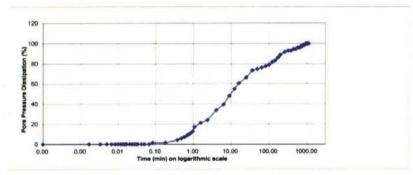
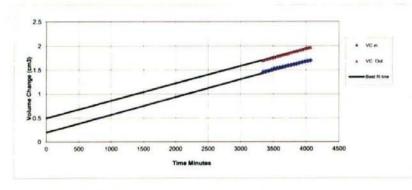
BS 1377 : Part 6 : 1990 Clause 6

| Specimen Details |   |                              |
|------------------|---|------------------------------|
| Borehole         |   | TRP28                        |
| Sample No.       |   | 9                            |
| Depth            | m | Tale Daniel State Control of |
| Date             |   | 02/04/2020                   |

#### **Consolidation Stage**



#### Permeability Stage



SP Flors

Checked and Approved By

02/04/20 Date

Howth

Client Ref P19188 **Contract No** 

48237



# Permeability in a Triaxial Cell BS 1377 : Part 6 : 1990 Clause 6

| Borehole                |   | MGP28      |
|-------------------------|---|------------|
| Sample No.              |   | 29         |
| Depth                   | m |            |
| Date                    |   | 02/04/2020 |
| Disturbed / Undisturbed |   | Ú          |

**Description of Specimen** 

Black silty stiff CLAY

| Height           | mm                | 194.00  | П |
|------------------|-------------------|---------|---|
| Diameter         | mm                | 104.00  |   |
| Area             | mm <sup>2</sup>   | 8494.87 |   |
| Volume           | cm <sup>3</sup>   | 1648.00 |   |
| Mass             | 9                 | 1943.10 |   |
| Dry Mass         | g                 | 1042.40 |   |
| Density          | Mg/m <sup>3</sup> | 1.18    |   |
| Dry Density      | Mg/m <sup>3</sup> | 0.63    |   |
| Moisture Content | %                 | 86.4    |   |
| Voids Ratio      | 10000             | 3.190   |   |
| Specific Gravity | kN/m <sup>3</sup> | 2.65    |   |
| (ass             | umed/measured)    | assumed |   |

| rinai specimen conditions |                   |       |  |
|---------------------------|-------------------|-------|--|
| Moisture Content          | %                 | 86.61 |  |
| Density                   | Mg/m <sup>3</sup> | 1.18  |  |
| Dry Density               | Mg/m³             | 0.63  |  |

| Test Setup             |            |
|------------------------|------------|
| Date started           | 24/03/2020 |
| Date Finished          | 01/04/2020 |
| Top Drain Used         | У          |
| Base Drain Used        | y          |
| Pressure System Number | PCELL 2    |
| Cell Number            | CCELL 2    |

2P Grans

Checked and Approved By

02/04/20 Date

Client Ref

P19188

**Contract No** 



BS 1377 : Part 6 : 1990 Clause 6

| Specimen Decima                         |   |            |
|---|---|------------|
| Borehole<br>Sample No.<br>Depth<br>Date |   | MGP28      |
| Sample No.                              |   | 29         |
| Depth                                   | m |            |
| Date                                    |   | 02/04/2020 |

| Sacuration            |         |        |  |
|-----------------------|---------|--------|--|
| Cell Pressure Incr.   | kPa     | 50.00  |  |
| Back Pressure Incr.   | kPa     | 48.00  |  |
| Differential Pressure | kPa     | 2.00   |  |
| Final Cell Pressure   | kPa     | 300.00 |  |
| Final Pore Pressure   | kPa     | 300.00 |  |
| Final B Value         | 165,000 | 0.96   |  |

| Consolidation        |                    |         |        |
|----------------------|--------------------|---------|--------|
| Effective Pressure   | kPa                | 100.00  | $\neg$ |
| Cell Pressure        | kPa                | 300.00  | - 1    |
| Back Pressure        | kPa                | 200.00  | - 1    |
| Excess Pore Pressure | kPa                | 100.00  | - 1    |
| Pore Pressure at End | kPa                | 200.00  | - 1    |
| Consolidated Volume  | cm <sup>2</sup>    | 1643.80 | - 1    |
| Consolidated Height  | mm                 | 193.84  | - 1    |
| Consolidated Area    | mm"                | 8480.43 | - 1    |
| Vol. Compressibility | m <sup>2</sup> /MN | 29.3690 |        |
| Consolidation Coef.  | m²/yr.             | 0.0255  | _      |
| Final Voids Ratio    |                    | 3.179   |        |

| kPa    | 300.00     |   |
|--------|------------|---|
| kPa    | 100.00     |   |
| kPa    | 20.00      |   |
| ml/min | 0.00030    |   |
| 'C     | 20         |   |
|        | kPa<br>kPa | kPa 100.00<br>kPa 20.00<br>ml/min 0.00030 |

| Vertical Permeability Kv | m/s | 5.58 x 10-11 |
|--------------------------|-----|--------------|
| Vertical Permeability KV | m/s | 2.29 X 10-11 |

DPGIONS

Checked and Approved By

02/04/20

Howth

Client Ref P19188

**Contract No** 

48237

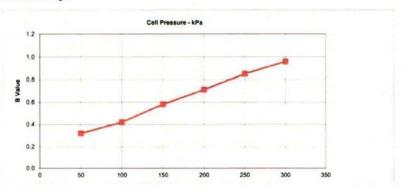


# Permeability in a Triaxial Cell

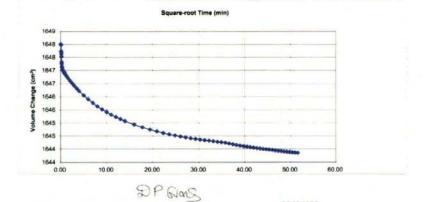
BS 1377 : Part 6 : 1990 Clause 6

Specimen Details Borehole MGP28 29 Sample No. Depth m 02/04/2020

### Saturation Stage



#### **Consolidation Stage**



Howth

Checked and Approved By

02/04/20 Date

Client Ref

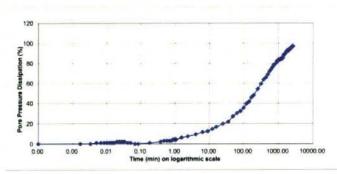
P19188 **Contract No** 

BS 1377 : Part 6 : 1990 Clause 6

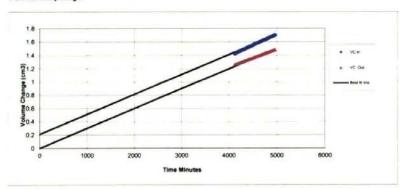
#### Specimen Details

| Borehole<br>Sample No. |   | MGP28      |
|------------------------|---|------------|
| Sample No.             |   | 29         |
| Depth                  | m |            |
| Date                   |   | 02/04/2020 |

#### **Consolidation Stage**



### **Permeability Stage**



2P Rions

Checked and Approved By

02/04/20 Date

Client Ref P19188 **Contract No** 

48237



### Permeability in a Triaxial Cell

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details

| Borehole                | MAP28      |
|-------------------------|------------|
| Sample No.              | 49         |
| Depth m                 |            |
| Date                    | 02/04/2020 |
| Disturbed / Undisturbed | U          |

### **Description of Specimen**

Dark grey silty stiff CLAY

| Height           | mm                | 188.00  | П |
|------------------|-------------------|---------|---|
| Diameter         | mm                | 104.00  |   |
| Area             | mm <sup>2</sup>   | 8494.87 |   |
| Volume           | cm <sup>3</sup>   | 1597.03 |   |
| Mass             | g                 | 1980.80 |   |
| Dry Mass         | 9                 | 1184.30 |   |
| Density          | Mg/m <sup>3</sup> | 1.24    |   |
| Dry Density      | Mg/m <sup>3</sup> | 0.74    |   |
| Moisture Content | %                 | 67.3    |   |
| Voids Ratio      |                   | 2.574   |   |
| Specific Gravity | kN/m³             | 2.65    |   |
| (assume          | d/measured)       | assumed |   |

| Moisture Content       | %                 | 67.92 | _ |
|------------------------|-------------------|-------|---|
|                        | Mg/m <sup>3</sup> | 1.25  |   |
| Density<br>Dry Density | Mg/m³             | 0.74  |   |

| 24/03/2020 |                                 |
|------------|---------------------------------|
| 01/04/2020 |                                 |
| У у        |                                 |
| y          |                                 |
| PCELL 3    |                                 |
| CCELL 3    |                                 |
|            | 01/04/2020<br>y<br>y<br>PCELL 3 |

DP GIONS

02/04/20 Date

**Checked and Approved By** 

Howth

Client Ref P19188

**Contract No** 

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details

| Borehole   | MAP28      |
|------------|------------|
| Sample No. | 49         |
| Depth m    |            |
| Date       | 02/04/2020 |

| Securation            |          |        |     |
|-----------------------|----------|--------|-----|
| Cell Pressure Incr.   | kPa      | 50.00  | П   |
| Back Pressure Incr.   | kPa      | 48.00  | - 1 |
| Differential Pressure | kPa      | 2.00   | - 1 |
| Final Cell Pressure   | kPa      | 300.00 | - 1 |
| Final Pore Pressure   | kPa      | 300.00 | - 1 |
| Final B Value         | 17.50.00 | 0.96   |     |

Consolidation

| Consonation          |                     |         |   |
|----------------------|---------------------|---------|---|
| Effective Pressure   | kPa                 | 100.00  | Т |
| Cell Pressure        | kPa                 | 300.00  |   |
| Back Pressure        | kPa                 | 200.00  |   |
| Excess Pore Pressure | kPa                 | 100.00  |   |
| Pore Pressure at End | kPa                 | 202.00  |   |
| Consolidated Volume  | cm <sup>3</sup>     | 1592.93 |   |
| Consolidated Height  | mm                  | 187.84  |   |
| Consolidated Area    | mm <sup>4</sup>     | 8480.33 |   |
| Vol. Compressibility | m²/MN               | 6.4436  |   |
| Consolidation Coef.  | m <sup>2</sup> /yr. | 0.0262  |   |
| Final Voids Ratio    | 27000477523         | 2.564   |   |

Permeability

| Cell Pressure           | kPa    | 300.00  |  |
|-------------------------|--------|---------|--|
| Effective Cell Pressure | kPa    | 100.00  |  |
| Back Pressure Diff.     | kPa    | 20.00   |  |
| Mean Rate of Flow       | ml/min | 0.00031 |  |
| Average Temperature     | c      | 20      |  |

| Vertical Permeability I m/s | 5.55 x 10-11 |
|-----------------------------|--------------|
|-----------------------------|--------------|

PP RIONS **Checked and Approved By** 

Howth

02/04/20 Date

Client Ref P19188 **Contract No** 48237



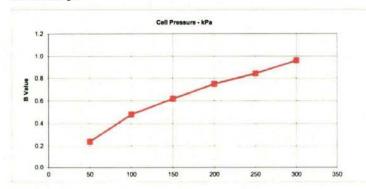
# Permeability in a Triaxial Cell

BS 1377 : Part 6 : 1990 Clause 6

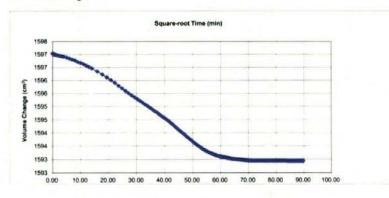
**Specimen Details** 

| Borehole                      | MAP28      |
|-------------------------------|------------|
| Sample No.                    | 49         |
| Depth m                       |            |
| Sample No.<br>Depth m<br>Date | 02/04/2020 |

#### Saturation Stage



#### **Consolidation Stage**



DP Grans

Checked and Approved By

02/04/20 Date

Howth

Client Ref P19188 Contract No

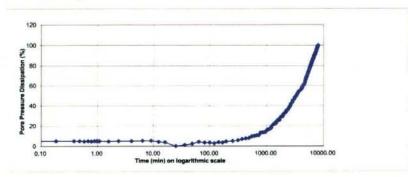


BS 1377 : Part 6 : 1990 Clause 6

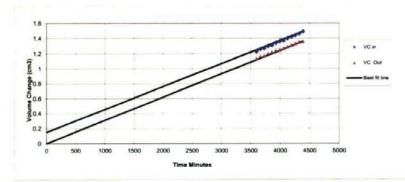
#### **Specimen Details**

| Borehole      |     | MAP28      |
|---------------|-----|------------|
| Sample No.    | - 1 | 49         |
| Depth         | m   |            |
| Depth<br>Date |     | 02/04/2020 |

#### **Consolidation Stage**



#### Permeability Stage



2P Gas

Checked and Approved By

02/04/20 Date

Howth

Client Ref P19188 **Contract No** 

48237



Permeability in a Triaxial Cell

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details

| Borehole                | 1MXP28     |
|-------------------------|------------|
| Sample No.              | 69         |
| Depth m                 |            |
| Date                    | 02/04/2020 |
| Disturbed / Undisturbed | U          |

