to Fragmentation - Los Angeles Test



Tested in accordance with BS EN1097-2:2010

Client: PM Group

Contract: PPK3 Profile Park

Contract No: 22000

Sample No. A19/4906

Client Ref: Tex 1

Location: Tex 1

Source: Site

Material Type: Rock

Sample Received: 10/10/2019

Date tested: 01/11/2019

Sample Cert: Attached /Not Provided

Size of Material: 1 <14mm >12.5mm

2 <12.5mm >10mm

Los Angeles Coefficient: 17

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager) H Byrne (Laboratory Manager)

IGSL Materials Laboratory

Approved by

Date Page
7/11/19 1 of 1

IGSL Ltd Unit J5, Materials Laboratory M7 Business Park Naas Co. Kildare 045-899324

Test Report

Resistance to Fragmentation - Los Angeles Test



Tested in accordance with BS EN1097-2:2010

Client: PM Group

Contract: PPK3 Profile Park

Contract No: 22000

Sample No. A19/4907

Client Ref: Tex 2

Location: Tex 2

Source: Site

Material Type: Rock

Sample Received: 10/10/2019

Date tested: 01/11/2019

Sample Cert: Attached /Not Provided

Size of Material: 1 <14mm >12.5mm

2 <12.5mm >10mm

Los Angeles Coefficient: 52

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager) H Byrne (Laboratory Manager)

IGSL Materials Laboratory

Approved by

Date Page
7/11/19 1 of 1

IGSL Ltd Unit J5, Materials Laboratory M7 Business Park Naas Co. Kildare 045-899324

Test Report

Resistance to Fragmentation - Los Angeles Test



Tested in accordance with BS EN1097-2:2010

Report No. R107042

Client: PM Group

Contract: PPK3 Profile Park

Contract No: 22000

Sample No. A19/4904

Client Ref: Tex 3

Location: Tex 3

Source: Site

Material Type: Rock

Sample Received: 10/10/2019

Date tested: 01/11/2019

Sample Cert: Attached /Not Provided

Size of Material: 1 <14mm >12.5mm

2 <12.5mm >10mm

Los Angeles Coefficient: 36

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager) H Byrne (Laboratory Manager)

IGSL Materials Laboratory

Approved by

Date Page
7/11/19 1 of 1

IGSL Ltd Unit J5, Materials Laboratory M7 Business Park Naas Co. Kildare 045-899324

Test Report

Resistance to Fragmentation - Los Angeles Test



Tested in accordance with BS EN1097-2:2010

Client: PM Group

Contract: PPK3 Profile Park

Contract No: 22000

Sample No. A19/4905

Client Ref: Tex 4

Location: Tex 4

Source: Site

Material Type: Rock

Sample Received: 10/10/2019

Date tested: 01/11/2019

Sample Cert: Attached /Not Provided

Size of Material: 1 <14mm >12.5mm

2 <12.5mm >10mm

Los Angeles Coefficient: 25

The result relates to the specimen tested.

Any remaining material will be retained for one month.

Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager) H Byrne (Laboratory Manager)

IGSL Materials Laboratory

Approved by

Date Page

7/11/19 1 of 1

Test Report

Slake Durability



Tested in accordance with ISRM Part 2 (1981)

Report No. R107044

Contract No. 22000

Contract Name: PPK3 Profile Park

Client: PM Group

Sample No. A19/4906

Client Ref Tex 1

Location Tex 1

Sample Certificate Approved / Provided

Date Received 04/10/19

Date Tested 01/11/19

Slake Durability

Cycle 1 99.9

Cycle 2 99.7

Description of the rock

Pre Test: crushed rock limestone

Post Test: Crushed rock limestone

The slaking fluid is tap water at 20°C unless otherwise stated in this report.

The results relate to the specimens tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

| Approved by | Date | Page |
|-------------|---------|--------|
| A Byene | 7/11/19 | 1 of 1 |

Test Report

Slake Durability



Tested in accordance with ISRM Part 2 (1981)

Report No. R107045

Contract No. 22000

Contract Name: PPK3 Profile Park

Client: PM Group

Sample No. A19/4907

Client Ref Tex 2

Location Tex 2

Sample Certificate Approved / Provided

Date Received 04/10/19

Date Tested 01/11/19

Slake Durability

Cycle 1 89.7

Cycle 2 88.4

Description of the rock

Pre Test: crushed rock mudstone/limestone

Post Test: crushed rock mudstone/limestone

The slaking fluid is tap water at 20°C unless otherwise stated in this report.

The results relate to the specimens tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

| Approved by | Date | Page |
|-------------|---------|--------|
| A Byene | 7/11/19 | 1 of 1 |

Test Report

Slake Durability



Tested in accordance with ISRM Part 2 (1981)

Report No. R107047

Contract No. 22000

Contract Name: PPK3 Profile Park

Client: PM Group

Sample No. A19/4904

Client Ref Tex 3

Location Tex 3

Sample Certificate Approved / Provided

Date Received 04/10/19

Date Tested 01/11/19

Slake Durability

Cycle 1 98.1

Cycle 2 97.1

Description of the rock

Pre Test: crushed rock limestone

Post Test: Crushed rock limestone

The slaking fluid is tap water at 20°C unless otherwise stated in this report.

The results relate to the specimens tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

| Approved by | Date | Page |
|-------------|---------|--------|
| A Byene | 7/11/19 | 1 of 1 |

Test Report

Slake Durability



Tested in accordance with ISRM Part 2 (1981)

Report No. R107046

Contract No. 22000

Contract Name: PPK3 Profile Park

Client: PM Group

Sample No. A19/4905

Client Ref Tex 4

Location Tex 4

Sample Certificate Approved / Provided

Date Received 04/10/19

Date Tested 01/11/19

Slake Durability

Cycle 1 98.9

Cycle 2 98.3

Description of the rock

Pre Test: crushed rock limestone

Post Test: Crushed rock limestone

The slaking fluid is tap water at 20°C unless otherwise stated in this report.

The results relate to the specimens tested.

Any remaining material will be retained for one month.

Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

| Approved by | Date | Page |
|-------------|---------|--------|
| A Byene | 7/11/19 | 1 of 1 |

Appendix 13

Chemical Analysis Records

PRICENED. 28/08/2024





Nicholls Colton Group 7 - 11 Harding Street Leicester LE1 4DH

PRICEINED: 28/06/2024

IGSL Unit F M7 Business Park Nass

> L19/2349/IGS/001 Analytical Test Report:

07/10/2019 Your Project Reference: 22000 - PPK3 Samples Received on:

Your Order Number: 16584 Testing Instruction Received: 07/10/2019

Report Issue Number: 1 Sample Tested: 07/10 to 17/10/2019

32 soil samples Samples Analysed: Report issued: 17/10/2019

Signed

James Gane Group Data Manager

Nicholls Colton Group

Notes:

General

Please refer to Methodologies tab for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Samples were supplied by customer, results are representative of the material provided

Accreditation Key

UKAS = UKAS Accreditation, u = Unaccredited

Date of Issue 24.01.2017 Owned by Emily Blissett - Customer Services Supervisor Authorised by James Gane - Commercial Manager

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L19/2349/IGS/001 Project Reference - 22000 - PPK3 Analytical Test Results - Aggregate Testing

| NC Reference | | | 55145 | 55146 | 55147 | 55148 |
|--|--------|---------------|---------------------|-------------|-------------|--------------------|
| Client Sample Number | | | A19/4342 | A19/4350 | A19/4354 | A19/4355 |
| Material | | | Soil | Soil | Soil | Soil |
| Source/Client Ref. | | | TP6 @ 0.50m | TP40 @ 1.3m | TP43 @ 0.6m | TP44 @ 0.6m |
| Sample Description | | | Brown gravelly clay | Brown clay | Brown clay | Brown crushed rock |
| EN 1744 Determinations | Units | Accreditation | | | | |
| Total Sulphur content (as S) | (%) | UKAS | 0.03 | 0.03 | 0.26 | 0.18 |
| Acid soluble sulphate content (as SO ₃) | (%) | UKAS | < 0.01 | 0.08 | < 0.01 | 0.26 |
| Acid soluble sulphate content (as SO ₄) | (%) | u | < 0.01 | 0.09 | < 0.01 | 0.31 |
| Water soluble sulphate content (as SO ₃) | (%) | UKAS | < 0.01 | 0.02 | < 0.01 | < 0.01 |
| Water soluble sulphate content (as SO ₃) | (mg/l) | u | < 50 | 83 | < 50 | < 50 |
| Water soluble sulphate content (as SO ₄) | (%) | u | < 0.01 | 0.02 | < 0.01 | < 0.01 |
| Water soluble sulphate content (as SO ₄) | (mg/l) | u | < 60 | 100 | < 60 | < 60 |
| Water Soluble chloride content | (%) | UKAS | 0.001 | 0.002 | 0.001 | 0.001 |





| UKAS PRING 0320 | | | | GROUP GROUP | | | | |
|--|--------|---------------|--------------------|-------------|---|--|--|--|
| L19/2349/IGS/001 | | | | | PROUP NO. | iicholls Colton Group 7 - 11 Harding Street Leicester LE1 4DH | | |
| Project Reference - 22000 - PPK3 | | | | | .,5 | ρ. | | |
| Analytical Test Results - Aggregate Testin | g | | | | | 063 | | |
| NC Reference | | | 55149 | 55150 | 55151 | 55152 | | |
| Client Sample Number | | | A19/4359 | A19/4360 | A19/4361 | A19/4363 | | |
| Material | | | Soil | Soil | Soil | Soil | | |
| Source/Client Ref. | | | TP48 @ 1.2m | TP49 @ 0.6m | TP52 @ 0.3m | TP54 @ 0.3m | | |
| Sample Description | | | Brown crushed rock | Brown clay | Brown crushed rock | Brown crushed rock | | |
| EN 1744 Determinations | Units | Accreditation | | | | | | |
| Total Sulphur content (as S) | (%) | UKAS | 0.02 | 0.24 | 0.02 | 0.02 | | |
| Acid soluble sulphate content (as SO ₃) | (%) | UKAS | 0.03 | 0.07 | < 0.01 | < 0.01 | | |
| Acid soluble sulphate content (as SO ₄) | (%) | u | 0.04 | 0.08 | < 0.01 | < 0.01 | | |
| Water soluble sulphate content (as SO ₃) | (%) | UKAS | < 0.01 | < 0.01 | < 0.01 | < 0.01 | | |
| Water soluble sulphate content (as SO ₃) | (mg/l) | u | < 50 | < 50 | < 50 | < 50 | | |
| Water soluble sulphate content (as SO ₄) | (%) | u | < 0.01 | < 0.01 | < 0.01 | < 0.01 | | |
| Water soluble sulphate content (as SO ₄) | (mg/l) | u | < 60 | < 60 | < 60 | < 60 | | |
| Water Soluble chloride content | (%) | UKAS | 0.001 | 0.002 | 0.002 | 0.001 | | |





| | | | L3 COLION | | |
|--------|---------------------------------|--|--------------------|--|--|
| g | | | | PECENTED. N | richolls Colton Group 7 - 11 Harding Street Leicester LE1 4DH |
| | | 55153 | 55154 | 55155 | 55156 |
| | | A19/4365 | A19/4368 | A19/4370 | A19/4372 |
| | | Soil | Soil | Soil | Soil |
| | | TP55 @ 0.2m | TP57 @ 1.0m | TP59 @ 2.7m | TP62 @ 1.0m |
| | | Grey crushed rock | Brown crushed rock | Brown gravelly clay | Grey crushed rock |
| Units | Accreditation | | | | |
| (%) | UKAS | 0.02 | 0.02 | 0.02 | 0.03 |
| (%) | UKAS | 0.09 | < 0.01 | < 0.01 | < 0.01 |
| (%) | u | 0.11 | < 0.01 | < 0.01 | < 0.01 |
| (%) | UKAS | 0.02 | < 0.01 | < 0.01 | < 0.01 |
| (mg/l) | u | 82 | < 50 | < 50 | < 50 |
| (%) | u | 0.02 | < 0.01 | < 0.01 | < 0.01 |
| (mg/l) | u | 98 | < 60 | < 60 | < 60 |
| (%) | UKAS | - | 0.001 | 0.003 | 0.002 |
| | Units (%) (%) (%) (mg/l) (mg/l) | Units Accreditation (%) UKAS (%) UKAS (%) u (%) UKAS (mg/l) u (%) UKAS | S5153 | S5153 S5154 A19/4365 A19/4368 Soil Soil TP55 @ 0.2m TP57 @ 1.0m Grey crushed rock Brown crushed rock | Soil Soil Soil Soil Soil TP55 @ 0.2m TP57 @ 1.0m TP59 @ 2.7m |





| NC Reference | | | 55157 | 55158 | 55159 | S5150 |
|--|--------|---------------|-------------------|--------------------------|---------------------------|--|
| | | | | | | * |
| Client Sample Number | | | A19/4373 | A19/4374 | A19/4375 | A19/4376 |
| Material | | | Soil | Soil | Soil | Soil |
| Source/Client Ref. | | | TP64 @ 0.3m | TP66 @ 0.5m | TP66 @ 1.4m | TP67 @ 0.2m |
| Sample Description | | | Grey crushed rock | Brown clay with mudstone | Brown clayey crushed rock | Brown gravelly with occasional plastic |
| EN 1744 Determinations | Units | Accreditation | | | | |
| Total Sulphur content (as S) | (%) | UKAS | 0.02 | 0.02 | 0.02 | 0.02 |
| Acid soluble sulphate content (as SO ₃) | (%) | UKAS | 0.02 | 0.02 | 0.02 | < 0.01 |
| Acid soluble sulphate content (as SO ₄) | (%) | u | 0.03 | 0.02 | 0.02 | < 0.01 |
| Water soluble sulphate content (as SO ₃) | (%) | UKAS | 0.02 | < 0.01 | < 0.01 | 0.03 |
| Water soluble sulphate content (as SO ₃) | (mg/l) | u | 98 | < 50 | < 50 | 140 |
| Water soluble sulphate content (as SO ₄) | (%) | u | 0.02 | < 0.01 | < 0.01 | 0.03 |
| Water soluble sulphate content (as SO ₄) | (mg/l) | u | 117 | < 60 | < 60 | 167 |
| Water Soluble chloride content | (%) | UKAS | 0.002 | 0.002 | 0.002 | 0.002 |





L19/2349/IGS/001 Project Reference - 22000 - PPK3 Analytical Test Results - Aggregate Testing

| NC Reference | | | 55161 | 55162 | 55163 | S5164 |
|--|--------|---------------|---------------------------------------|---------------------|-------------------|--------------------|
| Client Sample Number | | | A19/4377 | A19/4379 | A19/4382 | A19/4384 |
| Material | | | Soil | Soil | Soil | Soil |
| Source/Client Ref. | | | TP68 @ 1.3m | TP69 @ 1.5m | TP72 @ 0.35m | TP73 @ 2.0m |
| Sample Description | | | Brown gravelly clay with crushed rock | Brown gravelly clay | Grey crushed rock | Brown crushed rock |
| EN 1744 Determinations | Units | Accreditation | | | | |
| Total Sulphur content (as S) | (%) | UKAS | 0.02 | 0.02 | 0.01 | 0.02 |
| Acid soluble sulphate content (as SO ₃) | (%) | UKAS | 0.03 | 0.01 | 0.04 | 0.05 |
| Acid soluble sulphate content (as SO ₄) | (%) | u | 0.03 | 0.02 | 0.05 | 0.06 |
| Water soluble sulphate content (as SO ₃) | (%) | UKAS | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Water soluble sulphate content (as SO ₃) | (mg/l) | u | < 50 | < 50 | < 50 | < 50 |
| Water soluble sulphate content (as SO ₄) | (%) | u | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Water soluble sulphate content (as SO ₄) | (mg/l) | u | < 60 | < 60 | < 60 | < 60 |
| Water Soluble chloride content | (%) | UKAS | 0.002 | 0.001 | 0.002 | 0.002 |





Nicholls Colton Group 7 - 11 Harding Street Leicester LE1 4DH

L19/2349/IGS/001 Project Reference - 22000 - PPK3 Analytical Test Results - Aggregate Testing

NC Reference 55165 55166 55167 55168 Client Sample Number A19/4386 A19/4396 A19/4388 A19/4393 Material Soil Soil Soil Soil Source/Client Ref. TP74 @ 1.5m TP77 @ 1.1m TP83 @ 1.1m TP91 @ 0.5m Brown clay with Brown clay with Sample Description Brown garvelly clay Brown crushed rock crushed rock crushed rcok **EN 1744 Determinations** Units Accreditation Total Sulphur content (as S) (%) UKAS 0.02 0.03 0.03 0.03 Acid soluble sulphate content (as SO₃) UKAS 0.05 0.05 0.04 0.04 (%) Acid soluble sulphate content (as SO₄) (%) u 0.06 0.06 0.04 0.05 Water soluble sulphate content (as SO₃) (%) UKAS < 0.01 0.01 < 0.01 < 0.01 Water soluble sulphate content (as SO₃) (mg/l) < 50 52 < 50 < 50 Water soluble sulphate content (as SO₄) < 0.01 0.01 < 0.01 < 0.01 (%) u Water soluble sulphate content (as SO₄) (mg/l) < 60 62 < 60 < 60 u Water Soluble chloride content (%) UKAS 0.001 0.002





Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

L19/2349/IGS/001 Project Reference - 22000 - PPK3 Analytical Test Results - Aggregate Testing

| NC Reference | | | 55169 | 55170 | 55171 | 55172 |
|--|--------|---------------|------------------------------|---------------------|------------------------------|---------------------|
| Client Sample Number | | | A19/4400 | A19/4348 | A19/4344 | A19/4357 |
| Material | | | Soil | Soil | Soil | Soil |
| Source/Client Ref. | | | TP99 @ 0.6m | TP19 @ 1.3m | TP12 @ 1.0m | TP47 @ 1.4m |
| Sample Description | | | Brown slightly gravelly clay | Brown gravelly clay | Brown slightly gravelly clay | Brown gravelly clay |
| EN 1744 Determinations | Units | Accreditation | | | | |
| Total Sulphur content (as S) | (%) | UKAS | 0.02 | 0.01 | 0.04 | 0.02 |
| Acid soluble sulphate content (as SO ₃) | (%) | UKAS | < 0.01 | 0.03 | 0.03 | 0.04 |
| Acid soluble sulphate content (as SO ₄) | (%) | u | < 0.01 | 0.04 | 0.04 | 0.05 |
| Water soluble sulphate content (as SO ₃) | (%) | UKAS | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Water soluble sulphate content (as SO ₃) | (mg/l) | u | < 50 | < 50 | < 50 | < 50 |
| Water soluble sulphate content (as SO ₄) | (%) | u | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Water soluble sulphate content (as SO ₄) | (mg/l) | u | < 60 | < 60 | < 60 | < 60 |
| Water Soluble chloride content | (%) | UKAS | 0.001 | 0.002 | 0.001 | 0.002 |





| NC Reference | | | 55173 | 55174 | 55175 | S5176 |
|--|--------|---------------|---------------------|-------------------|--------------------------|---------------------|
| Client Sample Number | | | A19/4381 | A19/4384 | A19/4390 | A19/4398 |
| Material | | | Soil | Soil | Soil | Soil |
| Source/Client Ref. | | | TP70 @ 1.4m | TP73 @ 2.0m | TP78 @ 1.4m | TP95 @ 1.2m |
| Sample Description | | | Brown gravelly clay | Grey crushed rock | Grey brown garvelly clay | Brown gravelly clay |
| EN 1744 Determinations | Units | Accreditation | | | | |
| Total Sulphur content (as S) | (%) | UKAS | 0.02 | 0.03 | 0.07 | 0.02 |
| Acid soluble sulphate content (as SO ₃) | (%) | UKAS | 0.06 | < 0.01 | 0.08 | 0.03 |
| Acid soluble sulphate content (as SO ₄) | (%) | u | 0.07 | < 0.01 | 0.09 | 0.03 |
| Water soluble sulphate content (as SO ₃) | (%) | UKAS | < 0.01 | 0.04 | < 0.01 | < 0.01 |
| Water soluble sulphate content (as SO ₃) | (mg/l) | u | < 50 | 214 | < 50 | < 50 |
| Water soluble sulphate content (as SO ₄) | (%) | u | < 0.01 | 0.05 | < 0.01 | < 0.01 |
| Water soluble sulphate content (as SO ₄) | (mg/l) | u | < 60 | 257 | < 60 | < 60 |
| Water Soluble chloride content | (%) | UKAS | 0.002 | 0.002 | - | - |





L19/2349/IGS/001

Project Reference - 22000 - PPK3 **Analysis Methodologies and Notes**

| Determinant | Test method and notes | POZA |
|--------------------------------|---|------|
| EN 1744 Total Sulphur | Testing was in accordance with BS EN 1744-1:2009 + A1:2012 clause 11. | |
| EN 1744 Acid Soluble Sulphate | Testing was in accordance with BS EN 1744-1:2009 + A1:2012 clause 12. | |
| EN 1744 Water Soluble Sulphate | Testing was in accordance with BS EN 1744-1:2009 + A1:2012 clause 10. | |
| EN 1744 Water Soluble Chloride | Testing was in accordance with BS EN 1744-1:2009 + A1:2012 clause 7 (Reference Method). | |





IGSL Unit F M7 Business Park Nass

> Analytical Test Report: L19/2491/IGS/001

Your Project Reference: 22000 - PPK3 Profile Park Samples Received on: 23/10/2019

Your Order Number: 16667 Testing Instruction Received: 23/10/2019

Report Issue Number: 1 Sample Tested: 23/10 to 29/10/2019

Samples Analysed: 12 aggregate samples Report issued: 29/10/2019

Signed

Peter Swanston

Environmental Laboratories Manager

Nicholls Colton Group

Notes:

General

Please refer to Methodologies tab for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Samples were supplied by customer, results are representative of the material provided

Accreditation Key

UKAS = UKAS Accreditation, u = Unaccredited

Date of Issue 24.01.2017

Owned by Emily Blissett - Customer Services Supervisor Authorised by James Gane - Commercial Manager

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L19/2491/IGS/001 Project Reference - 22000 - PPK3 Profile Park Analytical Test Results - Aggregate Testing

| NC Reference | | | 58799 | 58800 | 58801 | S8902 |
|---|-------|---------------|-----------------|-----------------|-----------------|-----------------|
| Client Sample Reference | | | RC01 - 3.40m | RC08 - 4.10m | RC10 - 5.70m | RC18 - 7.80m |
| Material | | | Core | Core | Core | Core |
| Source/Client Ref. | | | RC01 - 3.40m | RC08 - 4.10m | RC10 - 5.70m | RC18 - 7.80m |
| Sample Description | | | Black rock core | Black rock core | Black rock core | Black rock core |
| EN 1744 Determinations | Units | Accreditation | | | | |
| Total Sulphur content (as S) | (%) | UKAS | 0.09 | 0.43 | 1.39 | 0.59 |
| Acid soluble sulphate content (as SO ₃) | (%) | UKAS | 0.09 | 0.03 | 0.15 | 0.09 |
| Acid soluble sulphate content (as SO ₄) | (%) | u | 0.10 | 0.03 | 0.18 | 0.11 |
| Total Potential Sulphate (as SO ₄) | (%) | u | 0.27 | 1.29 | 4.17 | 1.77 |
| Oxidisable Sulphides (as SO ₄) | (%) | u | 0.17 | 1.26 | 3.99 | 1.66 |
| Equivalent Pyrite Content (FeS ₂) | (%) | u | 0.11 | 0.78 | 2.49 | 1.03 |





L19/2491/IGS/001 Project Reference - 22000 - PPK3 Profile Park Analytical Test Results - Aggregate Testing

| | | | | | | <u> </u> |
|---|-------|---------------|-----------------|-----------------|-----------------|-----------------|
| NC Reference | | | 58803 | 58804 | 58805 | 28836 |
| Client Sample Reference | | | RC13 - 5.70m | RC14 - 7.00m | RC17 - 5.50m | RC18 - 6.80m |
| Material | | | Core | Core | Core | Core |
| Source/Client Ref. | | | RC13 - 5.70m | RC14 - 7.00m | RC17 - 5.50m | RC18 - 6.80m |
| Sample Description | | | Black rock core | Black rock core | Black rock core | Black rock core |
| EN 1744 Determinations | Units | Accreditation | | | | |
| Total Sulphur content (as S) | (%) | UKAS | 0.05 | 0.82 | 0.76 | 0.79 |
| Acid soluble sulphate content (as SO ₃) | (%) | UKAS | 0.11 | 0.08 | 0.09 | 0.10 |
| Acid soluble sulphate content (as SO ₄) | (%) | u | 0.13 | 0.10 | 0.10 | 0.11 |
| Total Potential Sulphate (as SO ₄) | (%) | u | 0.15 | 2.46 | 2.28 | 2.37 |
| Oxidisable Sulphides (as SO ₄) | (%) | u | 0.02 | 2.36 | 2.18 | 2.26 |
| Equivalent Pyrite Content (FeS ₂) | (%) | u | 0.01 | 1.47 | 1.36 | 1.41 |
| | | | | | | |