**Description of Specimen** 

Dark grey silty stiff CLAY

| Height           | mm                | 193.00  |     |
|------------------|-------------------|---------|-----|
| Diameter         | mm                | 103.00  |     |
| Area             | mm²               | 8332.29 | - 1 |
| Volume           | cm <sup>3</sup>   | 1608.13 |     |
| Mass             | 9                 | 1939.40 |     |
| Dry Mass         | g                 | 1012.00 |     |
| Density          | Mg/m <sup>3</sup> | 1.21    |     |
| Dry Density      | Mg/m <sup>3</sup> | 0.63    |     |
| Moisture Content | %                 | 91.6    |     |
| Voids Ratio      | 75-7              | 3.211   |     |
| Specific Gravity | kN/m <sup>3</sup> | 2.65    |     |
| (assume          | d/measured)       | assumed |     |

| rinal Specimen Conditions |                   |       |  |
|---------------------------|-------------------|-------|--|
| Moisture Content          | %                 | 92.42 |  |
| Density                   | Mg/m <sup>3</sup> | 1.22  |  |
| Dry Density               | Mg/m²             | 0.63  |  |

| Test Setup             |            |
|------------------------|------------|
| Date started           | 24/04/2020 |
| Date Finished          | 01/04/2020 |
| Top Drain Used         | y          |
| Base Drain Used        | y          |
| Pressure System Number | PCELL 4    |
| Cell Number            | CCELL 4    |

DP GONS

Checked and Approved By

02/04/20

Client Ref P19188 Contract No

48237

BS 1377 : Part 6 : 1990 Clause 4

Specimen Details

| Borehole   | 1MXP28     |
|------------|------------|
| Sample No. | 69         |
| Depth m    |            |
| Date       | 02/04/2020 |

| Securation            |       |        |        |
|-----------------------|-------|--------|--------|
| Cell Pressure Incr.   | kPa   | 50.00  | $\neg$ |
| Back Pressure Incr.   | kPa   | 48.00  | - 1    |
| Differential Pressure | kPa   | 2.00   | - 1    |
| Final Cell Pressure   | kPa   | 300.00 | _      |
| Final Pore Pressure   | kPa   | 247.00 | - 1    |
| Final B Value         | 55555 | 0.96   | _      |

| Consonation          |                    |         |        |
|----------------------|--------------------|---------|--------|
| Effective Pressure   | kPa                | 100.00  | $\neg$ |
| Cell Pressure        | kPa                | 300.00  | - 1    |
| Back Pressure        | kPa                | 200.00  | - 1    |
| Excess Pore Pressure | kPa                | 100.00  | - 1    |
| Pore Pressure at End | kPa                | 201.00  | - 1    |
| Consolidated Volume  | cm <sup>3</sup>    | 1602.23 | - 1    |
| Consolidated Height  | mm                 | 192.76  | - 1    |
| Consolidated Area    | mm*                | 8311.91 | - 1    |
| Vol. Compressibility | m <sup>2</sup> /MN | 6.7885  | - 1    |
| Consolidation Coef.  | m²/yr.             | 0.0371  | - 1    |
| Final Voids Ratio    | 107000000          | 3.196   |        |

| Cell Pressure           | kPa    | 300.00  |  |
|-------------------------|--------|---------|--|
| Effective Cell Pressure | kPa    | 100.00  |  |
| Back Pressure Diff.     | kPa    | 20.00   |  |
| Mean Rate of Flow       | ml/min | 0.00033 |  |
| Average Temperature     | 'C     | 20      |  |

| Vertical Permeability   m/s  | 6.32 x 10-11 |
|------------------------------|--------------|
| vertical Permeability (111/5 | 0.32 × 10-11 |

SP Gas

Checked and Approved By

02/04/20 Date

P19188 **Contract No** 



Howth

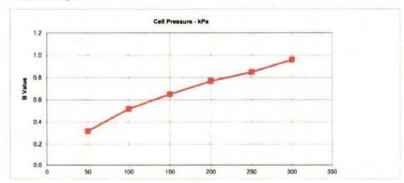
# Client Ref

48237

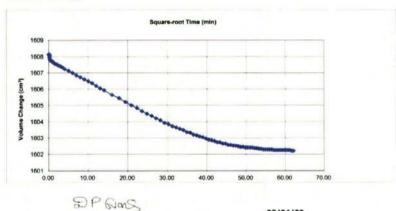
# Permeability in a Triaxial Cell BS 1377 : Part 6 : 1990 Clause 4

Specimen Details
Borehole
Sample No. 1MXP28 69 Depth Date 02/04/2020

### **Saturation Stage**



### Consolidation Stage



Checked and Approved By

02/04/20 Date

Contract No 48237

Client Ref

P19188

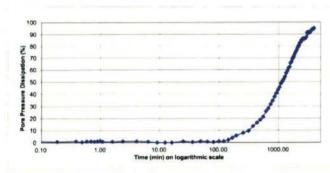


BS 1377 : Part 6 : 1990 Clause 4

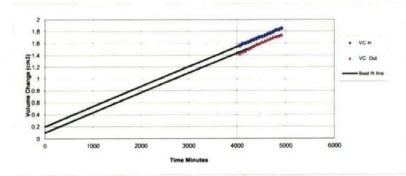
#### Specimen Details

| Borehole                    | 1MXP28     |
|-----------------------------|------------|
| Sample No.<br>Depth<br>Date | 69         |
| Depth                       | m          |
| Date                        | 02/04/2020 |

### **Consolidation Stage**



#### Permeability Stage



DP GIONS,

Checked and Approved By

02/04/20 Date

Client Ref P19188 **Contract No** 

48237



Howth

# Permeability in a Triaxial Cell

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details

| Borehole                | 2MXP28                     |
|-------------------------|----------------------------|
| Sample No.              | 87                         |
| Depth m                 | Control on Arranta to Pro- |
| Date                    | 02/04/2020                 |
| Disturbed / Undisturbed | U                          |

**Description of Specimen** 

Dark grey silty stiff CLAY

| Height           | mm                | 192.00  |  |
|------------------|-------------------|---------|--|
| Diameter         | mm                | 104.00  |  |
| Area             | mm <sup>2</sup>   | 8494.87 |  |
| Volume           | cm <sup>3</sup>   | 1631.01 |  |
| Mass             | g                 | 1950.30 |  |
| Dry Mass         | g                 | 1057.30 |  |
| Density          | Mg/m <sup>3</sup> | 1.20    |  |
| Dry Density      | Mg/m <sup>3</sup> | 0.65    |  |
| Moisture Content | %                 | 84.5    |  |
| Voids Ratio      |                   | 3.088   |  |
| Specific Gravity | kN/m <sup>3</sup> | 2.65    |  |
| (assume          | d/measured)       | assumed |  |

| rinai specimen conditions |                   |       |  |
|---------------------------|-------------------|-------|--|
| Moisture Content          | %                 | 84.66 |  |
| Density                   | Mg/m <sup>3</sup> | 1.20  |  |
| Dry Density               | Mg/m <sup>a</sup> | 0.65  |  |

| lest Setup             |            |  |
|------------------------|------------|--|
| Date started           | 24/03/2020 |  |
| Date Finished          | 01/04/2020 |  |
| Top Drain Used         | у          |  |
| Base Drain Used        | y          |  |
| Pressure System Number | PCELL 5    |  |
| Cell Number            | CCELL 5    |  |

2P Gas

Checked and Approved By

02/04/20 Date

Client Ref P19188 Contract No

48237

BS 1377 : Part 6 : 1990 Clause 6

| Darobala   |      | 3MVP30     |
|------------|------|------------|
| Borehole   |      | 2MXP28     |
| Sample No. |      | 87         |
| Depth      | m    |            |
| Date       | 2472 | 02/04/2020 |

#### Saturation

| Cell Pressure Incr.   | kPa    | 50.00  |  |
|-----------------------|--------|--------|--|
| Back Pressure Incr.   | kPa    | 48.00  |  |
| Differential Pressure | kPa    | 2.00   |  |
| Final Cell Pressure   | kPa    | 300.00 |  |
| Final Pore Pressure   | kPa    | 302.00 |  |
| Final B Value         | 12.50% | 0.96   |  |

#### Consolidation

| Effective Pressure   | kPa             | 100.00  |
|----------------------|-----------------|---------|
| Cell Pressure        | kPa             | 300.00  |
| Back Pressure        | kPa             | 200.00  |
| Excess Pore Pressure | kPa             | 102.00  |
| Pore Pressure at End | kPa             | 201.00  |
| Consolidated Volume  | cm <sup>3</sup> | 1627.31 |
| Consolidated Height  | mm              | 191.85  |
| Consolidated Area    | mm <sup>e</sup> | 8482.02 |
| Vol. Compressibility | m²/MN           | 7.5478  |
| Consolidation Coef.  | m²/yr.          | 0.0225  |
| Final Voids Ratio    | 440             | 3.079   |

Permeability

| Cell Pressure           | kPa    | 300.00  |  |
|-------------------------|--------|---------|--|
| Effective Cell Pressure | kPa    | 100.00  |  |
| Back Pressure Diff.     | kPa    | 20.00   |  |
| Mean Rate of Flow       | ml/min | 0.00030 |  |
| Average Temperature     | 'C     | 20      |  |

| Vertical Permeability I m/s  | 5.47 x 10-11 |  |
|--|--------------|--|
| The manufacture of the state of |              |  |

DPENOS

**Checked and Approved By** 

02/04/20 Date

Client Ref

P19188

Contract No

48237

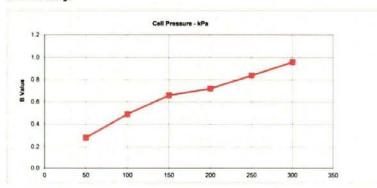
Howth

# Permeability in a Triaxial Cell

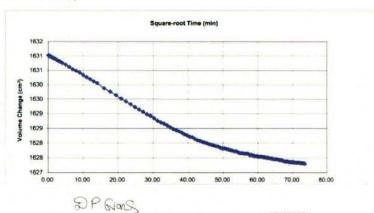
BS 1377 : Part 6 : 1990 Clause 6

**Specimen Details** 2MXP28 Borehole Sample No. Depth Date 02/04/2020

#### Saturation Stage



#### **Consolidation Stage**



Checked and Approved By

02/04/20 Date

Howth

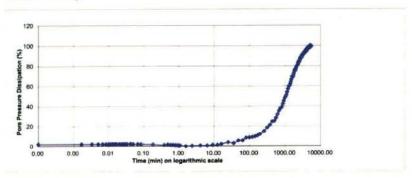
**Client Ref** P19188 Contract No 48237



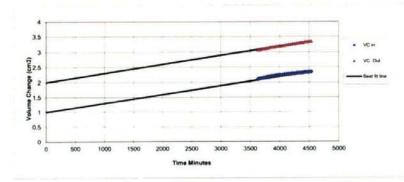
# Permeability in a Triaxial Cell BS 1377 : Part 6 : 1990 Clause 6

| Specimen Details |   |            |   |
|------------------|---|------------|---|
| Borehole         |   | 2MXP28     | 7 |
| Sample No.       |   | 87         |   |
| Depth            | m |            |   |
| Date             |   | 02/04/2020 |   |

#### Consolidation Stage



### **Permeability Stage**



2PRIORS

Checked and Approved By

02/04/20

Howth

Client Ref P19188 **Contract No** 

48237



Permeability in a Triaxial Cell

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details

| Borehole                | 3MXP28     |
|-------------------------|------------|
| Sample No.              | 108        |
| Depth m                 | 0.000      |
| Date                    | 02/04/2020 |
| Disturbed / Undisturbed | U          |

**Description of Specimen** 

Grey silty stiff CLAY

| Height           | mm                | 190.00  |
|------------------|-------------------|---------|
| Diameter         | mm                | 104.00  |
| Area             | mm <sup>2</sup>   | 8494.87 |
| Volume           | cm <sup>3</sup>   | 1614.02 |
| Mass             | g                 | 1963.70 |
| Dry Mass         | g                 | 1107.70 |
| Density          | Mg/m <sup>3</sup> | 1.22    |
| Dry Density      | Mg/m <sup>3</sup> | 0.69    |
| Moisture Content | %                 | 77.3    |
| Voids Ratio      | 1177              | 2.861   |
| Specific Gravity | kN/m <sup>3</sup> | 2.65    |
|                  | sumed/measured)   | assumed |

| rinai specimen conditi | IUIIS             |       |  |
|------------------------|-------------------|-------|--|
| Moisture Content       | %                 | 77.72 |  |
| Density                | Mg/m <sup>3</sup> | 1.22  |  |
| Dry Density            | Mg/m³             | 0.69  |  |

| Test Setup             |            |
|------------------------|------------|
| Date started           | 24/03/2020 |
| Date Finished          | 01/04/2020 |
| Top Drain Used         | y          |
| Base Drain Used        | y          |
| Pressure System Number | PCELL 6    |
| Cell Number            | CCELL 6    |