L19/2491/IGS/001 Project Reference - 22000 - PPK3 Profile Park Analytical Test Results - Aggregate Testing

| NC Reference | | | 58807 | 58808 | 58809 | 58910 |
|---|-------|---------------|-----------------|-----------------|-----------------|-----------------|
| Client Sample Reference | | | RC19 - 5.50m | RC20 - 6.80m | RC23 - 4.00m | RC24 - 5.80m |
| Material | | | Core | Core | Core | Core |
| Source/Client Ref. | | | RC19 - 5.50m | RC20 - 6.80m | RC23 - 4.00m | RC24 - 5.80m |
| Sample Description | | | Black rock core | Black rock core | Black rock core | Black rock core |
| EN 1744 Determinations | Units | Accreditation | | | | |
| Total Sulphur content (as S) | (%) | UKAS | 0.73 | 0.71 | 0.98 | 0.82 |
| Acid soluble sulphate content (as SO ₃) | (%) | UKAS | 0.04 | 0.04 | 0.08 | 0.08 |
| Acid soluble sulphate content (as SO ₄) | (%) | u | 0.05 | 0.05 | 0.10 | 0.09 |
| Total Potential Sulphate (as SO ₄) | (%) | u | 2.19 | 2.13 | 2.94 | 2.46 |
| Oxidisable Sulphides (as SO ₄) | (%) | u | 2.14 | 2.08 | 2.84 | 2.37 |
| Equivalent Pyrite Content (FeS ₂) | (%) | u | 1.33 | 1.30 | 1.77 | 1.48 |





L19/2491/IGS/001

| | GROI | HULLS COLION |
|---|--|---|
| L19/2491/IGS/001 Project Reference - 22000 - | | Nicholls Colton Group 7 - 11 Harding Street Leicester LE1 4DH |
| Analysis Methodologies and | | 000 |
| Determinant | Test method and notes | × |
| EN 1744 Total Sulphur | Testing was in accordance with BS EN 1744-1:2009 + A1:2012 clause 11. | |
| EN 1744 Acid Soluble Sulphate | Testing was in accordance with BS EN 1744-1:2009 + A1:2012 clause 12. | |
| EN 1744 Total Potential Sulphate | Derived from the Total sulphur concentration determined in accordance with EN1744. | |
| EN 1744 Oxidisable Sulphides | Calculated in accordance with TRL 447 using results determined in accordance with EN1744 | |
| Equivalent Pyrite Concentration | Derived from Oxidisable sulphides | |





IGSL Unit F M7 Business Park Nass

> Analytical Test Report: L19/2492/IGS/001

Your Project Reference: 22000 - PPK3 Samples Received on: 23/10/2019

Your Order Number: 16669 Testing Instruction Received: 23/10/2019

Report Issue Number: 1 Sample Tested: 23/10 to 31/10/2019

Samples Analysed: 4 aggregate samples Report issued: 31/10/2019

Signed

Peter Swanston

Environmental Laboratories Manager

Nicholls Colton Group

Notes:

General

Please refer to Methodologies tab for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Samples were supplied by customer, results are representative of the material provided

Accreditation Key

UKAS = UKAS Accreditation, u = Unaccredited

Date of Issue 24.01.2017

Owned by Emily Blissett - Customer Services Supervisor Authorised by James Gane - Commercial Manager

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L19/2492/IGS/001 Project Reference - 22000 - PPK3 Analytical Test Results - Aggregate Testing

| NC Reference | | | 58834 | 58835 | 58836 | 58997 |
|--|--------|---------------|--------------------|--------------------|--------------------|--------------------|
| Client Sample Reference | | | A19/4904 | A19/4905 | A19/4906 | A19/4907 |
| Material | | | Aggregate | Aggregate | Aggregate | Aggregate |
| Source/Client Ref | | | TEX1 @ 3.4m | TEX 2 @ 3.2m | TEX 3 @ 3.1m | TEX 4 @ 3.5m |
| Sample Description | | | Black crushed rock | Black crushed rock | Black crushed rock | Brown crushed rock |
| EN 1744 Determinations | Units | Accreditation | | | | |
| Total Sulphur content (as S) | (%) | UKAS | 0.28 | 0.01 | 0.14 | 0.04 |
| Acid soluble sulphate content (as SO ₃) | (%) | UKAS | 0.03 | 0.05 | < 0.01 | 0.03 |
| Acid soluble sulphate content (as SO ₄) | (%) | u | 0.03 | 0.06 | < 0.01 | 0.03 |
| Water soluble sulphate content (as SO ₃) | (%) | UKAS | 0.06 | < 0.01 | < 0.01 | < 0.01 |
| Water soluble sulphate content (as SO ₃) | (mg/l) | u | 304 | < 50 | < 50 | < 50 |
| Water soluble sulphate content (as SO ₄) | (%) | u | 0.07 | < 0.01 | < 0.01 | < 0.01 |
| Water soluble sulphate content (as SO ₄) | (mg/l) | u | 365 | < 60 | < 60 | < 60 |





L19/2492/IGS/001

Project Reference - 22000 - PPK3 **Analysis Methodologies and Notes**

| Determinant | Test method and notes | O POPA |
|--------------------------------|---|--------|
| EN 1744 Total Sulphur | Testing was in accordance with BS EN 1744-1:2009 + A1:2012 clause 11. | |
| EN 1744 Acid Soluble Sulphate | Testing was in accordance with BS EN 1744-1:2009 + A1:2012 clause 12. | |
| EN 1744 Water Soluble Sulphate | Testing was in accordance with BS EN 1744-1:2009 + A1:2012 clause 10. | |

Appendix 14

PECENED. 28/06/2024 Thin Section Petrographic & XRD Analysis Records

Appendix 15

Environmental Test Records

PRICENED. 28/08/2024





Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.: 19-32968-1

Initial Date of Issue: 15-Oct-2019

Client IGSL

Client Address: M7 Business Park

Naas

County Kildare

Ireland

Contact(s): Darren Keogh

Project PPK3

Quotation No.: Date Received: 02-Oct-2019

Order No.: Date Instructed: 07-Oct-2019

No. of Samples: 13

Turnaround (Wkdays): 7 Results Due: 15-Oct-2019

Date Approved: 15-Oct-2019

Approved By:

Details: Robert Monk, Technical Manager



Results - Leachate

| Client: IGSL | | | Che | mtest J | ob No.: | 19-32968 | 19-32968 | 19-32968 | 19-32968 | 19-32968 | 19-32968 | 19-32968 | 19-32968 | 9-32968 | 19-32968 | 19-32968 | 19-32968 | 19-32968 |
|-------------------|---------|------|--------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|---------|----------|-------------|----------|----------|
| Quotation No.: | | (| Chemte | st Sam | ple ID.: | 898655 | 898656 | 898657 | 898658 | 898659 | 898660 | 898661 | 898662 | 898663 | 898664 | 898665 | 898666 | 900765 |
| | | | Sa | ample Lo | ocation: | TP6 | TP17 | TP39 | TP41 | TP42 | TP47 | TP54 | TP55 | TP67 | TP76 | TP82 | TP93 | TP48 |
| | | | | Sampl | е Туре: | SOIL | SOIL | SOIL | SOIL | SOIL | SOIL |
| | | | | Top De | pth (m): | 0.50 | 0.50 | 0.40 | 0.30 | 0.30 | 0.70 | 0.80 | 0.50 | 0.20 | 0.65 | 0.60 | 0.50 | 0.50 |
| Determinand | Accred. | SOP | Type | Units | LOD | | | | | | | | | | Ö. | | | |
| рН | U | 1010 | 10:1 | | N/A | 9.0 | 8.4 | 10.5 | 11.1 | 11.1 | 10.3 | 10.2 | 10.0 | 9.7 | 9.7 | 9.0 | 9.0 | 9.0 |
| Ammonium | U | 1220 | 10:1 | mg/l | 0.050 | 0.090 | 0.12 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | 0.056 | 0.24 | < 0.050 |
| Ammonium | N | 1220 | 10:1 | mg/kg | 0.10 | 1.4 | 1.4 | 0.52 | 0.91 | 0.85 | 1.1 | 1.5 | 1.7 | 1.4 | 0.95 | 0.90 | 3.7 | 0.67 |
| Boron (Dissolved) | U | 1450 | 10:1 | μg/l | 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | 7 20 | < 20 | < 20 |
| Boron (Dissolved) | U | 1450 | 10:1 | mg/kg | 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 |



| Project: PPK3 | | | | | | | | | | | | | |
|---------------------------------|---------|--------|----------|----------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Client: IGSL | | Che | mtest J | ob No.: | 19-32968 | 19-32968 | 19-32968 | 19-32968 | 19-32968 | 19-3295 | 19-32968 | 19-32968 | 19-32968 |
| Quotation No.: | | Chemte | st Sam | ple ID.: | 898655 | 898656 | 898657 | 898658 | 898659 | 898660 | 898661 | 898662 | 898663 |
| | | Sa | ample Lo | ocation: | TP6 | TP17 | TP39 | TP41 | TP42 | TP47 | TP54 | TP55 | TP67 |
| | | | Sampl | е Туре: | SOIL |
| | | | Top De | oth (m): | 0.50 | 0.50 | 0.40 | 0.30 | 0.30 | 0.70 | 0.80 | 0.50 | 0.20 |
| | | | Asbest | os Lab: | COVENTRY |
| Determinand | Accred. | SOP | Units | LOD | | | | | | | 5 | 0 | |
| ACM Type | U | 2192 | | N/A | - | - | - | - | - | - | | 6 - | - |
| Asbestos Identification | U | 2192 | % | 0.001 | No Asbestos Detected |
| ACM Detection Stage | U | 2192 | | N/A | - | - | - | - | - | - | - | 5 | - |
| Moisture | N | 2030 | % | 0.020 | 19 | 17 | 12 | 12 | 13 | 14 | 5.0 | 6.8 × | 11 |
| Boron (Hot Water Soluble) | U | 2120 | mg/kg | 0.40 | 0.40 | 0.44 | 0.50 | 0.51 | 0.57 | 0.50 | < 0.40 | < 0.40 | 0.48 |
| Sulphur (Elemental) | U | 2180 | mg/kg | 1.0 | [A] < 1.0 | [A] 1.9 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] 4.6 | [A] 1.3 | [A] < 1.0 | [A] 3.0 |
| Cyanide (Total) | U | 2300 | mg/kg | 0.50 | [A] < 0.50 | [A] < 0.50 | [A] < 0.50 | [A] < 0.50 | [A] < 0.50 | [A] < 0.50 | [A] < 0.50 | [A] < 0.50 | [A] < 0.50 |
| Sulphide (Easily Liberatable) | N | 2325 | mg/kg | 0.50 | [A] 1.1 | [A] 10 | [A] 4.4 | [A] 4.8 | [A] 6.2 | [A] 5.9 | [A] 3.3 | [A] 4.9 | [A] 23 |
| Sulphate (Acid Soluble) | U | 2430 | % | 0.010 | [A] 0.035 | [A] 0.18 | [A] 0.45 | [A] 0.39 | [A] 0.39 | [A] 0.037 | [A] 0.017 | [A] 0.010 | [A] 0.071 |
| Arsenic | Ü | 2450 | mg/kg | 1.0 | 13 | 22 | 33 | 24 | 25 | 14 | 48 | 110 | 24 |
| Barium | U | 2450 | mg/kg | 10 | 78 | 53 | 79 | 69 | 67 | 37 | 120 | 79 | 100 |
| Cadmium | U | 2450 | mg/kg | 0.10 | 2.2 | 2.1 | 0.70 | 0.60 | 0.76 | 0.37 | 0.24 | 0.12 | 0.73 |
| Chromium | U | 2450 | mg/kg | 1.0 | 25 | 17 | 19 | 23 | 21 | 17 | 39 | 29 | 29 |
| Molybdenum | U | 2450 | mg/kg | 2.0 | 2.8 | 4.8 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Antimony | N | 2450 | mg/kg | 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Copper | U | 2450 | mg/kg | 0.50 | 17 | 29 | 18 | 18 | 15 | 24 | 33 | 24 | 23 |
| Mercury | Ü | 2450 | mg/kg | 0.10 | < 0.10 | 0.13 | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Nickel | Ü | 2450 | mg/kg | 0.50 | 46 | 59 | 25 | 30 | 23 | 36 | 47 | 39 | 39 |
| Lead | U | 2450 | mg/kg | 0.50 | 26 | 27 | 34 | 34 | 35 | 17 | 43 | 17 | 27 |
| Selenium | U | 2450 | mg/kg | 0.20 | 0.45 | 1.3 | < 0.20 | < 0.20 | < 0.20 | 0.42 | < 0.20 | < 0.20 | < 0.20 |
| Zinc | Ü | 2450 | mg/kg | 0.50 | 75 | 65 | 46 | 53 | 62 | 26 | 77 | 64 | 70 |
| Chromium (Trivalent) | N | 2490 | mg/kg | 1.0 | 25 | 17 | 19 | 23 | 21 | 17 | 39 | 29 | 29 |
| Chromium (Hexavalent) | N | 2490 | mg/kg | 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Total Organic Carbon | U | 2625 | % | 0.20 | [A] 0.62 | [A] 0.89 | [A] 0.45 | [A] 0.44 | [A] 0.61 | [A] 0.46 | [A] 0.68 | [A] 0.34 | [A] 1.3 |
| Mineral Oil | N | 2670 | mg/kg | 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Aliphatic TPH >C5-C6 | N | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aliphatic TPH >C6-C8 | N | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aliphatic TPH >C8-C10 | U | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aliphatic TPH >C10-C12 | Ü | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aliphatic TPH >C12-C16 | U | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aliphatic TPH >C16-C21 | Ü | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aliphatic TPH >C21-C35 | Ü | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aliphatic TPH >C35-C44 | T N | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Total Aliphatic Hydrocarbons | N | 2680 | mg/kg | 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 |
| Aromatic TPH >C5-C7 | N | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aromatic TPH >C7-C8 | N | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aromatic TPH >C8-C10 | U | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aromatic TPH >C10-C12 | T U | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aromatic TPH >C12-C16 | T U | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| / ((O)) (allo 11 11 / O 12-O 10 | | 2000 | my/kg | 1.0 | [/1] \ 1.0 | [/1] < 1.0 | [/1] \ 1.0 | [/1] \ 1.0 | [/1] < 1.0 | [/1] < 1.0 | [/1] < 1.0 | [/1] \ 1.0 | [/-] > 1.0 |



| Project: PPK3 | | | | | | | | | | _ | | | |
|------------------------------|---------|------|----------|---------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Client: IGSL | | | mtest J | | 19-32968 | 19-32968 | 19-32968 | 19-32968 | 19-32968 | 19-32969 | 19-32968 | 19-32968 | 19-32968 |
| Quotation No.: | ļ (| | st Sam | | 898655 | 898656 | 898657 | 898658 | 898659 | 898660 | 898661 | 898662 | 898663 |
| | | Sa | ample Lo | | TP6 | TP17 | TP39 | TP41 | TP42 | TP47 | TP54 | TP55 | TP67 |
| | | | | e Type: | SOIL |
| | | | Top De | (/ | 0.50 | 0.50 | 0.40 | 0.30 | 0.30 | 0.70 | 0.80 | 0.50 | 0.20 |
| | | | | os Lab: | COVENTRY |
| Determinand | Accred. | SOP | Units | LOD | | | | | | | 2 | 0 | |
| Aromatic TPH >C16-C21 | U | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aromatic TPH >C21-C35 | U | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | 1Al < 1.0 | [A] < 1.0 |
| Aromatic TPH >C35-C44 | N | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Total Aromatic Hydrocarbons | N | 2680 | mg/kg | 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 |
| Total Petroleum Hydrocarbons | N | 2680 | mg/kg | 10.0 | [A] < 10 | [A] < 10° | [A] < 10 |
| Benzene | U | 2760 | μg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Toluene | U | 2760 | μg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Ethylbenzene | U | 2760 | μg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| m & p-Xylene | U | 2760 | μg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| o-Xylene | U | 2760 | μg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Methyl Tert-Butyl Ether | U | 2760 | μg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Naphthalene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Acenaphthylene | N | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Acenaphthene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Fluorene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Phenanthrene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Benzo[j]fluoranthene | N | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Anthracene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Fluoranthene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Pyrene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Benzo[a]anthracene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Chrysene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Benzo[b]fluoranthene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Benzo[k]fluoranthene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Benzo[a]pyrene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Indeno(1,2,3-c,d)Pyrene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Dibenz(a,h)Anthracene | N | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Benzo[g,h,i]perylene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Coronene | N | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Total Of 17 PAH's | N | 2800 | mg/kg | 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| PCB 28 | U | 2815 | mg/kg | 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 |
| PCB 52 | U | 2815 | mg/kg | 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 |
| PCB 90+101 | U | 2815 | mg/kg | 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 |
| PCB 118 | U | 2815 | mg/kg | 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 |
| PCB 153 | U | 2815 | mg/kg | 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 |
| PCB 138 | U | 2815 | mg/kg | 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 |
| PCB 180 | U | 2815 | mg/kg | 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 |
| Total PCBs (7 Congeners) | N | 2815 | mg/kg | 0.10 | [A] < 0.10 | [A] < 0.10 | [A] < 0.10 | [A] < 0.10 | [A] < 0.10 | [A] < 0.10 | [A] < 0.10 | [A] < 0.10 | [A] < 0.10 |
| Total Phenols | U | 2920 | mg/kg | 0.30 | < 0.30 | < 0.30 | < 0.30 | < 0.30 | < 0.30 | < 0.30 | < 0.30 | < 0.30 | < 0.30 |





| Client: IGSL | | Che | mtest Jo | ob No.: | 19-32968 | 19-32968 | 19-32968 | 19-32968 |
|-------------------------------|---------|------|----------|----------|-------------------------|-------------------------|-------------------------|-------------------------|
| Quotation No.: | (| | st Sam | | 898664 | 898665 | 898666 | 900765 |
| | | Sa | ample Lo | | TP76 | TP82 | TP93 | TP48 |
| | | | | e Type: | SOIL | SOIL | SOIL | SOIL |
| | | | Top De | oth (m): | 0.65 | 0.60 | 0.50 | 0.50 |
| | | | Asbest | os Lab: | COVENTRY | COVENTRY | COVENTRY | COVENTRY |
| Determinand | Accred. | SOP | Units | LOD | | | | |
| ACM Type | U | 2192 | | N/A | - | - | - | - |
| Asbestos Identification | U | 2192 | % | 0.001 | No Asbestos Detected | No Asbestos Detected | No Asbestos Detected | No Asbestos Detected |
| ACM Detection Stage | U | 2192 | | N/A | - | - | - | - |
| Moisture | N | 2030 | % | 0.020 | 21 | 13 | 15 | 8.9 |
| Boron (Hot Water Soluble) | U | 2120 | mg/kg | 0.40 | 0.44 | < 0.40 | 0.42 | 0.41 |
| Sulphur (Elemental) | U | 2180 | mg/kg | 1.0 | [A] 2.9 | [A] 2.0 | [A] 2.5 | [A] 1.3 |
| Cyanide (Total) | U | 2300 | mg/kg | 0.50 | [A] < 0.50 | [A] < 0.50 | [A] 8.8 | [A] < 0.50 |
| Sulphide (Easily Liberatable) | N | 2325 | mg/kg | 0.50 | [A] 18 | [A] 4.8 | [A] 1.7 | [A] 12 |
| Sulphate (Acid Soluble) | U | 2430 | % | 0.010 | [A] 0.094 | [A] 0.018 | [A] 0.044 | [A] 0.11 |
| Arsenic | U | 2450 | mg/kg | 1.0 | 23 | 28 | 23 | 35 |
| Barium | U | 2450 | mg/kg | 10 | 100 | 43 | 41 | 100 |
| Cadmium | U | 2450 | mg/kg | 0.10 | 2.1 | 0.85 | 1.7 | 0.56 |
| Chromium | U | 2450 | mg/kg | 1.0 | 26 | 14 | 14 | 23 |
| Molybdenum | U | 2450 | mg/kg | 2.0 | 3.0 | < 2.0 | 3.4 | < 2.0 |
| Antimony | N | 2450 | mg/kg | 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Copper | U | 2450 | mg/kg | 0.50 | 34 | 22 | 28 | 22 |
| Mercury | U | 2450 | mg/kg | 0.10 | 0.18 | < 0.10 | < 0.10 | < 0.10 |
| Nickel | U | 2450 | mg/kg | 0.50 | 49 | 44 | 43 | 33 |
| Lead | U | 2450 | mg/kg | 0.50 | 59 | 19 | 25 | 19 |
| Selenium | U | 2450 | mg/kg | 0.20 | 1.6 | < 0.20 | 0.35 | < 0.20 |
| Zinc | U | 2450 | mg/kg | 0.50 | 110 | 41 | 59 | 60 |
| Chromium (Trivalent) | N | 2490 | mg/kg | 1.0 | 26 | 14 | 14 | 23 |
| Chromium (Hexavalent) | N | 2490 | mg/kg | 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Total Organic Carbon | U | 2625 | % | 0.20 | [A] 1.8 | [A] 0.57 | [A] 0.93 | [A] 0.37 |
| Mineral Oil | N | 2670 | mg/kg | 10 | < 10 | < 10 | < 10 | < 10 |
| Aliphatic TPH >C5-C6 | N | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aliphatic TPH >C6-C8 | N | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aliphatic TPH >C8-C10 | U | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aliphatic TPH >C10-C12 | Ū | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aliphatic TPH >C12-C16 | U | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aliphatic TPH >C16-C21 | Ū | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aliphatic TPH >C21-C35 | U | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aliphatic TPH >C35-C44 | N | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Total Aliphatic Hydrocarbons | N | 2680 | mg/kg | 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 |
| Aromatic TPH >C5-C7 | N | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aromatic TPH >C7-C8 | N | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aromatic TPH >C8-C10 | U | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aromatic TPH >C10-C12 | Ū | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aromatic TPH >C12-C16 | Ü | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |



| Client: IGSL | | | mtest Jo | | 19-32968 | 19-32968 | 19-32968 | 19-32968 |
|------------------------------|---------|--------|----------|----------|-------------|-------------|-------------|-------------|
| Quotation No.: | (| Chemte | st Sam | ple ID.: | 898664 | 898665 | 898666 | 900765 |
| | | Sa | ample Lo | | TP76 | TP82 | TP93 | TP48 |
| | | | Sampl | е Туре: | SOIL | SOIL | SOIL | SOIL |
| | | | Top Dep | oth (m): | 0.65 | 0.60 | 0.50 | 0.50 |
| | | | Asbest | os Lab: | COVENTRY | COVENTRY | COVENTRY | COVENTRY |
| Determinand | Accred. | SOP | Units | LOD | | | | |
| Aromatic TPH >C16-C21 | U | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aromatic TPH >C21-C35 | U | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Aromatic TPH >C35-C44 | N | 2680 | mg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Total Aromatic Hydrocarbons | N | 2680 | mg/kg | 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 | [A] < 5.0 |
| Total Petroleum Hydrocarbons | N | 2680 | mg/kg | 10.0 | [A] < 10 | [A] < 10 | [A] < 10 | [A] < 10 |
| Benzene | U | 2760 | μg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Toluene | U | 2760 | μg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Ethylbenzene | U | 2760 | μg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| m & p-Xylene | U | 2760 | μg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| o-Xylene | U | 2760 | μg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Methyl Tert-Butyl Ether | U | 2760 | μg/kg | 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 | [A] < 1.0 |
| Naphthalene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Acenaphthylene | N | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Acenaphthene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Fluorene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Phenanthrene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Benzo[j]fluoranthene | N | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Anthracene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Fluoranthene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Pyrene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Benzo[a]anthracene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Chrysene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Benzo[b]fluoranthene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Benzo[k]fluoranthene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Benzo[a]pyrene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Indeno(1,2,3-c,d)Pyrene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Dibenz(a,h)Anthracene | N | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Benzo[g,h,i]perylene | U | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Coronene | N | 2800 | mg/kg | 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Total Of 17 PAH's | N | 2800 | mg/kg | 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| PCB 28 | U | 2815 | mg/kg | 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 |
| PCB 52 | U | 2815 | mg/kg | 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 |
| PCB 90+101 | U | 2815 | mg/kg | 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 |
| PCB 118 | U | 2815 | mg/kg | 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 |
| PCB 153 | U | 2815 | mg/kg | 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 |
| PCB 138 | U | 2815 | mg/kg | 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 |
| PCB 180 | U | 2815 | mg/kg | 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 | [A] < 0.010 |
| Total PCBs (7 Congeners) | N | 2815 | mg/kg | 0.10 | [A] < 0.10 | [A] < 0.10 | [A] < 0.10 | [A] < 0.10 |
| Total Phenols | U | 2920 | mg/kg | 0.30 | < 0.30 | < 0.30 | < 0.30 | < 0.30 |