2P Ros

Checked and Approved By

02/04/20 Date

Client Ref P19188

Contract No

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details

| Borehole<br>Sample No.<br>Depth<br>Date |      | 3MXP28     |
|---|------|------------|
| Sample No.                              |      | 108        |
| Depth                                   | m    |            |
| Date                                    | 1000 | 02/04/2020 |

| Jacuiacion            |      |        |  |
|-----------------------|------|--------|--|
| Cell Pressure Incr.   | kPa  | 50.00  |  |
| Back Pressure Incr.   | kPa  | 48.00  |  |
| Differential Pressure | kPa  | 2.00   |  |
| Final Cell Pressure   | kPa  | 300.00 |  |
| Final Pore Pressure   | kPa  | 302.00 |  |
| Final B Value         | 1.75 | 0.96   |  |

| Collabilidation      |                    |         |   |
|----------------------|--------------------|---------|---|
| Effective Pressure   | kPa                | 100.00  | П |
| Cell Pressure        | kPa                | 300.00  |   |
| Back Pressure        | kPa                | 200.00  |   |
| Excess Pore Pressure | kPa                | 102.00  |   |
| Pore Pressure at End | kPa                | 201.00  |   |
| Consolidated Volume  | cm <sup>3</sup>    | 1609.02 |   |
| Consolidated Height  | mm                 | 189.80  |   |
| Consolidated Area    | mm <sup>e</sup>    | 8477.32 |   |
| Vol. Compressibility | m <sup>2</sup> /MN | 5.6521  |   |
| Consolidation Coef.  | m²/yr.             | 0.0307  |   |
| Final Voids Ratio    | 16.                | 2.849   |   |

Permeability

| Cell Pressure           | kPa    | 300.00  |  |
|-------------------------|--------|---------|--|
| Effective Cell Pressure | kPa    | 100.00  |  |
| Back Pressure Diff.     | kPa    | 20.00   |  |
| Mean Rate of Flow       | ml/min | 0.00039 |  |
| Average Temperature     | ·C     | 20      |  |

|                          |     | 286 PAV.     |
|--------------------------|-----|--------------|
| Vertical Permeability Kv | m/s | 7.09 x 10-11 |

2PGins

Checked and Approved By

02/04/20

Howth

Client Ref P19188 **Contract No** 

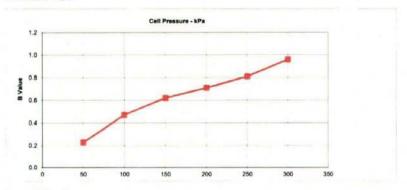
48237

# Permeability in a Triaxial Cell

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details Borehole 3MXP28 108 Sample No. Depth Date m 02/04/2020

#### Saturation Stage



#### **Consolidation Stage**

# 1615 1614 1613 1612 1611 1610 1609 1608 40.00 50.00

Square-root Time (min)

2P Ross

Checked and Approved By

D2/04/20 Date -2021F 21A/0368 0 PL DEPT

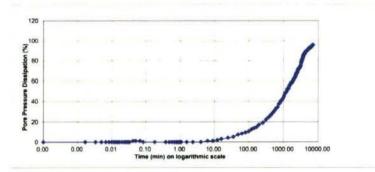
Client Ref P19188 **Contract No** 



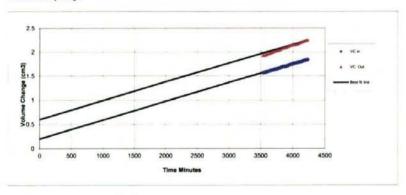
BS 1377 : Part 6 : 1990 Clause 6

| Specimen Details |       |            |     |
|------------------|-------|------------|-----|
| Borehole         |       | 3MXP28     | ٦   |
| Sample No.       |       | 108        | -   |
| Depth            | m     |            | - 1 |
| Date             | 0.000 | 02/04/2020 | - 1 |

#### **Consolidation Stage**



### Permeability Stage



2P Rions

**Checked and Approved By** 

02/04/20 Date

Client Ref P19188

**Contract No** 



Howth

48237

# Permeability in a Triaxial Cell

BS 1377 : Part 6 : 1990 Clause 6

| Borehole                | 4MXP28     |
|-------------------------|------------|
| Sample No.              | 117        |
| Depth m                 |            |
| Date                    | 02/04/2020 |
| Disturbed / Undisturbed | U          |

**Description of Specimen** 

Black silty stiff CLAY

| Height           | mm                 | 196.00  |  |
|------------------|--------------------|---------|--|
| Diameter         | mm                 | 108.00  |  |
| Area             | mm²                | 9160.88 |  |
| Volume           | cm <sup>3</sup>    | 1795.53 |  |
| Mass             | g                  | 2026.10 |  |
| Dry Mass         | g                  | 1090.70 |  |
| Density          | Mg/m <sup>3</sup>  | 1.13    |  |
| Dry Density      | Mg/m <sup>3</sup>  | 0.61    |  |
| Moisture Content | 96                 | 85.8    |  |
| Voids Ratio      |                    | 3.362   |  |
| Specific Gravity | kN/m <sup>3</sup>  | 2.65    |  |
|                  | (assumed/measured) | assumed |  |

Final Specimen Conditions

| Moisture Content | %                 | 86.75 |  |
|------------------|-------------------|-------|--|
| Density          | Mg/m <sup>3</sup> | 1.14  |  |
| Dry Density      | Mg/m <sup>2</sup> | 0.61  |  |

| Test Setup             |            |
|------------------------|------------|
| Date started           | 24/03/2020 |
| Date Finished          | 01/04/2020 |
| Top Drain Used         | y          |
| Base Drain Used        | y          |
| Pressure System Number | PCELL 8    |
| Cell Number            | CCELL 8    |

2P Grans

**Checked and Approved By** 

02/04/20 Date

Howth

Client Ref

P19188 Contract No

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details

| Borehole                    |      | 4MXP28     |
|-----------------------------|------|------------|
| Sample No.                  |      | 117        |
| Depth                       | m    |            |
| Sample No.<br>Depth<br>Date | 0000 | 02/04/2020 |

| Jucui acioni          |           |        |  |
|-----------------------|-----------|--------|--|
| Cell Pressure Incr.   | kPa       | 50.00  |  |
| Back Pressure Incr.   | kPa       | 48.00  |  |
| Differential Pressure | kPa       | 2.00   |  |
| Final Cell Pressure   | kPa       | 300.00 |  |
| Final Pore Pressure   | kPa       | 298.00 |  |
| Final B Value         | 1,349,355 | 0.96   |  |

| Consolidation        |                    |         |
|----------------------|--------------------|---------|
| Effective Pressure   | kPa                | 100.00  |
| Cell Pressure        | kPa                | 300.00  |
| Back Pressure        | kPa                | 200.00  |
| Excess Pore Pressure | kPa                | 98.00   |
| Pore Pressure at End | kPa                | 201.00  |
| Consolidated Volume  | cm <sup>3</sup>    | 1790.83 |
| Consolidated Height  | mm                 | 195.83  |
| Consolidated Area    | mm"                | 9144.90 |
| Vol. Compressibility | m <sup>2</sup> /MN | 4.0918  |
| Consolidation Coef.  | m²/yr.             | 0.0270  |
| Final Voids Ratio    | 200                | 3.351   |

Permashility

| Cell Pressure           | kPa    | 300.00  |  |
|-------------------------|--------|---------|--|
| Effective Cell Pressure | kPa    | 100.00  |  |
| Back Pressure Diff.     | kPa    | 20.00   |  |
| Mean Rate of Flow       | ml/min | 0.00034 |  |
| Average Temperature     | 'C     | 20      |  |

| Vertical Permeability Kv          | m/s | 5.86 x 10-11 |  |
|-----------------------------------|-----|--------------|--|
| CONTRACTOR DEPARTMENTS CONTRACTOR |     |              |  |

2P Gas

Checked and Approved By

02/04/20 Date

Client Ref P19188 **Contract No** 

Howth

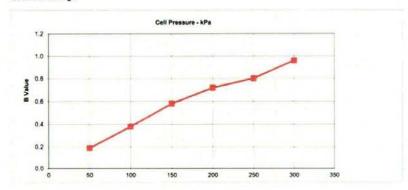
48237

# Permeability in a Triaxial Cell

BS 1377 : Part 6 : 1990 Clause 6

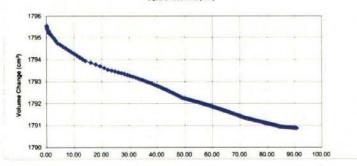
Specimen Details
Borehole
Sample No.
Depth
Date 4MXP28 117 m 02/04/2020

#### Saturation Stage



#### **Consolidation Stage**

#### Square-root Time (min)



20 P GIONS

Checked and Approved By

02/04/20

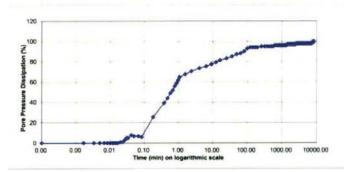
Client Ref P19188 Contract No

48237

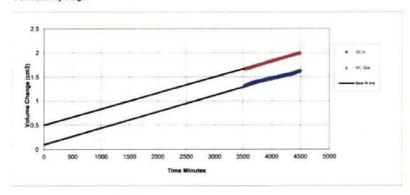
BS 1377 : Part 6 : 1990 Clause 6

| Specimen Details |   |                            |  |
|------------------|---|----------------------------|--|
| Borehole         |   | 4MXP28                     |  |
| Sample No.       |   | 117                        |  |
| Depth            | m | 13 9 00 100 00 00 00 00 00 |  |
| Date             |   | 02/04/2020                 |  |

#### **Consolidation Stage**



### Permeability Stage



2P Rians

Checked and Approved By

02/04/20 Date

Client Ref P19188 **Contract No** 

48237

### Permeability in a Triaxial Cell

BS 1377 : Part 6 : 1990 Clause 6

| Borehole                | 5MXP28     |
|-------------------------|------------|
| Sample No.              | 137        |
| Depth n                 | 1          |
| Date                    | 02/04/2020 |
| Disturbed / Undisturbed | Ú          |

**Description of Specimen** 

Dark grey silty stiff CLAY

Howth

| Height           | mm                | 191.00  | - |
|------------------|-------------------|---------|---|
| Diameter         | mm                | 104.00  |   |
| Area             | mm <sup>2</sup>   | 8494.87 |   |
| Volume           | cm <sup>3</sup>   | 1622.52 |   |
| Mass             | g                 | 1983.90 |   |
| Dry Mass         | g                 | 1165.50 |   |
| Density          | Mg/m <sup>3</sup> | 1.22    |   |
| Dry Density      | Mg/m <sup>3</sup> | 0.72    |   |
| Moisture Content | %                 | 70.2    |   |
| Voids Ratio      |                   | 2.689   |   |
| Specific Gravity | kN/m <sup>3</sup> | 2.65    |   |
| (assume          | d/measured)       | assumed |   |

| i man opecimen co |                   |       |  |
|-------------------|-------------------|-------|--|
| Moisture Content  | %                 | 70.62 |  |
| Density           | Mg/m <sup>3</sup> | 1.23  |  |
| Dry Density       | Mg/m*             | 0.72  |  |

| Test Setup             |            |  |
|------------------------|------------|--|
| Date started           | 24/03/2020 |  |
| Date Finished          | 01/04/2020 |  |
| Top Drain Used         | y          |  |
| Base Drain Used        | y          |  |
| Pressure System Number | PCELL 9    |  |
| Cell Number            | CCELL 9    |  |

2 P Gons

Checked and Approved By

02/04/20 Date

**Client Ref** P19188 **Contract No** 

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details

| Borehole   | 5MXP28         |
|------------|----------------|
| Sample No. | 137            |
| Depth m    | 123771-7-10160 |
| Date       | 02/04/2020     |

| Saturation            |       |        |  |
|-----------------------|-------|--------|--|
| Cell Pressure Incr.   | kPa   | 50.00  |  |
| Back Pressure Incr.   | kPa   | 48.00  |  |
| Differential Pressure | kPa   | 2.00   |  |
| Final Cell Pressure   | kPa   | 300.00 |  |
| Final Pore Pressure   | kPa   | 302.00 |  |
| Final B Value         | 12000 | 0.96   |  |

| Consolidation        |                    |          |  |
|----------------------|--------------------|----------|--|
| Effective Pressure   | kPa                | 100.00   |  |
| Cell Pressure        | kPa                | 300.00   |  |
| Back Pressure        | kPa                | 200.00   |  |
| Excess Pore Pressure | kPa                | 102.00   |  |
| Pore Pressure at End | kPa                | 201.00   |  |
| Consolidated Volume  | cm <sup>3</sup>    | 1618.62  |  |
| Consolidated Height  | mm                 | 190.85   |  |
| Consolidated Area    | mm <sup>4</sup>    | 8481.25  |  |
| Vol. Compressibility | m <sup>2</sup> /MN | 802.9026 |  |
| Consolidation Coef.  | m²/yr.             | 0.0238   |  |
| Final Voids Ratio    |                    | 2.680    |  |

| reinicability           |        |         |  |
|-------------------------|--------|---------|--|
| Cell Pressure           | kPa    | 300.00  |  |
| Effective Cell Pressure | kPa    | 100.00  |  |
| Back Pressure Diff.     | kPa    | 20.00   |  |
| Mean Rate of Flow       | ml/min | 0.00035 |  |
| Average Temperature     | 'C     | 20      |  |

| Vertical Permeability I m/s | 6.36 x 10-11 |
|-----------------------------|--------------|
| Vertical Permeability I m/s | 6.36 x 10-11 |

2P GORS

Checked and Approved By

02/04/20 Date

Client Ref P19188 Contract No



Howth

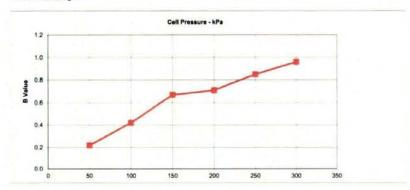
48237

# Permeability in a Triaxial Cell

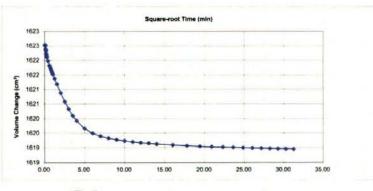
BS 1377 : Part 6 : 1990 Clause 6

**Specimen Details** Borehole Sample No. 5MXP28 137 Depth Date 02/04/2020

#### Saturation Stage



### **Consolidation Stage**



DP ROB

Checked and Approved By

02/04/20 Date

Client Ref P19188 Contract No

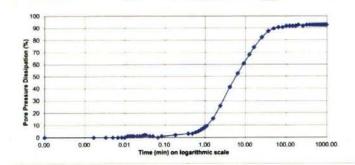
48237

BS 1377 : Part 6 : 1990 Clause 6

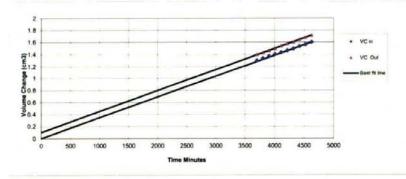
#### Specimen Details

| Borehole   | 5MXP28     |
|------------|------------|
| Sample No. | 137        |
| Depth m    | SS-V.      |
| Date       | 02/04/2020 |

#### **Consolidation Stage**



#### Permeability Stage



2P Gans

Checked and Approved By

02/04/20 Date

Client Ref P19188

Howth

Permeability in a Triaxial Cell

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details

| Borehole                | 6MXP28     |
|-------------------------|------------|
| Sample No.              | 157        |
| Depth m                 | 1992       |
| Date                    | 02/04/2020 |
| Disturbed / Undisturbed | Ü          |

#### **Description of Specimen**

Dark grey silty stiff CLAY

| Height           | mm                | 179.00  |  |
|------------------|-------------------|---------|--|
| Diameter         | mm                | 104.00  |  |
| Area             | mm <sup>2</sup>   | 8494.87 |  |
| Volume           | cm³               | 1520.58 |  |
| Mass             | g                 | 1808.60 |  |
| Dry Mass         | 9                 | 1197.40 |  |
| Density          | Mg/m³             | 1.19    |  |
| Dry Density      | Mg/m <sup>3</sup> | 0.79    |  |
| Moisture Content | %                 | 51.0    |  |
| Voids Ratio      |                   | 2.365   |  |
| Specific Gravity | kN/m³             | 2.65    |  |
| (assume          | d/measured)       | assumed |  |

| Moisture Content | %                 | 51.53 |  |
|------------------|-------------------|-------|--|
| Density          | Mg/m <sup>3</sup> | 1.20  |  |
| Dry Density      | Mg/m²             | 0.79  |  |

| 24/03/2020 |                                 |
|------------|---------------------------------|
| 01/04/2020 |                                 |
| y          |                                 |
| y          |                                 |
| PCELL 9    |                                 |
| CCELL 9    |                                 |
|            | 01/04/2020<br>Y<br>Y<br>PCELL 9 |

2P Gians

Checked and Approved By

02/04/20 Date

**Client Ref** P19188 **Contract No** 

48237



Howth

Contract No 48237

BS 1377 : Part 6 : 1990 Clause 6

| Specimen |  |
|----------|--|
|          |  |
|          |  |

| Borehole   |   | 6MXP28     |
|------------|---|------------|
| Sample No. |   | 157        |
| Depth      | m |            |
| Date       |   | 02/04/2020 |

#### Saturation

| Cell Pressure Incr.   | kPa        | 50.00  | ╗ |
|-----------------------|------------|--------|---|
| Back Pressure Incr.   | kPa        | 48.00  |   |
| Differential Pressure | kPa        | 2.00   |   |
| Final Cell Pressure   | kPa        | 300.00 |   |
| Final Pore Pressure   | kPa        | 201.00 |   |
| Final B Value         | School St. | 0.96   |   |

#### Consolidation

| Consolidation        |                     |         |
|----------------------|---------------------|---------|
| Effective Pressure   | kPa                 | 100.00  |
| Cell Pressure        | kPa                 | 300.00  |
| Back Pressure        | kPa                 | 200.00  |
| Excess Pore Pressure | kPa                 | 102.00  |
| Pore Pressure at End | kPa                 | 201.00  |
| Consolidated Volume  | cm <sup>3</sup>     | 1516.98 |
| Consolidated Height  | mm                  | 178.86  |
| Consolidated Area    | mm <sup>4</sup>     | 8481.46 |
| Vol. Compressibility | m <sup>2</sup> /MN  | 60.3273 |
| Consolidation Coef.  | m <sup>2</sup> /yr. | 0.0234  |
| Final Voids Ratio    | 200                 | 2.357   |

### Permeability

| Cell Pressure           | kPa    | 300.00  |  |
|-------------------------|--------|---------|--|
| Effective Cell Pressure | kPa    | 100.00  |  |
| Back Pressure Diff.     | kPa    | 20.00   |  |
| Mean Rate of Flow       | ml/min | 0.00042 |  |
| Average Temperature     | 'C     | 20      |  |

| Vertical Permeability I m/s  | 7.24 x 10-11 |
|--|--------------|
| MODELS AND CONTROL STREET, STR |              |

2PRIORS

Checked and Approved By

02/04/20 Date

Client Ref P19188 **Contract No** 

48237

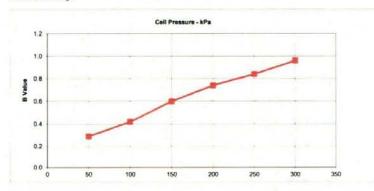
Howth

# Permeability in a Triaxial Cell

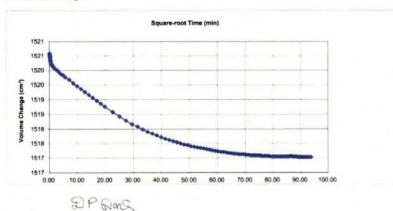
BS 1377 : Part 6 : 1990 Clause 6

Specimen Details Borehole Sample No. Depth 6MXP28 157 Date 02/04/2020

### **Saturation Stage**



#### **Consolidation Stage**



Checked and Approved By

02/04/20 Date

Howth

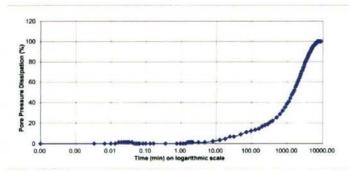
Client Ref P19188 Contract No

BS 1377 : Part 6 : 1990 Clause 6

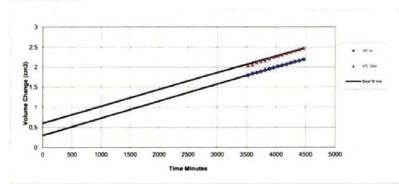
#### Specimen Details

| Borehole<br>Sample No.<br>Depth m<br>Date | 6MXP28     |
|---|------------|
| Sample No.                                | 157        |
| Depth m                                   | 1,40040    |
| Date                                      | 02/04/2020 |

### Consolidation Stage



#### Permeability Stage



2P Gins

Checked and Approved By

02/04/20 Date

Client Ref P19188 **Contract No** 

48237



Howth

# Permeability in a Triaxial Cell

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details

| Borehole                | 7MXP28      |
|-------------------------|-------------|
| Sample No.              | 177         |
| Depth m                 |             |
| Date                    | 07/04/2020  |
| Disturbed / Undisturbed | Undisturbed |

**Description of Specimen** 

Dark grey silty CLAY.

| Height           | mm                 | 192.00  |  |
|------------------|--------------------|---------|--|
| Diameter         | mm                 | 104.00  |  |
| Area             | mm <sup>2</sup>    | 8494.87 |  |
| Volume           | cm <sup>3</sup>    | 1631.01 |  |
| Mass             | g                  | 1958.00 |  |
| Dry Mass         | g                  | 1249.20 |  |
| Density          | Mg/m³              | 1.20    |  |
| Dry Density      | Mg/m <sup>3</sup>  | 0.77    |  |
| Moisture Content | %                  | 56.7    |  |
| Voids Ratio      |                    | 2.460   |  |
| Specific Gravity | kN/m <sup>3</sup>  | 2.65    |  |
|                  | (assumed/measured) | assumed |  |

**Final Specimen Conditions** 

| Moisture Content       | %                 | 56.74 | _ |
|------------------------|-------------------|-------|---|
| Density                | Mg/m <sup>3</sup> | 1.23  |   |
| Density<br>Dry Density | Mg/m³             | 0.78  |   |

| Test Setup             |            |
|------------------------|------------|
| Date started           | 24/03/2020 |
| Date Finished          | 02/04/2020 |
| Top Drain Used         | y          |
| Base Drain Used        | y          |
| Pressure System Number | PPerm10    |
| Cell Number            | CPerm10    |

DP GORS

Checked and Approved By

07/04/20 Date

Client Ref P19188 Contract No



BS 1377 : Part 6 : 1990 Clause 6

Specimen Details

| Specimen becaus |   |            |
|-----------------|---|------------|
| Borehole        |   | 7MXP28     |
| Sample No.      |   | 177        |
| Depth           | m |            |
| Date            |   | 07/04/2020 |

Saturation

| Cell Pressure Incr.   | kPa | 50.00  |
|-----------------------|-----|--------|
| Back Pressure Incr.   | kPa | 48.00  |
| Differential Pressure | kPa | 2.00   |
| Final Cell Pressure   | kPa | 200.00 |
| Final Pore Pressure   | kPa | 202.00 |
| Final B Value         |     | 0.96   |

Consolidation

| Consolidation        |                    |         |
|----------------------|--------------------|---------|
| Effective Pressure   | kPa                | 100.00  |
| Cell Pressure        | kPa                | 200.00  |
| Back Pressure        | kPa                | 100.00  |
| Excess Pore Pressure | kPa                | 105.00  |
| Pore Pressure at End | kPa                | 106.00  |
| Consolidated Volume  | cm <sup>3</sup>    | 1597.71 |
| Consolidated Height  | mm                 | 190.69  |
| Consolidated Area    | mm*                | 8379.24 |
| Vol. Compressibility | m <sup>2</sup> /MN | 3.9032  |
| Consolidation Coef.  | m²/yr.             | 0.2062  |
| Final Voids Ratio    |                    | 2.389   |

Permeability

| Cell Pressure           | kPa    | 200.00  |  |
|-------------------------|--------|---------|--|
| Effective Cell Pressure | kPa    | 100.00  |  |
| Back Pressure Diff.     | kPa    | 20.00   |  |
| Mean Rate of Flow       | ml/min | 0.00024 |  |
| Average Temperature     | 'C     | 20      |  |

| Vertical Permeability Kv | m/s | 4.36 x 10-11 |  |
|--------------------------|-----|--------------|--|
|                          |     |              |  |

SPERMS

Checked and Approved By

07/04/20

Client Ref P19188 **Contract No** 

Howth

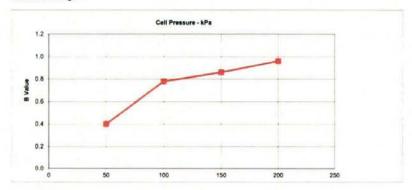
48237

# Permeability in a Triaxial Cell

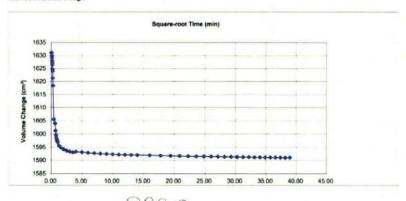
BS 1377 : Part 6 : 1990 Clause 6

Specimen Details
Borehole
Sample No. 7MXP28 177 Depth Date 07/04/2020

#### Saturation Stage



### **Consolidation Stage**



Checked and Approved By

07/04/20 Date

Howth

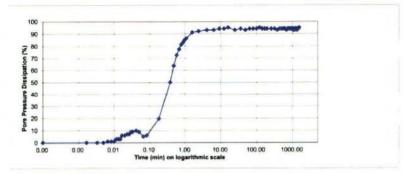
Client Ref P19188 **Contract No** 



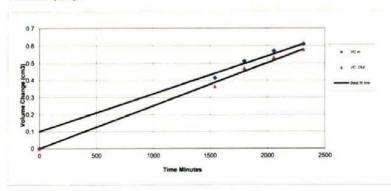
BS 1377 : Part 6 : 1990 Clause 6

| Specimen Details |       |                       |   |
|------------------|-------|-----------------------|---|
| Borehole         |       | 7MXP28                | 1 |
| Sample No.       |       | 177                   | ı |
| Depth            | m     | and the second second | ı |
| Date             | 0.250 | 07/04/2020            | ı |

#### Consolidation Stage



#### Permeability Stage



Howth

2P Flores

Checked and Approved By

07/04/20 Date

**Client Ref** P19188 **Contract No** 

48237

# Permeability in a Triaxial Cell

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details

| Borehole                | 8MXP28      |
|-------------------------|-------------|
| Sample No.              | 186         |
| Depth m                 |             |
| Date                    | 07/04/2020  |
| Disturbed / Undisturbed | Undisturbed |

**Description of Specimen** 

Dark brown silty CLAY.