Results - Single Stage WAC

| eliver results Project: PPK3 | | | | | | PA | |
|-------------------------------|----------|---------|-------------|-------------|----------------------------------|-----------------|---------------------------------------|
| Chemtest Job No: | 19-32968 | | | | Landfill \ | Waste Acceptanc | e Criteria |
| Chemtest Sample ID: | 898655 | | | | | Limits | · · · · · · · · · · · · · · · · · · · |
| Sample Ref: | 33333 | | | | | Stable, Non | |
| Sample ID: | | | | | | reactive | |
| Sample Location: | TP6 | | | | | hazardous | Hazardous |
| Top Depth(m): | 0.50 | | | | Inert Waste | waste in non- | ///aste |
| Bottom Depth(m): | | | | | Landfill | hazardous | Landfill |
| Sampling Date (\$): | | | | | | Landfill | |
| Determinand | SOP | Accred. | Units | | | | 2 |
| Total Organic Carbon | 2625 | U | % | [A] 0.62 | 3 | 5 | 6 |
| Loss On Ignition | 2610 | U | % | 3.1 | | | 10 |
| Total BTEX | 2760 | U | mg/kg | [A] < 0.010 | 6 | | |
| Total PCBs (7 Congeners) | 2815 | U | mg/kg | < 0.10 | 1 | | |
| TPH Total WAC (Mineral Oil) | 2670 | U | mg/kg | [A] < 10 | 500 | | |
| Total (Of 17) PAH's | 2800 | N | mg/kg | < 2.0 | 100 | | |
| pH | 2010 | U | | 7.8 | | >6 | |
| Acid Neutralisation Capacity | 2015 | N | mol/kg | 0.23 | | To evaluate | To evaluate |
| Eluate Analysis | | | 10:1 Eluate | 10:1 Eluate | Limit values | for compliance | eaching test |
| _ | | | mg/l | mg/kg | using BS EN 12457 at L/S 10 l/kg | | S 10 I/kg |
| Arsenic | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 2 | 25 |
| Barium | 1450 | U | 0.0019 | < 0.50 | 20 | 100 | 300 |
| Cadmium | 1450 | U | < 0.00010 | < 0.010 | 0.04 | 1 | 5 |
| Chromium | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 10 | 70 |
| Copper | 1450 | U | < 0.0010 | < 0.050 | 2 | 50 | 100 |
| Mercury | 1450 | U | < 0.00050 | < 0.0050 | 0.01 | 0.2 | 2 |
| Molybdenum | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 10 | 30 |
| Nickel | 1450 | U | 0.013 | 0.13 | 0.4 | 10 | 40 |
| Lead | 1450 | U | < 0.0010 | < 0.010 | 0.5 | 10 | 50 |
| Antimony | 1450 | U | < 0.0010 | < 0.010 | 0.06 | 0.7 | 5 |
| Selenium | 1450 | U | 0.0011 | 0.011 | 0.1 | 0.5 | 7 |
| Zinc | 1450 | U | < 0.0010 | < 0.50 | 4 | 50 | 200 |
| Chloride | 1220 | U | < 1.0 | < 10 | 800 | 15000 | 25000 |
| Fluoride | 1220 | U | 0.19 | 1.9 | 10 | 150 | 500 |
| Sulphate | 1220 | U | 13 | 130 | 1000 | 20000 | 50000 |
| Total Dissolved Solids | 1020 | N | 53 | 530 | 4000 | 60000 | 100000 |
| Phenol Index | 1920 | U | < 0.030 | < 0.30 | 1 | - | - |
| Dissolved Organic Carbon | 1610 | U | 3.1 | < 50 | 500 | 800 | 1000 |

| Solid Information | | | | |
|-----------------------------|-------|--|--|--|
| Dry mass of test portion/kg | 0.090 | | | |
| Moisture (%) | 19 | | | |

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.



Results - Single Stage WAC

| Project: PPK3 | | | | | | | |
|------------------------------|----------|---------|-------------|-------------|---|-------------------|----------------|
| Chemtest Job No: | 19-32968 | | | | Landfill | Waste Acceptance | e Criteria |
| Chemtest Sample ID: | 898656 | | | | | Limits | |
| Sample Ref: | | | | | | Stable, Non | |
| Sample ID: | | | | | | reactive | |
| Sample Location: | TP17 | | | | | hazardous | Hazardous |
| Гор Depth(m): | 0.50 | | | | Inert Waste | waste in non- | √ vaste |
| Bottom Depth(m): | | | | | Landfill | hazardous | Landfill |
| Sampling Date (\$): | | | | | | Landfill | 6 |
| Determinand | SOP | Accred. | Units | | | | 2 |
| otal Organic Carbon | 2625 | U | % | [A] 0.89 | 3 | 5 | 6 |
| oss On Ignition | 2610 | U | % | 2.3 | | | 10 |
| Γotal BTEX | 2760 | U | mg/kg | [A] < 0.010 | 6 | | |
| Total PCBs (7 Congeners) | 2815 | U | mg/kg | < 0.10 | 1 | | |
| ΓΡΗ Total WAC (Mineral Oil) | 2670 | U | mg/kg | [A] < 10 | 500 | | |
| Total (Of 17) PAH's | 2800 | N | mg/kg | < 2.0 | 100 | | |
| Н | 2010 | U | | 7.7 | | >6 | |
| Acid Neutralisation Capacity | 2015 | N | mol/kg | 0.36 | | To evaluate | To evaluate |
| Eluate Analysis | | | 10:1 Eluate | 10:1 Eluate | Limit values for compliance leaching test | | |
| | | | mg/l | mg/kg | using B | S EN 12457 at L/S | 3 10 l/kg |
| Arsenic | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 2 | 25 |
| Barium | 1450 | U | 0.0059 | < 0.50 | 20 | 100 | 300 |
| Cadmium | 1450 | U | < 0.00010 | < 0.010 | 0.04 | 1 | 5 |
| Chromium | 1450 | U | 0.0030 | < 0.050 | 0.5 | 10 | 70 |
| Copper | 1450 | U | < 0.0010 | < 0.050 | 2 | 50 | 100 |
| Mercury | 1450 | U | < 0.00050 | < 0.0050 | 0.01 | 0.2 | 2 |
| Molybdenum | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 10 | 30 |
| Nickel | 1450 | U | 0.012 | 0.12 | 0.4 | 10 | 40 |
| _ead | 1450 | U | < 0.0010 | < 0.010 | 0.5 | 10 | 50 |
| Antimony | 1450 | U | < 0.0010 | < 0.010 | 0.06 | 0.7 | 5 |
| Selenium | 1450 | U | 0.0012 | 0.012 | 0.1 | 0.5 | 7 |
| Zinc | 1450 | U | < 0.0010 | < 0.50 | 4 | 50 | 200 |
| Chloride | 1220 | U | < 1.0 | < 10 | 800 | 15000 | 25000 |
| luoride | 1220 | U | 0.17 | 1.7 | 10 | 150 | 500 |
| Sulphate | 1220 | U | 130 | 1300 | 1000 | 20000 | 50000 |
| Total Dissolved Solids | 1020 | N | 210 | 2100 | 4000 | 60000 | 100000 |
| - · · · · | 4000 | U | - 0.020 | . 0.20 | 1 | | |
| Phenol Index | 1920 | U | < 0.030 | < 0.30 | l | - | |

| Solid Information | | | | | |
|-----------------------------|-------|--|--|--|--|
| Dry mass of test portion/kg | 0.090 | | | | |
| Moisture (%) | 17 | | | | |

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.



Results - Single Stage WAC

| Project: PPK3 | | | | | | PA | | |
|------------------------------|----------|---------|-------------|-------------|---|------------------|----------------|--|
| Chemtest Job No: | 19-32968 | | | | Landfill \ | Waste Acceptance | e Criteria | |
| Chemtest Sample ID: | 898657 | | | | | Limits | | |
| Sample Ref: | | | | | | Stable, Non | | |
| Sample ID: | | | | | | reactive | | |
| Sample Location: | TP39 | | | | | hazardous | Hazardous | |
| Γop Depth(m): | 0.40 | | | | Inert Waste | waste in non- | V ∕aste | |
| Bottom Depth(m): | | | | | Landfill | hazardous | Landfill | |
| Sampling Date (\$): | | | | | | Landfill | 6 | |
| Determinand | SOP | Accred. | Units | | | | 2 | |
| Total Organic Carbon | 2625 | U | % | [A] 0.45 | 3 | 5 | 6 | |
| oss On Ignition | 2610 | U | % | 2.0 | | | 10 | |
| Total BTEX | 2760 | U | mg/kg | [A] < 0.010 | 6 | | | |
| Total PCBs (7 Congeners) | 2815 | U | mg/kg | < 0.10 | 1 | | | |
| TPH Total WAC (Mineral Oil) | 2670 | U | mg/kg | [A] < 10 | 500 | | | |
| Total (Of 17) PAH's | 2800 | N | mg/kg | < 2.0 | 100 | | - | |
| ρΗ | 2010 | U | | 11.5 | | >6 | | |
| Acid Neutralisation Capacity | 2015 | N | mol/kg | 0.16 | | To evaluate | To evaluate | |
| Eluate Analysis | | | 10:1 Eluate | 10:1 Eluate | Limit values for compliance leaching test | | | |
| | mg/l | | | mg/kg | kg using BS EN 12457 at L/S 10 l/kg | | | |
| Arsenic | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 2 | 25 | |
| 3arium | 1450 | U | 0.031 | < 0.50 | 20 | 100 | 300 | |
| Cadmium | 1450 | U | < 0.00010 | < 0.010 | 0.04 | 1 | 5 | |
| Chromium | 1450 | U | 0.022 | 0.22 | 0.5 | 10 | 70 | |
| Copper | 1450 | U | 0.0026 | < 0.050 | 2 | 50 | 100 | |
| Mercury | 1450 | U | < 0.00050 | < 0.0050 | 0.01 | 0.2 | 2 | |
| Molybdenum | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 10 | 30 | |
| Nickel | 1450 | U | 0.014 | 0.14 | 0.4 | 10 | 40 | |
| _ead | 1450 | U | < 0.0010 | < 0.010 | 0.5 | 10 | 50 | |
| Antimony | 1450 | U | 0.0016 | 0.016 | 0.06 | 0.7 | 5 | |
| Selenium | 1450 | U | < 0.0010 | < 0.010 | 0.1 | 0.5 | 7 | |
| Zinc | 1450 | U | < 0.0010 | < 0.50 | 4 | 50 | 200 | |
| Chloride | 1220 | U | < 1.0 | < 10 | 800 | 15000 | 25000 | |
| luoride | 1220 | U | 0.11 | 1.1 | 10 | 150 | 500 | |
| Sulphate | 1220 | U | 26 | 260 | 1000 | 20000 | 50000 | |
| Total Dissolved Solids | 1020 | N | 360 | 3600 | 4000 | 60000 | 100000 | |
| Phenol Index | 1920 | U | < 0.030 | < 0.30 | 1 | - | - | |
| | 1610 | U | 6.3 | 63 | 500 | 800 | 1000 | |

| Solid Information | | | | | |
|-----------------------------|-------|--|--|--|--|
| Dry mass of test portion/kg | 0.090 | | | | |
| Moisture (%) | 12 | | | | |

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.



| Project: PPK3 | | | | | | PA | |
|------------------------------|----------|---------|-------------|-------------|--------------------------------------|------------------|----------------|
| Chemtest Job No: | 19-32968 | | | | Landfill \ | Waste Acceptanc | e Criteria |
| Chemtest Sample ID: | 898658 | | | | | Limits | |
| Sample Ref: | | | | | | Stable, Non | |
| Sample ID: | | | | | | reactive | |
| Sample Location: | TP41 | | | | | hazardous | Hazardous |
| Top Depth(m): | 0.30 | | | | Inert Waste | waste in non- | V ∕aste |
| Bottom Depth(m): | | | | | Landfill | hazardous | Landfill |
| Sampling Date (\$): | | | | | | Landfill | 6 |
| Determinand | SOP | Accred. | Units | | | | 70 |
| Total Organic Carbon | 2625 | U | % | [A] 0.44 | 3 | 5 | 6 |
| Loss On Ignition | 2610 | U | % | 1.8 | | | 10 |
| Total BTEX | 2760 | U | mg/kg | [A] < 0.010 | 6 | | |
| Total PCBs (7 Congeners) | 2815 | J | mg/kg | < 0.10 | 1 | | - |
| TPH Total WAC (Mineral Oil) | 2670 | U | mg/kg | [A] < 10 | 500 | | |
| Total (Of 17) PAH's | 2800 | N | mg/kg | < 2.0 | 100 | | |
| рН | 2010 | U | | 11.4 | | >6 | |
| Acid Neutralisation Capacity | 2015 | N | mol/kg | 0.12 | | To evaluate | To evaluate |
| Eluate Analysis | | | 10:1 Eluate | 10:1 Eluate | Limit values for compliance leaching | | eaching test |
| | | | mg/l | mg/kg | using B | S EN 12457 at L/ | S 10 I/kg |
| Arsenic | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 2 | 25 |
| Barium | 1450 | U | 0.022 | < 0.50 | 20 | 100 | 300 |
| Cadmium | 1450 | U | < 0.00010 | < 0.010 | 0.04 | 1 | 5 |
| Chromium | 1450 | U | 0.049 | 0.49 | 0.5 | 10 | 70 |
| Copper | 1450 | U | 0.0031 | < 0.050 | 2 | 50 | 100 |
| Mercury | 1450 | U | < 0.00050 | < 0.0050 | 0.01 | 0.2 | 2 |
| Molybdenum | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 10 | 30 |
| Nickel | 1450 | U | 0.016 | 0.16 | 0.4 | 10 | 40 |
| Lead | 1450 | U | < 0.0010 | < 0.010 | 0.5 | 10 | 50 |
| Antimony | 1450 | U | < 0.0010 | < 0.010 | 0.06 | 0.7 | 5 |
| Selenium | 1450 | U | < 0.0010 | < 0.010 | 0.1 | 0.5 | 7 |
| Zinc | 1450 | U | < 0.0010 | < 0.50 | 4 | 50 | 200 |
| Chloride | 1220 | U | < 1.0 | < 10 | 800 | 15000 | 25000 |
| Fluoride | 1220 | U | 0.13 | 1.3 | 10 | 150 | 500 |
| Sulphate | 1220 | U | 25 | 250 | 1000 | 20000 | 50000 |
| Total Dissolved Solids | 1020 | N | 360 | 3600 | 4000 | 60000 | 100000 |
| Phenol Index | 1920 | U | < 0.030 | < 0.30 | 1 | - | - |
| Dissolved Organic Carbon | 1610 | U | 3.6 | < 50 | 500 | 800 | 1000 |

| Solid Information | |
|-----------------------------|-------|
| Dry mass of test portion/kg | 0.090 |
| Moisture (%) | 12 |