Initial Specimen Conditions

| Height           | mm                | 194.00  | П |
|------------------|-------------------|---------|---|
| Diameter         | mm                | 103.00  |   |
| Area             | mm <sup>2</sup>   | 8332.29 |   |
| Volume           | cm <sup>3</sup>   | 1616.46 |   |
| Mass             | g                 | 2021.30 |   |
| Dry Mass         | g                 | 1359.30 |   |
| Density          | Mg/m³             | 1.25    |   |
| Dry Density      | Mg/m³             | 0.84    |   |
| Moisture Content | %                 | 48.7    |   |
| Voids Ratio      | C ( 200 )         | 2.151   |   |
| Specific Gravity | kN/m <sup>3</sup> | 2.65    |   |
| (ass             | sumed/measured)   | assumed |   |

| rinai specimen conditi | Ons               |       |  |
|------------------------|-------------------|-------|--|
| Moisture Content       | %                 | 48.70 |  |
| Density                | Mg/m <sup>3</sup> | 1.28  |  |
| Dry Density            | Mg/m³             | 0.86  |  |

| Test Setup             |            |
|------------------------|------------|
| Date started           | 23/03/2020 |
| Date Finished          | 02/04/2020 |
| Top Drain Used         | y          |
| Base Drain Used        | Y          |
| Pressure System Number | PPerm11    |
| Cell Number            | CPerm11    |

2P Gas

Checked and Approved By

07/04/20 Date

Client Ref

P19188 Contract No

BS 1377 : Part 6 : 1990 Clause 6

| specimen becaus |      |            |     |
|-----------------|------|------------|-----|
| Borehole        |      | 8MXP28     | ٦   |
| Sample No.      |      | 186        | - 1 |
| Depth           | m    |            | - 1 |
| Date            | 1000 | 07/04/2020 | -1  |

Saturation

| Secureción            |        |        |  |
|-----------------------|--------|--------|--|
| Cell Pressure Incr.   | kPa    | 50.00  |  |
| Back Pressure Incr.   | kPa    | 48.00  |  |
| Differential Pressure | kPa    | 2.00   |  |
| Final Cell Pressure   | kPa    | 200.00 |  |
| Final Pore Pressure   | kPa    | 200.00 |  |
| Final B Value         | 771000 | 0.96   |  |

| Consolidation        |                 |         |     |
|----------------------|-----------------|---------|-----|
| Effective Pressure   | kPa             | 100.00  | П   |
| Cell Pressure        | kPa             | 200.00  | - 1 |
| Back Pressure        | kPa             | 100.00  | - 1 |
| Excess Pore Pressure | kPa             | 100.00  | - 1 |
| Pore Pressure at End | kPa             | 105.00  | - 1 |
| Consolidated Volume  | cm <sup>3</sup> | 1576.26 |     |
| Consolidated Height  | mm              | 192.39  | - 1 |
| Consolidated Area    | mm*             | 8194.14 |     |
| Vol. Compressibility | m²/MN           | 3.9790  |     |
| Consolidation Coef.  | m²/yr.          | 0.2618  |     |
| Final Voids Ratio    | 500             | 2.073   |     |

Permeability

| Cell Pressure           | kPa    | 200.00  |  |
|-------------------------|--------|---------|--|
| Effective Cell Pressure | kPa    | 100.00  |  |
| Back Pressure Diff.     | kPa    | 20.00   |  |
| Mean Rate of Flow       | ml/min | 0.00010 |  |
| Average Temperature     | 'C     | 20      |  |

| Vertical Permeability Kv | m/s   | 1.84 x 10-11 |
|--------------------------|-------|--------------|
|                          | 10000 |              |

20 Pans

Checked and Approved By

07/04/20 Date

**Client Ref** P19188 **Contract No** 

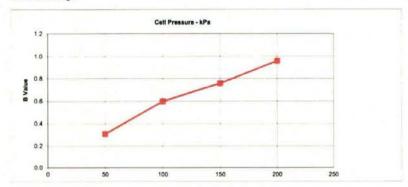
Howth

48237

# Permeability in a Triaxial Cell BS 1377 : Part 6 : 1990 Clause 6

Specimen Details
Borehole
Sample No. 8MXP28 186 Depth Date m 07/04/2020

#### Saturation Stage



#### **Consolidation Stage**



Checked and Approved By

07/04/20

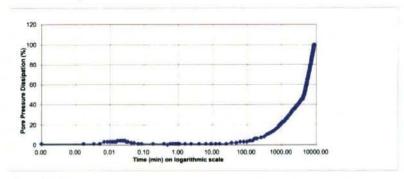
Howth

Client Ref P19188 Contract No

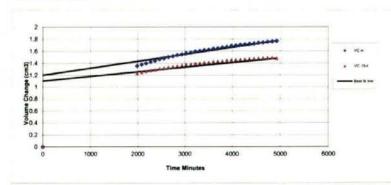
BS 1377 : Part 6 : 1990 Clause 6

| Specimen Details |     |            |     |
|------------------|-----|------------|-----|
| Borehole         |     | 8MXP28     | П   |
| Sample No.       |     | 186        | - 1 |
| Depth            | m i |            | - 1 |
| Data             |     | 07/04/2020 | - 1 |

#### Consolidation Stage



### Permeability Stage



2P Gions

Checked and Approved By

07/04/20 Date



Howth

48237

Client Ref

P19188

Contract No

# Permeability in a Triaxial Cell

BS 1377 : Part 6 : 1990 Clause 6

| Borehole               |        | 9MXP28            |
|------------------------|--------|-------------------|
| Sample No.             |        | 195               |
| Depth                  | m      | Lauren et tourage |
| Date                   | 14,971 | 07/04/2020        |
| Disturbed / Undisturbe | d      | Undisturbed       |

Description of Specimen

Dark grey silty CLAY.

| Height           | mm                | 193.00  |
|------------------|-------------------|---------|
| Diameter         | mm                | 103.00  |
| Area             | mm <sup>2</sup>   | 8332.29 |
| Volume           | cm <sup>3</sup>   | 1608.13 |
| Mass             | 9                 | 2009.00 |
| Dry Mass         | 9                 | 1387.20 |
| Density          | Mg/m³             | 1.25    |
| Dry Density      | Mg/m³             | 0.86    |
| Moisture Content | %                 | 44.8    |
| Voids Ratio      | 400               | 2.072   |
| Specific Gravity | kN/m <sup>3</sup> | 2.65    |
| (                | assumed/measured) | assumed |

Final Specimen Conditions

| Moisture Content       | %                 | 44.82 | _ |
|------------------------|-------------------|-------|---|
| Density                | Mg/m <sup>3</sup> | 1.27  |   |
| Density<br>Dry Density | Mg/m²             | 0.88  |   |

| Test Setup             |            |
|------------------------|------------|
| Date started           | 23/03/2020 |
| Date Finished          | 03/04/2020 |
| Top Drain Used         | y          |
| Base Drain Used        | y          |
| Pressure System Number | PPerm 12   |
| Cell Number            | CPerm 12   |

2PROB

Checked and Approved By

07/04/20 Date

Howth

Client Ref P19188

Contract No

# Permeability in a Triaxial Cell BS 1377 : Part 6 : 1990 Clause 6

Specimen Details

| Specimen perans |   |            |
|-----------------|---|------------|
| Borehole        |   | 9MXP28     |
| Sample No.      |   | 195        |
| Depth           | m |            |
| Date            |   | 07/04/2020 |

| Sucuration            |     |        |  |
|-----------------------|-----|--------|--|
| Cell Pressure Incr.   | kPa | 50.00  |  |
| Back Pressure Incr.   | kPa | 48.00  |  |
| Differential Pressure | kPa | 2.00   |  |
| Final Cell Pressure   | kPa | 200.00 |  |
| Final Pore Pressure   | kPa | 204.00 |  |
| Final B Value         |     | 0.96   |  |

| Consondation         |                     |         |
|----------------------|---------------------|---------|
| Effective Pressure   | kPa                 | 100.00  |
| Cell Pressure        | kPa                 | 200.00  |
| Back Pressure        | kPa                 | 100.00  |
| Excess Pore Pressure | kPa                 | 104.00  |
| Pore Pressure at End | kPa                 | 106.00  |
| Consolidated Volume  | cm <sup>3</sup>     | 1580.23 |
| Consolidated Height  | mm                  | 191.88  |
| Consolidated Area    | mm*                 | 8235.92 |
| Vol. Compressibility | m²/MN               | 3.9480  |
| Consolidation Coef.  | m <sup>2</sup> /yr. | 0.1770  |
| Final Voids Ratio    |                     | 2.019   |

Permeability

| Cell Pressure           | kPa    | 200.00  | Т |
|-------------------------|--------|---------|---|
| Effective Cell Pressure | kPa    | 100.00  |   |
| Back Pressure Diff.     | kPa    | 20.00   |   |
| Mean Rate of Flow       | ml/min | 0.00041 |   |
| Average Temperature     | 'C     | 20      |   |

| Vertical Permeability Kv | m/s  | 7.7 x 10-11 | _ |
|--------------------------|------|-------------|---|
|                          | 1000 |             |   |

DPRINS

Checked and Approved By

07/04/20 Date

Client Ref P19188 **Contract No** 

48237

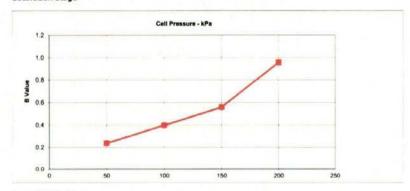


# Permeability in a Triaxial Cell

BS 1377 : Part 6 : 1990 Clause 6

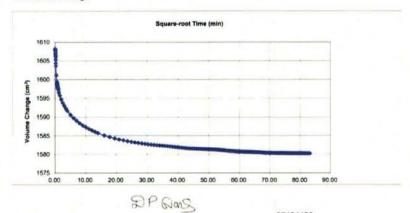
Specimen Details
Borehole
Sample No. 195 Depth Date m

#### **Saturation Stage**



07/04/2020

#### **Consolidation Stage**



Checked and Approved By

07/04/20

**Client Ref** 

P19188 Contract No

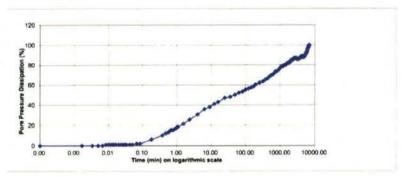
48237

BS 1377 : Part 6 : 1990 Clause 6

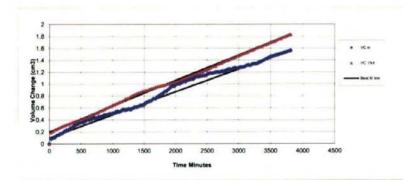
#### Specimen Details

| Borehole                    |   | 9MXP28     |
|-----------------------------|---|------------|
| Sample No.<br>Depth<br>Date |   | 195        |
| Depth                       | m |            |
| Date                        |   | 07/04/2020 |

#### **Consolidation Stage**



#### Permeability Stage



2P Gans

Checked and Approved By

07/04/20

Client Ref P19188 **Contract No** 

48237



Howth

### Permeability in a Triaxial Cell

BS 1377 : Part 6 : 1990 Clause 6

| Borehole    |      | 10MXP      |
|-------------|------|------------|
| Sample No.  |      | 204        |
| Depth       | m    |            |
| Date        | 2.00 | 07/04/2020 |
| Sample Type |      | U          |

**Description of Specimen** 

Dark grey silty CLAY.

| Height           | mm                | 195.00  |  |
|------------------|-------------------|---------|--|
| Diameter         | mm                | 104.00  |  |
| Area             | mm <sup>2</sup>   | 8494.87 |  |
| Volume           | cm <sup>3</sup>   | 1656.50 |  |
| Mass             | g                 | 2028.10 |  |
| Dry Mass         | g                 | 1088.90 |  |
| Density          | Mg/m <sup>3</sup> | 1.22    |  |
| Dry Density      | Mg/m <sup>3</sup> | 0.66    |  |
| Moisture Content | %                 | 86.3    |  |
| Voids Ratio      |                   | 3.031   |  |
| Specific Gravity | kN/m <sup>3</sup> | 2.65    |  |
| (a:              | ssumed/measured)  | assumed |  |

**Final Specimen Conditions** 

| Moisture Content | %                 | 86.25 |  |
|------------------|-------------------|-------|--|
| Density          | Mg/m <sup>3</sup> | 1.26  |  |
| Dry Density      | Mg/m <sup>2</sup> | 0.68  |  |

| Test Setup             |            |
|------------------------|------------|
| Date started           | 24/03/2020 |
| Date Finished          | 03/04/2020 |
| Top Drain Used         | У          |
| Base Drain Used        | У          |
| Pressure System Number | PPerm 13   |
| Cell Number            | CPerm 13   |

DP RIONS

Checked and Approved By

07/04/20 Date

Client Ref

P19188 Contract No





BS 1377 : Part 6 : 1990 Clause 6

| Specimen become |   |            |
|-----------------|---|------------|
| Borehole        |   | 10MXP      |
| Sample No.      |   | 204        |
| Depth           | m |            |
| Date            |   | 07/04/2020 |

Saturation

| Dutai Brioii          |        |        |        |
|-----------------------|--------|--------|--------|
| Cell Pressure Incr.   | kPa    | 50.00  | $\neg$ |
| Back Pressure Incr.   | kPa    | 48.00  |        |
| Differential Pressure | kPa    | 2.00   |        |
| Final Cell Pressure   | kPa    | 200.00 |        |
| Final Pore Pressure   | kPa    | 203.00 |        |
| Final B Value         | 100.00 | 0.96   |        |

Consolidation

| Consolidation        |                 |          |
|----------------------|-----------------|----------|
| Effective Pressure   | kPa             | 100.00   |
| Cell Pressure        | kPa             | 200.00   |
| Back Pressure        | kPa             | 100.00   |
| Excess Pore Pressure | kPa             | 103.00   |
| Pore Pressure at End | kPa             | 100.00   |
| Consolidated Volume  | cm <sup>3</sup> | 1607.60  |
| Consolidated Height  | mm              | 193.08   |
| Consolidated Area    | mm*             | 8327.69  |
| Vol. Compressibility | m²/MN           | 209.6423 |
| Consolidation Coef.  | m²/yr.          | 0.2866   |
| Final Voids Ratio    |                 | 2.912    |

| Cell Pressure           | kPa    | 200.00  | _ |
|-------------------------|--------|---------|---|
| Effective Cell Pressure | kPa    | 100.00  |   |
| Back Pressure Diff.     | kPa    | 20.00   |   |
| Mean Rate of Flow       | ml/min | 0.00030 |   |
| Average Temperature     | 'C     | 20      |   |

| Vertical Permeability Kv | m/s | 5.73 x 10-11 |
|--------------------------|-----|--------------|
| vertical Permeability KV | ,.  | 3.73 X 10-11 |

SPEROS

Checked and Approved By

07/04/20

**Client Ref** P19188 **Contract No** 

48237

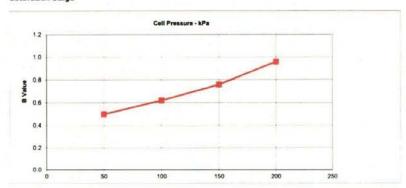


Permeability in a Triaxial Cell BS 1377 : Part 6 : 1990 Clause 6

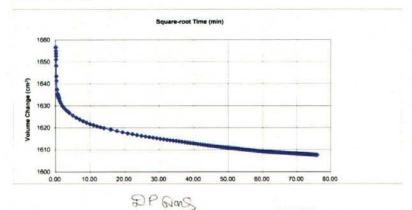
Specimen Details
Borehole
Sample No.
Depth
Date

10MXP 204 m 07/04/2020

**Saturation Stage** 



**Consolidation Stage** 



Checked and Approved By

07/04/20

Client Ref

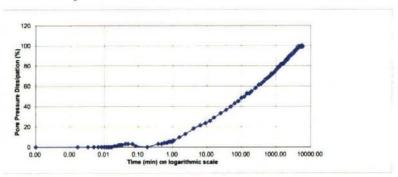
Howth

P19188 **Contract No** 

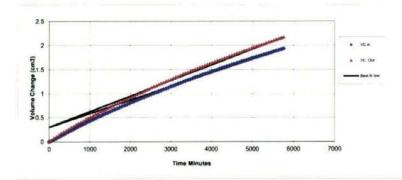
# Permeability in a Triaxial Cell BS 1377: Part 6: 1990 Clause 6

| Specimen Details |      |            |
|------------------|------|------------|
| Borehole         |      | 10MXP      |
| Sample No.       |      | 204        |
| Depth            | m    |            |
| Date             | 1000 | 07/04/2020 |

### **Consolidation Stage**



### Permeability Stage



SPEROS

Checked and Approved By

07/04/20 Date

**Client Ref** P19188 **Contract No** 

Howth





Chemtest

Eurofins Chemtest Ltd. Depot Road CB8 OAL Tel: 01638 606070

# **Final Report**

Report No.:

20-15963-1

Initial Date of Issue:

02-Jul-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork

Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

Quotation No.:

Q20-19920

Date Received:

24-Jun-2020

12451

Order No.:

Date Instructed:

24-Jun-2020

No. of Samples:

Turnaround (Wkdays): 7

Results Due:

02-Jul-2020

Date Approved:

02-Jul-2020

Approved By:

Details:

Glynn Harvey, Technical Manager

Results - Leachate

| Client: Priority Geotechnical Ltd |         |           | Che    | mtest            | Chemtest Job No.:    | 20-15963    | 20-15963    | 20-15963    | 20-1596   |
|-----------------------------------|---------|-----------|--------|------------------|----------------------|-------------|-------------|-------------|-----------|
| Quotation No.: Q20-19920          |         |           | Chemit | est Sar          | Chemtest Sample ID.: | 1021601     | 1021602     | 1021603     | 1021604   |
|                                   |         |           | S      | ample            | Sample Location.     | 4MXM120     | 5MXM120     | 6MXM120     | 10MXM12   |
|                                   |         |           |        | Samp             | Sample Type:         | SOIL        | SOIL        | SOIL        | SOIL      |
|                                   |         |           |        | Date 5           | Date Sampled:        | 19-Jun-2020 | 19-Jun-2020 | 19-Jun-2020 | 19-Jun-20 |
| Determinand                       | Accred. | SOP       | Type   | Units            | COD                  |             |             |             |           |
| Chloride                          | n       | 1220      | 10:1   | l/gm             | 1.0                  | 330         | 480         | 340         | 330       |
| Sulphate                          | ח       | 1220      | 10:1   | l/gm             | 1.0                  | 33          | 28          | 27          | < 1.0     |
| Calcium                           | ח       | 1415      | 10.1   | l/gm             | 5.0                  | 200         | 270         | 280         | 520       |
| Sodium                            | ח       | 1415      | 10:1   | l/gm             | 0.50                 | 180         | 280         | 160         | 220       |
| Arsenic (Dissolved)               | 2       | 1450      | 10.1   | l/gu             | 1.0                  | 2.6         | 3.0         | 2.0         | 4.3       |
| Cadmium (Dissolved)               | ח       | 1450      | 10:1   | l/gu             | 0.080                | < 0.080     | < 0.080     | < 0.080     | < 0.080   |
| Chromium (Dissolved)              | ם       | 1450      | 10:1   | l/gu             | 1.0                  | 6.5         | 7.5         | 7.8         | 6.6       |
| Copper (Dissolved)                | n       | 1450      | 10:1   | η <sub>0</sub>   | 1.0                  | 1.2         | 1.2         | < 1.0       | 1.8       |
| Mercury (Dissolved)               | n       | 1450      | 10:1   | ν <sub>g</sub> α | 0.50                 | < 0.50      | < 0.50      | < 0.50      | < 0.50    |
| Nickel (Dissolved)                | n       | 1450      | 10:1   | l/gu             | 1.0                  | 26          | 15          | 10          | 06        |
| Lead (Dissolved)                  | n       | 1450      | 10:1   | l/gu             | 1.0                  | < 1.0       | < 1.0       | < 1.0       | < 1.0     |
| Selenium (Dissolved)              | ח       | 1450      | 10:1   | l/gu             | 1.0                  | 7.6         | - 11        | 9.1         | 8.3       |
| Tin (Dissolved)                   | 0       | 1450      | 10:1   | l/gu             | 1.0                  | < 1.0       | < 1.0       | < 1.0       | 1.3       |
| Vanadium (Dissolved)              | ם       | 1450      | 10:1   | l/gq             | 1.0                  | 3.9         | 4.1         | 3.3         | 1.0       |
| Zinc (Dissolved)                  | n       | 1450      | 10:1   | Veu              | 1.0                  | 28          | 20          | 19          | 24        |
| Dibutyl Tin                       | z       | 1730      | 10:1   | /6ri             | 0.050                | < 0.050     | < 0.050     | < 0.050     | < 0.050   |
| Tributhd Tin                      | z       | 1730 10:1 | 10:1   | l/ou             | ug/1 0.0500          | < 0.050     | < 0.050     | < 0.050     | < 0.050   |

### **Test Methods**

| SOP  | Title  | Parameters included  | Method summary   |
|------|--|--|--|
| 1220 | Anions, Alkalinity & Ammonium in Waters                          | Fluoride; Chloride; Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.  |
| 1415 | Cations in Waters by ICP-MS                                      | Sodium, Potassium, Calcium, Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).                                 |
| 1450 | Metals in Waters by ICP-MS                                       | Metals, including: Antimony; Arsenic: Barium;<br>Beryllium: Boron: Cadmium; Chromium; Cobalt,<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS). |
| 1730 | Organo-Leads   | Organo-Leads   | Solvent extraction / GCMS detection  |
| 2030 | Moisture and Stone Content of<br>Soils(Requirement of<br>MCERTS) | Moisture content   | Determination of moisture content of soil as a<br>percentage of its as received mass obtained at<br><37°C.       |
| 2040 | Soil Description(Requirement of MCERTS)                          | Soil description   | As received soil is described based upon BS5930  |
| 640  | Characterisation of Waste (Leaching C10)                         | Waste material including soil, sludges and<br>granular waste   | ComplianceTest for Leaching of Granular<br>Waste Material and Sludge   |

Page 3 of 4

#### Report Information

#### Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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





CB8 OAL Tel: 01638 606070 Email: info@chemtest.com

# **Final Report**

Report No.:

20-13172-1

Initial Date of Issue:

02-Jun-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork

Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

Q20-19920

Date Received:

26-May-2020

**Quotation No.:** 

12451

Date Instructed:

26-May-2020

Order No.: No. of Samples:

Turnaround (Wkdays):

Results Due:

03-Jun-2020

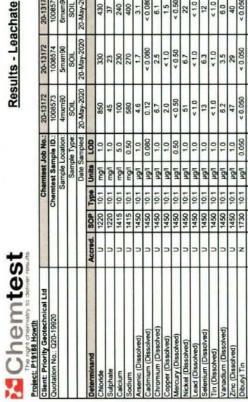
Date Approved:

02-Jun-2020

Approved By:

Details:

Glynn Harvey, Technical Manager





### **Test Methods**

| SOP  | Title  | Parameters included  | Method summary   |
|------|--|--|--|
| 1220 | Anions, Alkalinity & Ammonium<br>in Waters                       | Fluoride; Chloride; Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.                                  |
| 1415 | Cations in Waters by ICP-MS                                      | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).                           |
| 1450 | Metals in Waters by ICP-MS                                       | Metals, including: Antimony, Arsenic; Barium,<br>Beryllium; Boron; Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | determination by inductively coupled plasma  |
| 1730 | Organo-Leads   | Organo-Leads   | Solvent extraction / GCMS detection  |
|      | Moisture and Stone Content of<br>Soils(Requirement of<br>MCERTS) | Moisture content   | Determination of moisture content of soil as a<br>percentage of its as received mass obtained at<br><37°C. |
| 2040 | Soil Description(Requirement of MCERTS)                          | Soil description   | As received soil is described based upon BS5930  |
| 640  | Characterisation of Waste (Leaching C10)                         | Waste material including soil, sludges and<br>granular waste   | ComplianceTest for Leaching of Granular<br>Waste Material and Sludge                                       |

Page 3 of 4



### Report Information

#### Kev

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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





Depot Road CB8 OAL Tel: 01638 606070 Email: info@chemtest.com

# **Final Report**

Report No.: 20-12147-1

Initial Date of Issue: 20-May-2020

Priority Geotechnical Ltd Client

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

P19188 Howth Project

**Quotation No.:** 

Q20-19920

Date Received:

12-May-2020

Order No.:

12451

Date Instructed:

12-May-2020

No. of Samples:

Turnaround (Wkdays):

Results Due:

20-May-2020

Date Approved:

20-May-2020

Approved By:

Details:

Glynn Harvey, Technical Manager

| Project: P19188 Howth             |         |      |       |         |                      |             |             |             |      |
|-----------------------------------|---------|------|-------|---------|----------------------|-------------|-------------|-------------|------|
| Client: Priority Geotechnical Ltd |         |      | Che   | mtest   | Chemtest Job No.:    | 20-12147    | 20-12147    | 20-12147    | 20-  |
| Quotation No.: Q20-19920          |         |      | Chemt | est Sar | Chemtest Sample ID.: | 1003871     | 1003872     | 1003873     | 2    |
|                                   |         |      | S     | ample   | Sample Location:     | 4mx76       | 5mx76       | 8mx76       | 10   |
|                                   |         |      |       | Samp    | Sample Type:         | SOIL        | SOIL        | SOIL        |      |
|                                   |         |      |       | Date 5  | Date Sampled:        | 06-May-2020 | 06-May-2020 | 06-May-2020 | M-90 |
| Determinand                       | Accred. | SOP  | Type  | Units   | 100                  |             |             |             |      |
| Chloride                          | 0       | 1220 | 10:1  | l/gm    | 1.0                  | 520         | 200         | 390         | L    |
| Sulphate                          | 0       | 1220 | 10:1  | ηđω     | 1.0                  | 35          | 20          | 37          |      |
| Calcium                           | כ       | 1415 | 10:1  | l/gm    | 5.0                  | 220         | 190         | 160         | L    |
| Sodium                            | D       | 1415 | 10:1  | l/gm    | 0.50                 | 400         | 350         | 220         | L    |
| Arsenic (Dissolved)               | ס       | 1450 | 10:1  | 1/64    | 1.0                  | 3.3         | 2.5         | 3.0         | L    |
| Cadmium (Dissolved)               | n       | 1450 | 10:1  | hg4     | 0.080                | 0.12        | < 0.080     | < 0.080     |      |
| Chromium (Dissolved)              | 0       | 1450 | 10:1  | hg4     | 1.0                  | 11          | 3.8         | 10          |      |
| Copper (Dissolved)                | 2       | 1450 | 10:1  | Ng4     | 1.0                  | 2.8         | 1.5         | 1.5         | L    |
| Mercury (Dissolved)               | n       | 1450 | 10:1  | Ng4     | 0.50                 | 0.81        | < 0.50      | < 0.50      | ľ    |
| Nickel (Dissolved)                | ס       | 1450 | 10:1  | hg4     | 1.0                  | 29          | 17          | 56          | L    |
| Lead (Dissolved)                  | n       | 1450 | 10:1  | hgų.    | 1.0                  | < 1.0       | < 1.0       | < 1.0       | Ů    |
| Selenium (Dissolved)              | ח       | 1450 | 10:1  | N94     | 1.0                  | 9.3         | 9.1         | 9'6         |      |
| Tin (Dissolved)                   | ח       | 1450 | 10:1  | hg4     | 1.0                  | < 1.0       | 1.3         | <b>7</b> '6 |      |
| Vanadium (Dissolved)              | 0       | 1450 | 10:1  | 1/6rt   | 1.0                  | 6.3         | 3,4         | 7.5         |      |
| Zinc (Dissolved)                  | 0       | 1450 | 10:1  | l/gu    | 1.0                  | 19          | 11          | 10          |      |
| Dibutyl Tin                       | z       | 1730 | 10:1  | hgq.    | 0.050                | < 0.050     | < 0.050     | < 0.050     | ٧    |
| Telbuchd Tim                      |         | 1390 | +0.4  | B       | 00000                | 03000       | 0000        | 0000        | L    |

Page 1 of 4



### **Test Methods**

| SOP  | Title  | Parameters included  | Method summary   |
|------|--|--|--|
| 1220 | Anions, Alkalinity & Ammonium<br>in Waters                       | Fluoride: Chloride: Nitrite: Nitrate: Totat;<br>Oxidisable Nitrogen (TON): Sulfate: Phosphate:<br>Alkalinity: Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.                                  |
| 1415 | Cations in Waters by ICP-MS                                      | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).                           |
| 1450 | Metais in Waters by ICP-MS                                       | Metals, including: Antimony: Arsenic: Barlum;<br>Beryllium; Boron; Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | determination by inductively coupled plasma  |
| 1730 | Organo-Leads   | Organo-Leads   | Solvent extraction / GCMS detection  |
| 2030 | Moisture and Stone Content of<br>Soils(Requirement of<br>MCERTS) | Moisture content   | Determination of moisture content of soil as a<br>percentage of its as received mass obtained at<br><37°C. |
| 2040 | Soil Description(Requirement of MCERTS)                          | Soil description   | As received soil is described based upon BS5930  |
| 640  | Characterisation of Waste (Leaching C10)                         | Waste material including soil, sludges and granular waste  | ComplianceTest for Leaching of Granular<br>Waste Material and Sludge                                       |

Page 3 of 4



#### Report Information

#### Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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





CB8 OAL Tel: 01638 606070 Email: info@chemtest.com

# **Final Report**

Report No.:

20-09950-1

Initial Date of Issue:

09-Apr-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 HOWTH

**Quotation No.:** 

Q20-19920

Date Received:

27-Feb-2020

Order No.:

12451

Date Instructed:

02-Apr-2020

No. of Samples:

Turnaround (Wkdays):

Results Due:

14-Apr-2020

Date Approved:

09-Apr-2020

Approved By:

Details:

Glynn Harvey, Technical Manager

Results - Leachate

| Client: Priority Geotechnical Ltd |         |      | CF   | omtest     | Chemtest Job No.:    | 20-09950    | 20-09950    | 09660-02    | _ |
|-----------------------------------|---------|------|------|------------|----------------------|-------------|-------------|-------------|---|
| Quotation No.: Q20-19920          |         |      | Chem | lest Sar   | Chemtest Sample ID.: | 994846      | 994847      | 994848      |   |
|                                   |         |      | ,    | Sample     | Sample Location:     | 5Mx28       | 4Mx28       | 6Mx28       |   |
|                                   |         |      |      | Sam        | Sample Type:         | SOIL        | SOIL        | SOIL        |   |
|                                   |         |      |      | Date 5     | Date Sampled:        | 23-Mar-2020 | 23-Mar-2020 | 24-Mar-2020 |   |
| Determinand                       | Accred. | SOP  | Type | Units      | 100                  |             |             |             |   |
| Noride                            | ח       | 1220 | 1:01 | 1/6m       | 1.0                  | 460         | 440         | 440         |   |
| ulphate                           | ח       | 1220 | 10:1 | ng/l       | 1.0                  | 30          | 23          | 16          |   |
| Calcium                           | ס       | 1415 | 10.1 | ₩<br>l/bm  | 5.0                  | 140         | 200         | 160         |   |
| milpo                             | ח       | 1415 | 10:1 | flgm       | 0.50                 | 190         | 190         | 200         |   |
| Arsenic (Dissolved)               | ח       | 1450 | 1:01 | V6ri       | 1.0                  | 2.4         | 3.2         | 2.5         |   |
| Cadmium (Dissolved)               | ם       | 1450 | 10:1 | /br        | 0.080                | < 0.080     | 0.35        | 980.0       |   |
| Chromium (Dissolved)              | ם       | 1450 | 1:01 | l/gu       | 1.0                  | 2.4         | 3.7         | 3.8         |   |
| Copper (Dissolved)                | n       | 1450 | 1:01 | l/gu       | 1.0                  | 1.8         | 2.1         | 1.6         |   |
| Mercury (Dissolved)               | ח       | 1450 | 10:1 | l/gri      | 0.50                 | 0.56        | 22          | 3.5         |   |
| Nickel (Dissolved)                | ח       | 1450 | 10:1 | Ngu<br>I   | 1.0                  | 18          | 25          | 5.0         |   |
| ead (Dissolved)                   | ח       | 1450 | 10:1 | l/gu       | 1.0                  | < 1.0       | < 1.0       | <1.0        |   |
| Selenium (Dissolved)              | 2       | 1450 | 10:1 | Ngu<br>Ngu | 1.0                  | 9.1         | 11          | 16          |   |
| in (Dissolved)                    | ח       | 1450 | 10.1 | Ngu        | 1.0                  | < 1.0       | 1.2         | <1.0        |   |
| (anadium (Dissolved)              | ח       | 1450 | 10:1 | l/gri      | 1.0                  | 3.9         | 5.2         | 3.5         |   |
| Zinc (Dissolved)                  | ח       | 1450 | 10:1 | l/gri      | 1.0                  | 13          | 16          | 16          |   |
| Dibutyl Tin                       | z       | 1730 | 10:1 | l/gri      | 0.050                | < 0.050     | < 0.050     | < 0.050     |   |
| The second second                 | ,       |      |      | -          |                      |             |             |             |   |

Chemtest

Page 1 of 4



### **Test Methods**

| SOP  | Title  | Parameters included  | Method summary   |
|------|--|--|--|
| 1220 | Anions, Alkalinity & Ammonium in Waters                          | Fluoride: Chloride: Nitrite: Nitrate: Total;<br>Oxidisable Nitrogen (TON); Sulfate: Phosphate;<br>Alkalinity: Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.                                  |
| 1415 | Cations in Waters by ICP-MS                                      | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).                           |
| 1450 | Metals in Waters by ICP-MS                                       | Metals, including: Antimony; Arsenic, Barium,<br>Beryllium; Boron; Cadmium; Chromium; Cobalt;<br>Copper, Lead; Manganese; Mercury;<br>Mołybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | determination by inductively coupled plasma  |
| 1730 | Organo-Leads   | Organo-Leads   | Solvent extraction / GCMS detection  |
| 2030 | Moisture and Stone Content of<br>Soils(Requirement of<br>MCERTS) | Moisture content   | Determination of moisture content of soil as a<br>percentage of its as received mass obtained at<br><37°C. |
| 640  | Characterisation of Waste<br>(Leaching C10)                      | Waste material including soil, sludges and<br>granular waste   | ComplianceTest for Leaching of Granular<br>Waste Material and Sludge                                       |





#### Report Information

#### Kev

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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





Depot Road Newmarket CB8 OAL Tel: 01638 606070

# **Final Report**

Report No.: 20-08616-1

Initial Date of Issue: 27-Mar-2020

Priority Geotechnical Ltd Client

Client Address: Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s): Colette Kelly Project

P19188 Howth

**Quotation No.:** 

Q20-19850

Date Received:

11-Mar-2020

Order No.:

12451

Date Instructed:

19-Mar-2020

No. of Samples:

Turnaround (Wkdays):

Results Due:

27-Mar-2020

Date Approved:

27-Mar-2020

Approved By:

Details:

Glynn Harvey, Technical Manager

| 긔  |  |  |
|----|--|--|
| 2  |  |  |
| 5  |  |  |
| 5  |  |  |
| 김  |  |  |
| 1  |  |  |
| d  |  |  |
| 1  |  |  |
| 2  |  |  |
| 31 |  |  |
|    |  |  |
|    |  |  |
|    |  |  |
|    |  |  |
|    |  |  |
|    |  |  |
|    |  |  |
|    |  |  |