Waste Acceptance Criteria



Project: PPK3 **Chemtest Job No:** 19-32968 Landfill Waste Acceptance Criteria 898659 Limits Chemtest Sample ID: Sample Ref: Stable, Non Sample ID: reactive TP42 Sample Location: hazardous Hazardous Top Depth(m): 0.30 **Inert Waste** waste in non-**W**aste Bottom Depth(m): Landfill Landfill hazardous Sampling Date (\$): Landfill Determinand SOP Accred. Units Total Organic Carbon 2625 [A] 0.61 3 % 5 6 Loss On Ignition 2610 U % 1.8 10 ----2760 U Total BTEX mg/kg [A] < 0.010 6 --Total PCBs (7 Congeners) 2815 U < 0.10 mg/kg 1 --FPH Total WAC (Mineral Oil) U 2670 [A] < 10 500 mg/kg Total (Of 17) PAH's 2800 Ν mg/kg < 2.0 100 ----2010 U 11.2 >6 --Acid Neutralisation Capacity 2015 Ν 0.098 To evaluate mol/kg To evaluate Eluate Analysis 10:1 Eluate 10:1 Eluate Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg mg/l mg/kg 1450 U 0.0015 < 0.050 0.5 Arsenic 25 U 100 1450 0.018 < 0.50 20 300 Barium 1450 U < 0.00010 < 0.010 0.04 5 Cadmium U 0.058 0.58 0.5 70 Chromium 1450 10 U 1450 0.0034 < 0.050 2 50 100 Copper U < 0.00050 < 0.0050 0.01 0.2 2 Mercurv 1450 Molybdenum 1450 U < 0.0010 < 0.050 0.5 10 30 Nickel 1450 U 0.016 0.16 0.4 10 40 Lead 1450 U < 0.0010 < 0.010 0.5 10 50 IJ Antimony 1450 < 0.0010 < 0.010 0.06 0.7 5 1450 U < 0.0010 < 0.010 0.1 0.5 7 Selenium 1450 U < 0.0010 < 0.50 50 200 Zinc 4 Chloride 1220 U < 1.0 < 10 800 15000 25000 1220 U 0.15 1.5 10 500 Fluoride 150 U 350 Sulphate 1220 35 1000 20000 50000 N Total Dissolved Solids 1020 240 2400 4000 60000 100000 Phenol Index 1920 U < 0.030 < 0.30 1 Dissolved Organic Carbon U 3.9 < 50 500 800 1610 1000

| Solid Information | |
|-----------------------------|-------|
| Dry mass of test portion/kg | 0.090 |
| Moisture (%) | 13 |

Waste Acceptance Criteria



| Project: PPK3 | | | | | | PA | |
|------------------------------|----------|---------|-------------|-------------|--------------------------------------|------------------|----------------|
| Chemtest Job No: | 19-32968 | | | | Landfill \ | Waste Acceptanc | e Criteria |
| Chemtest Sample ID: | 898660 | | | | | Limits | |
| Sample Ref: | | | | | | Stable, Non | |
| Sample ID: | | | | | | reactive | |
| Sample Location: | TP47 | | | | | hazardous | Hazardous |
| Top Depth(m): | 0.70 | | | | Inert Waste | waste in non- | V ∕aste |
| Bottom Depth(m): | | | | | Landfill | hazardous | Landfill |
| Sampling Date (\$): | | | | | | Landfill | 6 |
| Determinand | SOP | Accred. | Units | | | | 70 |
| Total Organic Carbon | 2625 | U | % | [A] 0.46 | 3 | 5 | 6 |
| Loss On Ignition | 2610 | U | % | 3.1 | | | 10 |
| Total BTEX | 2760 | U | mg/kg | [A] < 0.010 | 6 | | |
| Total PCBs (7 Congeners) | 2815 | J | mg/kg | < 0.10 | 1 | | - |
| TPH Total WAC (Mineral Oil) | 2670 | U | mg/kg | [A] < 10 | 500 | | |
| Total (Of 17) PAH's | 2800 | N | mg/kg | < 2.0 | 100 | | |
| рН | 2010 | U | | 10.2 | | >6 | |
| Acid Neutralisation Capacity | 2015 | N | mol/kg | 0.078 | | To evaluate | To evaluate |
| Eluate Analysis | | | 10:1 Eluate | 10:1 Eluate | Limit values for compliance leaching | | eaching test |
| - | | | mg/l | mg/kg | using B | S EN 12457 at L/ | S 10 l/kg |
| Arsenic | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 2 | 25 |
| Barium | 1450 | J | 0.0012 | < 0.50 | 20 | 100 | 300 |
| Cadmium | 1450 | U | < 0.00010 | < 0.010 | 0.04 | 1 | 5 |
| Chromium | 1450 | U | 0.016 | 0.16 | 0.5 | 10 | 70 |
| Copper | 1450 | U | < 0.0010 | < 0.050 | 2 | 50 | 100 |
| Mercury | 1450 | U | < 0.00050 | < 0.0050 | 0.01 | 0.2 | 2 |
| Molybdenum | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 10 | 30 |
| Nickel | 1450 | U | 0.011 | 0.11 | 0.4 | 10 | 40 |
| Lead | 1450 | U | < 0.0010 | < 0.010 | 0.5 | 10 | 50 |
| Antimony | 1450 | U | < 0.0010 | < 0.010 | 0.06 | 0.7 | 5 |
| Selenium | 1450 | U | < 0.0010 | < 0.010 | 0.1 | 0.5 | 7 |
| Zinc | 1450 | U | < 0.0010 | < 0.50 | 4 | 50 | 200 |
| Chloride | 1220 | U | < 1.0 | < 10 | 800 | 15000 | 25000 |
| Fluoride | 1220 | U | 0.27 | 2.7 | 10 | 150 | 500 |
| Sulphate | 1220 | U | 8.3 | 83 | 1000 | 20000 | 50000 |
| Total Dissolved Solids | 1020 | N | 58 | 580 | 4000 | 60000 | 100000 |
| Phenol Index | 1920 | U | < 0.030 | < 0.30 | 1 | - | - |
| Dissolved Organic Carbon | 1610 | U | 4.3 | < 50 | 500 | 800 | 1000 |

| Solid Information | |
|-----------------------------|-------|
| Dry mass of test portion/kg | 0.090 |
| Moisture (%) | 14 |

Waste Acceptance Criteria



| Project: PPK3 | | | | | | | | | |
|------------------------------|----------|---------|-------------|-------------|---|------------------------------------|-----------------|--|--|
| Chemtest Job No: | 19-32968 | | | | Landflll \ | Landfill Waste Acceptance Criteria | | | |
| Chemtest Sample ID: | 898661 | | | | | Limits / | | | |
| Sample Ref: | | | | | | Stable, Non | | | |
| Sample ID: | | | | | | reactive | | | |
| Sample Location: | TP54 | | | | | hazardous | Hazardous | | |
| Top Depth(m): | 0.80 | | | | Inert Waste | waste in non- | √ v/aste | | |
| Bottom Depth(m): | | | | | Landfill | hazardous | Landfill | | |
| Sampling Date (\$): | | | | | | Landfill | 6 | | |
| Determinand | SOP | Accred. | Units | | | | 7 | | |
| otal Organic Carbon | 2625 | U | % | [A] 0.68 | 3 | 5 | 6 | | |
| oss On Ignition | 2610 | U | % | 1.5 | | | 10 | | |
| Γotal BTEX | 2760 | U | mg/kg | [A] < 0.010 | 6 | | | | |
| Total PCBs (7 Congeners) | 2815 | U | mg/kg | < 0.10 | 1 | | | | |
| ΓΡΗ Total WAC (Mineral Oil) | 2670 | U | mg/kg | [A] < 10 | 500 | | | | |
| Total (Of 17) PAH's | 2800 | N | mg/kg | < 2.0 | 100 | | | | |
| Н | 2010 | U | | 9.4 | | >6 | | | |
| Acid Neutralisation Capacity | 2015 | N | mol/kg | 0.087 | | To evaluate | To evaluate | | |
| luate Analysis | | | 10:1 Eluate | 10:1 Eluate | Limit values for compliance leaching test | | | | |
| | | | mg/l | mg/kg | using B | S EN 12457 at L/S | 6 10 l/kg | | |
| Arsenic | 1450 | U | 0.022 | 0.22 | 0.5 | 2 | 25 | | |
| Barium | 1450 | U | 0.017 | < 0.50 | 20 | 100 | 300 | | |
| Cadmium | 1450 | U | < 0.00010 | < 0.010 | 0.04 | 1 | 5 | | |
| Chromium | 1450 | U | 0.039 | 0.39 | 0.5 | 10 | 70 | | |
| Copper | 1450 | U | 0.0018 | < 0.050 | 2 | 50 | 100 | | |
| Mercury | 1450 | U | < 0.00050 | < 0.0050 | 0.01 | 0.2 | 2 | | |
| Molybdenum | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 10 | 30 | | |
| lickel | 1450 | U | 0.015 | 0.15 | 0.4 | 10 | 40 | | |
| ₋ead | 1450 | U | 0.0013 | 0.013 | 0.5 | 10 | 50 | | |
| Antimony | 1450 | U | < 0.0010 | < 0.010 | 0.06 | 0.7 | 5 | | |
| Selenium | 1450 | U | < 0.0010 | < 0.010 | 0.1 | 0.5 | 7 | | |
| Zinc Zinc | 1450 | U | < 0.0010 | < 0.50 | 4 | 50 | 200 | | |
| Chloride | 1220 | U | < 1.0 | < 10 | 800 | 15000 | 25000 | | |
| luoride | 1220 | U | < 0.050 | < 1.0 | 10 | 150 | 500 | | |
| Sulphate | 1220 | U | 17 | 170 | 1000 | 20000 | 50000 | | |
| Total Dissolved Solids | 1020 | N | 38 | 380 | 4000 | 60000 | 100000 | | |
| Phenol Index | 1920 | U | < 0.030 | < 0.30 | 1 | - | - | | |
| | | | | | | | | | |

| Solid Information | | | | |
|-----------------------------|-------|--|--|--|
| Dry mass of test portion/kg | 0.090 | | | |
| Moisture (%) | 5.0 | | | |

Waste Acceptance Criteria



| Project: PPK3 | | | | | | | | | |
|------------------------------|----------|---------|-------------|-------------|---|-------------------|-------------------------|--|--|
| Chemtest Job No: | 19-32968 | | | | Landfill \ | Waste Acceptance | ste Acceptance Criteria | | |
| Chemtest Sample ID: | 898662 | | | | | Limits | | | |
| Sample Ref: | | | | | | Stable, Non | | | |
| Sample ID: | | | | | | reactive | | | |
| Sample Location: | TP55 | | | | | hazardous | Hazardous | | |
| Гор Depth(m): | 0.50 | | | | Inert Waste | waste in non- | √ V/aste | | |
| Bottom Depth(m): | | | | | Landfill | hazardous | Landfill | | |
| Sampling Date (\$): | | | | | | Landfill | 6 | | |
| Determinand | SOP | Accred. | Units | | | | 7 | | |
| otal Organic Carbon | 2625 | U | % | [A] 0.34 | 3 | 5 | 6 | | |
| oss On Ignition | 2610 | U | % | 0.93 | | | 10 | | |
| Total BTEX | 2760 | U | mg/kg | [A] < 0.010 | 6 | | | | |
| Total PCBs (7 Congeners) | 2815 | U | mg/kg | < 0.10 | 1 | | | | |
| ΓΡΗ Total WAC (Mineral Oil) | 2670 | U | mg/kg | [A] < 10 | 500 | | | | |
| Γotal (Of 17) PAH's | 2800 | N | mg/kg | < 2.0 | 100 | | | | |
| Н | 2010 | U | | 9.3 | | >6 | | | |
| Acid Neutralisation Capacity | 2015 | N | mol/kg | 0.097 | | To evaluate | To evaluate | | |
| Eluate Analysis | | | 10:1 Eluate | 10:1 Eluate | Limit values for compliance leaching test | | | | |
| | | | mg/l | mg/kg | using B | S EN 12457 at L/S | 6 10 l/kg | | |
| Arsenic | 1450 | U | 0.12 | 1.2 | 0.5 | 2 | 25 | | |
| Barium | 1450 | U | 0.013 | < 0.50 | 20 | 100 | 300 | | |
| Cadmium | 1450 | U | < 0.00010 | < 0.010 | 0.04 | 1 | 5 | | |
| Chromium | 1450 | U | 0.041 | 0.41 | 0.5 | 10 | 70 | | |
| Copper | 1450 | U | 0.0015 | < 0.050 | 2 | 50 | 100 | | |
| Mercury | 1450 | U | < 0.00050 | < 0.0050 | 0.01 | 0.2 | 2 | | |
| Molybdenum | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 10 | 30 | | |
| Nickel | 1450 | U | 0.016 | 0.16 | 0.4 | 10 | 40 | | |
| ₋ead | 1450 | U | < 0.0010 | < 0.010 | 0.5 | 10 | 50 | | |
| Antimony | 1450 | U | < 0.0010 | < 0.010 | 0.06 | 0.7 | 5 | | |
| Selenium | 1450 | U | < 0.0010 | < 0.010 | 0.1 | 0.5 | 7 | | |
| Zinc Zinc | 1450 | U | < 0.0010 | < 0.50 | 4 | 50 | 200 | | |
| Chloride | 1220 | U | < 1.0 | < 10 | 800 | 15000 | 25000 | | |
| luoride | 1220 | U | < 0.050 | < 1.0 | 10 | 150 | 500 | | |
| Sulphate | 1220 | U | 7.3 | 73 | 1000 | 20000 | 50000 | | |
| Total Dissolved Solids | 1020 | N | 40 | 400 | 4000 | 60000 | 100000 | | |
| Phenol Index | 1920 | U | < 0.030 | < 0.30 | 1 | - | - | | |
| | | | | | | | | | |

| Solid Information | |
|-----------------------------|-------|
| Dry mass of test portion/kg | 0.090 |
| Moisture (%) | 6.8 |

Waste Acceptance Criteria



| eliver results Project: PPK3 | | | | | | PA | |
|-------------------------------|----------|---------|-------------|-------------|--------------------------------------|------------------|----------------|
| Chemtest Job No: | 19-32968 | | | | Landfill \ | Waste Acceptanc | e Criteria |
| Chemtest Sample ID: | 898663 | | | | | Limits | |
| Sample Ref: | | | | | | Stable, Non | |
| Sample ID: | | | | | | reactive | |
| Sample Location: | TP67 | | | | | hazardous | Hazardous |
| Top Depth(m): | 0.20 | | | | Inert Waste | waste in non- | V ∕aste |
| Bottom Depth(m): | | | | | Landfill | hazardous | Landfill |
| Sampling Date (\$): | | | | | | Landfill | 6 |
| Determinand | SOP | Accred. | Units | | | | 70 |
| Total Organic Carbon | 2625 | U | % | [A] 1.3 | 3 | 5 | 6 |
| Loss On Ignition | 2610 | U | % | 3.4 | | | 10 |
| Total BTEX | 2760 | U | mg/kg | [A] < 0.010 | 6 | | |
| Total PCBs (7 Congeners) | 2815 | U | mg/kg | < 0.10 | 1 | | - |
| TPH Total WAC (Mineral Oil) | 2670 | U | mg/kg | [A] < 10 | 500 | | |
| Total (Of 17) PAH's | 2800 | N | mg/kg | < 2.0 | 100 | | |
| рН | 2010 | U | | 8.5 | | >6 | |
| Acid Neutralisation Capacity | 2015 | N | mol/kg | 0.082 | | To evaluate | To evaluate |
| Eluate Analysis | | | 10:1 Eluate | 10:1 Eluate | Limit values for compliance leaching | | eaching test |
| | | | mg/l | mg/kg | using B | S EN 12457 at L/ | S 10 I/kg |
| Arsenic | 1450 | U | 0.012 | 0.12 | 0.5 | 2 | 25 |
| Barium | 1450 | U | 0.0093 | < 0.50 | 20 | 100 | 300 |
| Cadmium | 1450 | U | < 0.00010 | < 0.010 | 0.04 | 1 | 5 |
| Chromium | 1450 | U | 0.11 | 1.1 | 0.5 | 10 | 70 |
| Copper | 1450 | U | 0.0041 | < 0.050 | 2 | 50 | 100 |
| Mercury | 1450 | U | < 0.00050 | < 0.0050 | 0.01 | 0.2 | 2 |
| Molybdenum | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 10 | 30 |
| Nickel | 1450 | U | 0.029 | 0.29 | 0.4 | 10 | 40 |
| Lead | 1450 | U | < 0.0010 | < 0.010 | 0.5 | 10 | 50 |
| Antimony | 1450 | U | < 0.0010 | < 0.010 | 0.06 | 0.7 | 5 |
| Selenium | 1450 | U | < 0.0010 | < 0.010 | 0.1 | 0.5 | 7 |
| Zinc | 1450 | U | < 0.0010 | < 0.50 | 4 | 50 | 200 |
| Chloride | 1220 | U | < 1.0 | < 10 | 800 | 15000 | 25000 |
| Fluoride | 1220 | U | 0.16 | 1.6 | 10 | 150 | 500 |
| Sulphate | 1220 | U | 13 | 130 | 1000 | 20000 | 50000 |
| Total Dissolved Solids | 1020 | N | 72 | 710 | 4000 | 60000 | 100000 |
| Phenol Index | 1920 | U | < 0.030 | < 0.30 | 1 | - | - |
| Dissolved Organic Carbon | 1610 | U | 5.6 | 56 | 500 | 800 | 1000 |

| Solid Information | |
|-----------------------------|-------|
| Dry mass of test portion/kg | 0.090 |
| Moisture (%) | 11 |

Waste Acceptance Criteria



| Project: PPK3 | | | | | | | | |
|------------------------------|----------|---------|-------------|-------------|---|------------------------------------|----------------|--|
| Chemtest Job No: | 19-32968 | | | | Landfill V | Landfill Waste Acceptance Criteria | | |
| Chemtest Sample ID: | 898664 | | | | | Limits / | | |
| Sample Ref: | | | | | | Stable, Non | | |
| Sample ID: | | | | | | reactive | | |
| Sample Location: | TP76 | | | | | hazardous | Hazardous | |
| Γορ Depth(m): | 0.65 | | | | Inert Waste | waste in non- | √ waste | |
| Bottom Depth(m): | | | | | Landfill | hazardous | Landfill | |
| Sampling Date (\$): | | | | | | Landfill | 6 | |
| Determinand | SOP | Accred. | Units | | | | 7 | |
| otal Organic Carbon | 2625 | U | % | [A] 1.8 | 3 | 5 | 6 | |
| oss On Ignition | 2610 | U | % | 5.4 | | | 10 | |
| Γotal BTEX | 2760 | U | mg/kg | [A] < 0.010 | 6 | | | |
| Total PCBs (7 Congeners) | 2815 | U | mg/kg | < 0.10 | 1 | | | |
| ΓΡΗ Total WAC (Mineral Oil) | 2670 | U | mg/kg | [A] < 10 | 500 | | | |
| Total (Of 17) PAH's | 2800 | N | mg/kg | < 2.0 | 100 | | | |
| Н | 2010 | U | | 7.3 | | >6 | | |
| Acid Neutralisation Capacity | 2015 | N | mol/kg | 0.018 | | To evaluate | To evaluate | |
| Eluate Analysis | | | 10:1 Eluate | 10:1 Eluate | Limit values for compliance leaching test | | | |
| | | | mg/l | mg/kg | using B | S EN 12457 at L/S | 6 10 l/kg | |
| Arsenic | 1450 | U | 0.0013 | < 0.050 | 0.5 | 2 | 25 | |
| Barium | 1450 | U | 0.0023 | < 0.50 | 20 | 100 | 300 | |
| Cadmium | 1450 | U | 0.00020 | < 0.010 | 0.04 | 1 | 5 | |
| Chromium | 1450 | U | 0.25 | 2.5 | 0.5 | 10 | 70 | |
| Copper | 1450 | U | 0.0058 | 0.058 | 2 | 50 | 100 | |
| Mercury | 1450 | U | < 0.00050 | < 0.0050 | 0.01 | 0.2 | 2 | |
| Molybdenum | 1450 | U | 0.0020 | < 0.050 | 0.5 | 10 | 30 | |
| Nickel | 1450 | U | 0.059 | 0.59 | 0.4 | 10 | 40 | |
| ₋ead | 1450 | U | 0.0010 | 0.010 | 0.5 | 10 | 50 | |
| Antimony | 1450 | U | < 0.0010 | < 0.010 | 0.06 | 0.7 | 5 | |
| Selenium | 1450 | U | < 0.0010 | < 0.010 | 0.1 | 0.5 | 7 | |
| Zinc Zinc | 1450 | U | < 0.0010 | < 0.50 | 4 | 50 | 200 | |
| Chloride | 1220 | U | < 1.0 | < 10 | 800 | 15000 | 25000 | |
| luoride | 1220 | U | 0.19 | 1.9 | 10 | 150 | 500 | |
| Sulphate | 1220 | U | 15 | 150 | 1000 | 20000 | 50000 | |
| Total Dissolved Solids | 1020 | N | 44 | 440 | 4000 | 60000 | 100000 | |
| Phenol Index | 1920 | U | < 0.030 | < 0.30 | 1 | - | - | |
| | | | | 67 | | | | |

| Solid Information | | | | |
|-----------------------------|-------|--|--|--|
| Dry mass of test portion/kg | 0.090 | | | |
| Moisture (%) | 21 | | | |

Waste Acceptance Criteria



| Project: PPK3 | | | | | | | |
|------------------------------|----------|---------|-------------|-------------|---|-------------------|---------------|
| Chemtest Job No: | 19-32968 | | | | Landfill \ | Waste Acceptance | e Criteria |
| Chemtest Sample ID: | 898665 | | | | | Limits / | |
| Sample Ref: | | | | | | Stable, Non | |
| Sample ID: | | | | | | reactive | |
| Sample Location: | TP82 | | | | | hazardous | Hazardous |
| op Depth(m): | 0.60 | | | | Inert Waste | waste in non- | ₩ aste |
| Bottom Depth(m): | | | | | Landfill | hazardous | Landfill |
| Sampling Date (\$): | | | | | | Landfill | 6 |
| Determinand | SOP | Accred. | Units | | | | 7 |
| otal Organic Carbon | 2625 | U | % | [A] 0.57 | 3 | 5 | 6 |
| oss On Ignition | 2610 | U | % | 3.3 | | | 10 |
| Γotal BTEX | 2760 | U | mg/kg | [A] < 0.010 | 6 | | |
| Total PCBs (7 Congeners) | 2815 | U | mg/kg | < 0.10 | 1 | | |
| ΓΡΗ Total WAC (Mineral Oil) | 2670 | U | mg/kg | [A] < 10 | 500 | | |
| Total (Of 17) PAH's | 2800 | N | mg/kg | < 2.0 | 100 | | |
| Н | 2010 | U | | 8.5 | | >6 | |
| Acid Neutralisation Capacity | 2015 | N | mol/kg | 0.027 | | To evaluate | To evaluate |
| Eluate Analysis | | | 10:1 Eluate | 10:1 Eluate | Limit values for compliance leaching test | | |
| | | | mg/l | mg/kg | using B | S EN 12457 at L/S | 6 10 l/kg |
| Arsenic | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 2 | 25 |
| Barium | 1450 | U | < 0.0010 | < 0.50 | 20 | 100 | 300 |
| Cadmium | 1450 | U | < 0.00010 | < 0.010 | 0.04 | 1 | 5 |
| Chromium | 1450 | U | 0.072 | 0.72 | 0.5 | 10 | 70 |
| Copper | 1450 | U | 0.0016 | < 0.050 | 2 | 50 | 100 |
| Mercury | 1450 | U | < 0.00050 | < 0.0050 | 0.01 | 0.2 | 2 |
| Molybdenum | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 10 | 30 |
| lickel | 1450 | U | 0.024 | 0.24 | 0.4 | 10 | 40 |
| ₋ead | 1450 | U | < 0.0010 | < 0.010 | 0.5 | 10 | 50 |
| Antimony | 1450 | U | < 0.0010 | < 0.010 | 0.06 | 0.7 | 5 |
| Selenium | 1450 | U | < 0.0010 | < 0.010 | 0.1 | 0.5 | 7 |
| 'inc | 1450 | U | < 0.0010 | < 0.50 | 4 | 50 | 200 |
| Chloride | 1220 | U | < 1.0 | < 10 | 800 | 15000 | 25000 |
| luoride | 1220 | U | 0.12 | 1.2 | 10 | 150 | 500 |
| Sulphate | 1220 | U | 3.7 | 37 | 1000 | 20000 | 50000 |
| Total Dissolved Solids | 1020 | N | 120 | 1200 | 4000 | 60000 | 100000 |
| Phenol Index | 1920 | U | < 0.030 | < 0.30 | 1 | - | - |
| | | | | | | | |

| Solid Information | | | | | |
|-----------------------------|-------|--|--|--|--|
| Dry mass of test portion/kg | 0.090 | | | | |
| Moisture (%) | 13 | | | | |