| Project: P19188 Howth             |                        |      |       |                |                      |          |             |             |        |
|-----------------------------------|------------------------|------|-------|----------------|----------------------|----------|-------------|-------------|--------|
| Client: Priority Geotechnical Ltd |                        |      | CP    | untest         | Chemtest Job No.:    | 20-08616 | 20-08616    | 20-08616    | 20-086 |
| Quotation No.: Q20-19850          |                        |      | Chemi | ost Sar        | Chemtest Sample ID.: | 987959   | 987960      | 987961      | 98796  |
|                                   |                        |      | S     | ample          | Sample Location:     | 5MX7C    | 4MX7C       | 6MX7C       | TOMX   |
|                                   |                        |      |       | Sam            | Sample Type:         | SOIL     | SOIL        | SOIL        | SOI    |
|                                   |                        |      |       | Date 5         | Date Sampled:        | ģ        | 09-Mar-2020 | 09-Mar-2020 | Mar-   |
| Determinand                       | Accred. SOP Type Units | SOP  | Type  | Units          | 700                  |          |             |             |        |
| Chloride                          | n                      | 1220 | 10:1  | Mg/l           | 1.0                  | 490      | 630         | 550         | 390    |
| Sulphate                          | n                      | 1220 | 10:1  | ₩ <sub>0</sub> | 1.0                  | 36       | 2           | 69          | <1.    |
| Calcium                           | ח                      | 1415 | 10:1  | Ngm            | 5.0                  | 130      | 150         | 120         | 390    |
| Sodium                            | n                      | 1415 | 10:1  | Ngm<br>Ng/l    | 0.50                 | 350      | 320         | 250         | 250    |
| Arsenic (Dissolved)               | ח                      | 1450 | 10:1  | l/gu           | 1.0                  | 3.1      | 3.5         | 3.0         | 4.4    |
| Cadmium (Dissolved)               | n                      | 1450 | 10:1  | l/6ri          | 0.080                | 0.12     | 0.16        | 0.11        | 0.1    |
| Chromium (Dissolved)              | n                      | 1450 | 10:1  | l/gri          | 1.0                  | 4.6      | 5.6         | 4.4         | 3.0    |
| Copper (Dissolved)                | n                      | 1450 | 10:1  | Ng4            | 1.0                  | 12       | 180         | 19          | 13     |
| Mercury (Dissolved)               | n                      | 1450 | 10:1  | l/g⊔           | 0.50                 | 1.8      | < 0.50      | < 0.50      | < 0.5  |
| Nickel (Dissolved)                | n                      | 1450 | 10:1  | l/gu           | 1.0                  | 33       | 63          | 18          | 120    |
| Lead (Dissolved)                  | n                      | 1450 | 10:1  | l/gq           | 1.0                  | < 1.0    | < 1.0       | <10         | < 1.   |
| Selenium (Dissolved)              | n                      | 1450 | 10:1  | l/gq           | 1.0                  | 10       | 11          | 9.7         | 6.0    |
| Tin (Dissolved)                   | n                      | 1450 | 10:1  | l/Bri          | 1.0                  | < 1.0    | 1.0         | 1.2         | 2.1    |
| Vanadium (Dissolved)              | n                      | 1450 | 10:1  | l/gu           | 1.0                  | 4.2      | 0.6         | 11          | 1.3    |
| Zinc (Dissolved)                  | ח                      | 1450 | 10:1  | l/6d           | 1.0                  | 17       | 36          | 40          | 20     |
| Dibutyl Tin                       | z                      | 1730 | 10:1  | l/gr(          | 0.050                | < 0.050  | < 0.050     | < 0.050     | × 0.0  |
| Tributol Tin                      |                        | 1720 | *0.   | N. was         | 00500                | 10000    | 0000        | 0000        | 200    |



### **Test Methods**

| SOP  | Title  | Parameters included  | Method summary   |
|------|--|--|--|
| 1220 | Anions, Alkalinity & Ammonium in Waters                          | Fluoride: Chloride: Nitrite: Nitrate: Total;<br>Oxidisable Nitrogen (TON); Sulfate: Phosphate:<br>Alkalinity: Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.                                  |
| 1415 | Cations in Waters by ICP-MS                                      | Sodium: Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).                           |
| 1450 | Metals in Waters by ICP-MS                                       | Metals, including: Antimony; Arsenic; Barium;<br>Beryllium; Boron; Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | determination by inductively coupled plasma  |
| 1730 | Organo-Leads   | Organo-Leads   | Solvent extraction / GCMS detection  |
| 2030 | Moisture and Stone Content of<br>Soils(Requirement of<br>MCERTS) | Moisture content   | Determination of moisture content of soil as a<br>percentage of its as received mass obtained at<br><37°C. |
| 640  | Characterisation of Waste (Leaching C10)                         | Waste material including soil, sludges and<br>granular waste   | ComplianceTest for Leaching of Granular<br>Waste Material and Sludge                                       |

Page 3 of 4



### Report Information

#### Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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





Depot Road CB8 OAL Tel: 01638 606070 Email: info@chemtest.com

# **Final Report**

Report No.:

20-03433-1

Initial Date of Issue:

19-Feb-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Colette Kelly

Contact(s):

Project

P19188 Howth

**Quotation No.:** 

Date Received:

04-Feb-2020

Order No.:

12451

Date Instructed:

3

05-Feb-2020

No. of Samples:

Turnaround (Wkdays):

Results Due:

13-Feb-2020

Date Approved:

14-Feb-2020

Approved By:

Details:

Glynn Harvey, Laboratory Manager

| Client: Priority Geotechnical Ltd |         | Ì    | S    | ormtost  | Chemitest Job No.:   | 20-03433    | 20-03433    | 8   |
|-----------------------------------|---------|------|------|----------|----------------------|-------------|-------------|-----|
| Quotation No.:                    |         |      | Chem | test Sar | Chemtest Sample ID.: | 963611      | 963612      | 86  |
| Order No. 12451                   |         |      | 5    | ent San  | Client Sample Ref.   | CI          | C1          | Į.  |
|                                   |         |      |      | ample    | Sample Location:     | LB203       | LB204       | _   |
|                                   |         |      |      | Sam      | Sample Type:         | SOIL        | SOIL        |     |
|                                   |         |      |      | Date 5   | Date Sampled:        | 31-Jan-2020 | 31-Jan-2020 | 314 |
| Determinand                       | Accred. | SOP  | Type | Units    | 100                  |             |             |     |
| Chloride                          | ח       | 1220 | 10:1 | l/gm     | 1.0                  | 1300        | 680         | Ų,  |
| Sulphate                          | ח       | 1220 | 10:1 | l/gm     | 1.0                  | 140         | 110         |     |
| Calcium                           | n       | 1415 | 10:1 | l/gm     | 5.0                  | 23          | 36          |     |
| Sodium                            | n       | 1415 | 10:1 | l/gm     | 0.50                 | 850         | 420         |     |
| Arsenic (Dissolved)               | n       | 1450 | 10:1 | η6π      | 1.0                  | 7.3         | 5.0         |     |
| Cadmium (Dissolved)               | n       | 1450 | 10:1 | 1/64     | 0.080                | 0.24        | 0.27        |     |
| Chromium (Dissolved)              | n       | 1450 | 10.1 | 1/6ri    | 1.0                  | 18          | 12          |     |
| Copper (Dissolved)                | n       | 1450 | 10:1 | /bri     | 1.0                  | 3.5         | 2.5         | 1   |
| Mercury (Dissolved)               | n       | 1450 | 10:1 | 1/6rl    | 0.50                 | 2.3         | 0.62        |     |
| Nickel (Dissolved)                | n       | 1450 | 10:1 | 1/6rt    | 1.0                  | < 1.0       | < 1.0       |     |
| Lead (Dissolved)                  | n       | 1450 | 10:1 | 1/6/1    | 1.0                  | < 1.0       | < 1.0       |     |
| Selenium (Dissolved)              | n       | 1450 | 10:1 | ηδη.     | 1.0                  | 22          | 13          |     |
| Tin (Dissolved)                   | n       | 1450 | 10:1 | l/6rl    | 1.0                  | < 1.0       | < 1.0       |     |
| Vanadium (Dissolved)              | n       | 1450 | 10:1 | hg4      | 1.0                  | 9.4         | 6.1         |     |
| Zinc (Dissolved)                  | ח       | 1450 | 10:1 | 1/6ri    | 1.0                  | 5.4         | 5.0         |     |
| Dibutyl Tin                       | z       | 1730 | 10:1 | 1/6rl    | 0.050                | < 0.050     | < 0.050     | ٧   |
| Tributyl Tio                      | 2       | 1730 | 10.1 | 1/2/11   | 0.0500               | 05000       | 0900        | '   |



### Results - Soil

| Client: Priority Geotechnical Ltd   |         | Che    | mtest J | b No.:   | 20-03433    | 20-03433    | 20-03433    |
|-------------------------------------|---------|--------|---------|----------|-------------|-------------|-------------|
| Quotation No.:                      | -       | Chemte | st Sam  | ple ID.: | 963611      | 963612      | 963613      |
| Order No.: 12451                    |         | Clies  | nt Samp | le Ref.: | C1          | C1          | C1          |
|                                     |         | Se     | mple Lo | cation:  | LB203       | LB204       | LB207       |
|                                     |         |        | Sampl   | e Type:  | SOIL        | SOIL        | SOIL        |
|                                     |         |        | Date Sa | mpled    | 31-Jan-2020 | 31-Jan-2020 | 31-Jan-2020 |
| Determinand                         | Accred. | SOP    | Units   | LOD      |             |             |             |
| Moisture                            | N       | 2030   | %       | 0.020    | 54          | 37          | 40          |
| Sulphate (2:1 Water Soluble) as SO4 | U       | 2120   | g/I     | 0.010    | 2.0         | 1.5         | 1.1         |
| Chloride (Water Soluble)            | U       | 2220   | g/l     | 0.010    | 13          | 4.6         | 5.0         |
| Calcium                             | N       | 2400   | mg/l    | 20       | 4800        | 3900        | 3100        |
| Sodium                              | N       | 2400   | mg/l    | 2.0      | 15000       | 8800        | 8500        |
| Arsenic                             | U       | 2450   | mg/kg   | 1.0      | 17          | 36          | 22          |
| Cadmium                             | U       | 2450   | mg/kg   | 0.10     | 0.68        | 0.80        | 0.58        |
| Chromium                            | U       | 2450   | mg/kg   | 1.0      | 34          | 53          | 39          |
| Tin                                 | N       | 2450   | mg/kg   | 5.0      | 9.3         | 9.1         | 8.3         |
| Copper                              | U       | 2450   | mg/kg   | 0.50     | 130         | 76          | 81          |
| Mercury                             | U       | 2450   | mg/kg   | 0.10     | 0.15        | 2.1         | 0.58        |
| Nickel                              | U       | 2450   | mg/kg   | 0.50     | 29          | 24          | 27          |
| Lead                                | U       | 2450   | mg/kg   | 0.50     | 180         | 160         | 240         |
| Selenium                            | U       | 2450   | mg/kg   | 0.20     | 1.0         | 0.69        | 0.78        |
| Vanadium                            | U       | 2450   | mg/kg   | 5.0      | 28          | 42          | 27          |
| Zinc                                | U       | 2450   | mg/kg   | 0.50     | 590         | 270         | 190         |
| Dibutyl Tin                         | N       | 2730   | µg/kg   | 10       | < 10        | < 10        | < 10        |
| Tributyl Tin                        | N       | 2730   | µg/kg   | 10       | < 10        | < 10        | < 10        |

Page 3 of 5



# Test Methods

| 640  | 2730                                | 2450  | 2400    | 2220   | 2120   | 2030   | 1730                                | 1450   | 1415   | 1220   | SOP                 |
|--|-------------------------------------|---|---------|--|--|--|-------------------------------------|--|--|--|---------------------|
| Characterisation of Waste<br>(Leaching C10)                          | Organo-Leads                        | 2450 Acid Soluble Metals in Solls   | Cations | 2220 Water soluble Chloride in Solls   | Water Soluble Boron, Sulphate,<br>Magnesium & Chromium | Moisture and Stone Content of<br>Soils(Requirement of<br>MCERTS)   | Organo-Leads                        | 1450 Metals in Waters by ICP-MS  | 1415 Cations in Waters by ICP-MS   | Anions, Alkalinity & Ammonium in Waters  | Title               |
| Waste material including soil, sludges and<br>granular waste         | Organo-Leads                        | Metals. Including: Arsenic, Barlum; Beryllium;<br>Cadmium; Chromium; Cobalt; Copper; Lead;<br>Manganese; Mercury; Molybdenum; Nickel;<br>Selenium; Vanadium; Zinc | Cations | Chloride   | Boron, Sulphate, Magnesium, Chromium                   | Moisture content   | Organo-Leads                        | Metals, Including: Antimony, Arsenic: Barium: Bergitum: Boron: Cadmium: Chromium: Cobalt: Filtration of samples followed by direct Copper: Lead; Manganese: Mercury: Molybdenum; Nickel: Selenium; Tin; Vanadium; mass spectrometry (ICP-MS). Zine | Sodium, Potassium, Calcium, Magnesium  | Fluoride: Chloride: Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium | Parameters included |
| ComplianceTest for Leaching of Granutar<br>Waste Material and Sludge | Solvent extraction / GCMS detection | Acid digestion followed by determination of metals in extract by ICP-MS.  | ICP-MS  | Aqueous extraction and measurement by<br>'Aquakem 600' Discrete Analyser using ferric<br>nitrate / mercuric thiocyanate. | Aqueous extraction / ICP-OES                           | Determination of moisture content of soil as a<br>percentage of its as received mass obtained at<br><37°C. | Solvent extraction / GCMS detection | Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).   | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS). | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.  | Method summary      |



Key

U UKAS accredited

M MCERTS and UKAS accredited

N Unaccredited

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

T This analysis has been subcontracted to an unaccredited laboratory

I/S Insufficient Sample

U/S Unsuitable Sample

N/E not evaluated

< "less than"

> "greater than"

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





Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

28-May-2020

### **Final Report**

Report No.: 20-13473-1

Initial Date of Issue: 05-Jun-2020

Client Priority Geotechnical Ltd

Client Address: Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s): Colette Kelly

Project P19188 Howth

Quotation No.: Q20-19850 Date Received: 28-May-2020

Order No.: 12451 Date Instructed:

No. of Samples: 4

Turnaround (Wkdays): 75 