Waste Acceptance Criteria



| Project: PPK3 | | | | | | | |
|------------------------------|----------|---------|-------------|-------------|-------------|-------------------|-----------------|
| Chemtest Job No: | 19-32968 | | | | Landfill | Waste Acceptance | e Criteria |
| Chemtest Sample ID: | 898666 | | | | | Limits | |
| Sample Ref: | | | | | | Stable, Non | |
| Sample ID: | | | | | | reactive |) |
| Sample Location: | TP93 | | | | | hazardous | Hazardous |
| Top Depth(m): | 0.50 | | | | Inert Waste | waste in non- | √ v/aste |
| Bottom Depth(m): | | | | | Landfill | hazardous | Landfill |
| Sampling Date (\$): | | | | | | Landfill | 6 |
| Determinand | SOP | Accred. | Units | | | | 7 |
| otal Organic Carbon | 2625 | U | % | [A] 0.93 | 3 | 5 | 6 |
| oss On Ignition | 2610 | U | % | 3.8 | | | 10 |
| Total BTEX | 2760 | U | mg/kg | [A] < 0.010 | 6 | | |
| Total PCBs (7 Congeners) | 2815 | U | mg/kg | < 0.10 | 1 | | |
| ΓΡΗ Total WAC (Mineral Oil) | 2670 | U | mg/kg | [A] < 10 | 500 | | |
| otal (Of 17) PAH's | 2800 | N | mg/kg | < 2.0 | 100 | | |
| Н | 2010 | U | | 8.2 | | >6 | |
| Acid Neutralisation Capacity | 2015 | N | mol/kg | 0.027 | | To evaluate | To evaluate |
| Eluate Analysis | | | 10:1 Eluate | 10:1 Eluate | | | |
| | | | mg/l | mg/kg | using B | S EN 12457 at L/S | 6 10 I/kg |
| Arsenic | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 2 | 25 |
| Barium | 1450 | U | 0.0011 | < 0.50 | 20 | 100 | 300 |
| Cadmium | 1450 | U | < 0.00010 | < 0.010 | 0.04 | 1 | 5 |
| Chromium | 1450 | U | 0.052 | 0.52 | 0.5 | 10 | 70 |
| Copper | 1450 | U | 0.0017 | < 0.050 | 2 | 50 | 100 |
| Mercury | 1450 | U | < 0.00050 | < 0.0050 | 0.01 | 0.2 | 2 |
| Molybdenum | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 10 | 30 |
| lickel | 1450 | U | 0.020 | 0.20 | 0.4 | 10 | 40 |
| .ead | 1450 | U | < 0.0010 | < 0.010 | 0.5 | 10 | 50 |
| Antimony | 1450 | U | < 0.0010 | < 0.010 | 0.06 | 0.7 | 5 |
| Selenium | 1450 | U | < 0.0010 | < 0.010 | 0.1 | 0.5 | 7 |
| Zinc | 1450 | U | < 0.0010 | < 0.50 | 4 | 50 | 200 |
| Chloride | 1220 | U | < 1.0 | < 10 | 800 | 15000 | 25000 |
| luoride | 1220 | U | 0.26 | 2.6 | 10 | 150 | 500 |
| Sulphate | 1220 | U | 6.4 | 64 | 1000 | 20000 | 50000 |
| Total Dissolved Solids | 1020 | N | 65 | 650 | 4000 | 60000 | 100000 |
| Phenol Index | 1920 | U | < 0.030 | < 0.30 | 1 | - | - |
| 110110111110011 | | | | | | | |

| Solid Information | | | | |
|-----------------------------|-------|--|--|--|
| Dry mass of test portion/kg | 0.090 | | | |
| Moisture (%) | 15 | | | |

Waste Acceptance Criteria



| Project: PPK3 | | | | | | | |
|------------------------------|----------|---------|-------------|-------------|-------------|-------------------|----------------|
| Chemtest Job No: | 19-32968 | | | | Landfill \ | Waste Acceptance | e Criteria |
| Chemtest Sample ID: | 900765 | | | | | Limits | |
| Sample Ref: | | | | | | Stable, Non | |
| Sample ID: | | | | | | reactive | |
| Sample Location: | TP48 | | | | | hazardous | Hazardous |
| Гор Depth(m): | 0.50 | | | | Inert Waste | waste in non- | √ Vaste |
| Bottom Depth(m): | | | | | Landfill | hazardous | Landfill |
| Sampling Date (\$): | | | | | | Landfill | 6 |
| Determinand | SOP | Accred. | Units | | | | 7 |
| otal Organic Carbon | 2625 | U | % | [A] 0.37 | 3 | 5 | 6 |
| oss On Ignition | 2610 | U | % | 1.7 | | | 10 |
| Total BTEX | 2760 | U | mg/kg | [A] < 0.010 | 6 | | |
| Total PCBs (7 Congeners) | 2815 | U | mg/kg | < 0.10 | 1 | | |
| ΓΡΗ Total WAC (Mineral Oil) | 2670 | U | mg/kg | [A] < 10 | 500 | | |
| Total (Of 17) PAH's | 2800 | N | mg/kg | < 2.0 | 100 | | |
| Н | 2010 | U | | 10.8 | | >6 | |
| Acid Neutralisation Capacity | 2015 | N | mol/kg | 0.13 | | To evaluate | To evaluate |
| Eluate Analysis | | | 10:1 Eluate | 10:1 Eluate | 9 | | |
| | | | mg/l | mg/kg | using B | S EN 12457 at L/S | 6 10 l/kg |
| Arsenic | 1450 | U | 0.011 | 0.11 | 0.5 | 2 | 25 |
| Barium | 1450 | U | 0.0094 | < 0.50 | 20 | 100 | 300 |
| Cadmium | 1450 | U | < 0.00010 | < 0.010 | 0.04 | 1 | 5 |
| Chromium | 1450 | U | 0.038 | 0.38 | 0.5 | 10 | 70 |
| Copper | 1450 | U | 0.0021 | < 0.050 | 2 | 50 | 100 |
| Mercury | 1450 | U | < 0.00050 | < 0.0050 | 0.01 | 0.2 | 2 |
| Molybdenum | 1450 | U | < 0.0010 | < 0.050 | 0.5 | 10 | 30 |
| Nickel | 1450 | U | 0.016 | 0.16 | 0.4 | 10 | 40 |
| ∟ead | 1450 | U | < 0.0010 | < 0.010 | 0.5 | 10 | 50 |
| Antimony | 1450 | U | < 0.0010 | < 0.010 | 0.06 | 0.7 | 5 |
| Selenium | 1450 | U | < 0.0010 | < 0.010 | 0.1 | 0.5 | 7 |
| Zinc | 1450 | U | < 0.0010 | < 0.50 | 4 | 50 | 200 |
| Chloride | 1220 | U | < 1.0 | < 10 | 800 | 15000 | 25000 |
| luoride | 1220 | U | 0.089 | < 1.0 | 10 | 150 | 500 |
| Sulphate | 1220 | U | 16 | 160 | 1000 | 20000 | 50000 |
| Total Dissolved Solids | 1020 | N | 65 | 650 | 4000 | 60000 | 100000 |
| Phenol Index | 1920 | U | < 0.030 | < 0.30 | 1 | - | - |
| | | | | | | | |

| Solid Information | | | | | |
|-----------------------------|-------|--|--|--|--|
| Dry mass of test portion/kg | 0.090 | | | | |
| Moisture (%) | 8.9 | | | | |

Waste Acceptance Criteria



Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accledited but the results may be compromised.

| Sample: | Sample Ref: | Sample ID: | Sample Location: | Sampled Date: | Deviation Code(s): | Containers Received: |
|---------|-------------|------------|---------------------|---------------|--------------------|-------------------------|
| 898655 | | | TP6 | | А | Amber Glass 250ml |
| 898655 | | | TP6 | | А | Amber Glass 60ml |
| 898656 | | | TP17 | | А | Amber Glass 250ml |
| 898656 | | | TP17 | | А | Amber Glass 60ml |
| 898657 | | | TP39 | | А | Amber Glass 250ml |
| 898657 | | | TP39 | | А | Amber Glass 60ml |
| 898658 | | | TP41 | | А | Amber Glass 250ml |
| 898658 | | | TP41 | | А | Amber Glass 60ml |
| 898659 | | | TP42 | | А | Amber Glass 250ml |
| 898659 | | | TP42 | | А | Amber Glass 60ml |
| 898660 | | | TP47 | | А | Amber Glass 60ml |
| 898660 | | | TP47 | | А | Plastic Tub 1000g |
| 898661 | | | TP54 | | А | Amber Glass 250ml |
| 898661 | | | TP54 | | А | Amber Glass 60ml |
| 898662 | | | TP55 | | А | Amber Glass 250ml |
| 898662 | | | TP55 | | А | Amber Glass 60ml |
| 898663 | | | TP67 | | А | Amber Glass 250ml |
| 898663 | | | TP67 | | А | Amber Glass 60ml |
| 898664 | | | TP76 | | А | Amber Glass 250ml |
| 898664 | | | TP76 | | А | Amber Glass 60ml |
| 898665 | | | TP82 | | А | Amber Glass 250ml |
| 898665 | | | TP82 | | А | Amber Glass 60ml |
| 898666 | | | TP93 | | А | Amber Glass 60ml |



Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accledited but the results may be compromised.

| Sample: | Sample Ref: | Sample ID: | Sample Location: | Sampled Date: | Deviation Code(s): | Containers Received: |
|---------|-------------|------------|---------------------|---------------|--------------------|-------------------------|
| 898666 | | | TP93 | | А | Plastic Tub 1000g |
| 900765 | | | TP48 | | А | Amber Glass 250ml |
| 900765 | | | TP48 | | А | Amber Glass 60ml |



Test Methods

| SOP | Title | Parameters included | Method summary |
|------|--|--|--|
| 1010 | pH Value of Waters | рН | pH Meter |
| 1020 | Electrical Conductivity and Total Dissolved Solids (TDS) in Waters | Electrical Conductivity and Total Dissolved Solids (TDS) in Waters | Conductivity Meter |
| 1220 | Anions, Alkalinity & Ammonium in Waters | Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium | Automated colorimetric analysis using 'Aquakem 600' Discrete Analyse |
| 1450 | Metals in Waters by ICP-MS | Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc | determination by inductively coupled plasma |
| 1610 | Total/Dissolved Organic Carbon in Waters | Organic Carbon | TOC Analyser using Catalytic Oxidation |
| 1920 | Phenols in Waters by HPLC | Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded. | Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection. |
| 2010 | pH Value of Soils | рН | pH Meter |
| 2015 | Acid Neutralisation Capacity | Acid Reserve | Titration |
| 2030 | Moisture and Stone Content of Soils(Requirement of MCERTS) | Moisture content | Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C. |
| 2120 | Water Soluble Boron, Sulphate, Magnesium & Chromium | Boron; Sulphate; Magnesium; Chromium | Aqueous extraction / ICP-OES |
| 2180 | Sulphur (Elemental) in Soils by HPLC | Sulphur | Dichloromethane extraction / HPLC with UV detection |
| 2192 | Asbestos | Asbestos | Polarised light microscopy / Gravimetry |
| 2300 | Cyanides & Thiocyanate in Soils | Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate | Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser. |
| 2325 | Sulphide in Soils | Sulphide | Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine. |
| 2430 | Total Sulphate in soils | Total Sulphate | Acid digestion followed by determination of sulphate in extract by ICP-OES. |
| 2450 | Acid Soluble Metals in Soils | Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc | Acid digestion followed by determination of metals in extract by ICP-MS. |
| 2490 | Hexavalent Chromium in Soils | Chromium [VI] | Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide. |
| 2610 | Loss on Ignition | loss on ignition (LOI) | Determination of the proportion by mass that is lost from a soil by ignition at 550°C. |
| 2625 | Total Organic Carbon in Soils | Total organic Carbon (TOC) | Determined by high temperature combustion under oxygen, using an Eltra elemental analyser. |
| 2670 | Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID | TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40 | Dichloromethane extraction / GC-FID |
| 2680 | TPH A/A Split | Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21- C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 | Dichloromethane extraction / GCxGC FID detection |



Test Methods

| SOP | Title | Parameters included | Method summary |
|------|--|---|--|
| 2760 | Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS | Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule | Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds. |
| 2800 | Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS | Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene* | Dichloromethane extraction / GC-MS |
| 2815 | Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS | ICES7 PCB congeners | Acetone/Hexane extraction / GC-MS |
| 2920 | Phenols in Soils by HPLC | Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1- Naphthol and TrimethylphenolsNote: chlorophenols are excluded. | 60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection. |
| 640 | Characterisation of Waste (Leaching C10) | Waste material including soil, sludges and granular waste | ComplianceTest for Leaching of Granular Waste Material and Sludge |



Report Information

Key

- **UKAS** accredited
- M MCERTS and UKAS accredited
- Ν Unaccredited
- PRICEINED 28/06/ S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- This analysis has been subcontracted to an unaccredited laboratory Τ
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
 - "less than"
- "greater than"
- This information has been supplied by the client and can affect the integrity of test data.

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A Date of sampling not supplied
- B Sample age exceeds stability time (sampling to extraction)
- C Sample not received in appropriate containers
- D Broken Container
- E Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: customerservices@chemtest.com

Appendix 16

Exploratory Hole Location Plan

PRICENED. 28/08/2024

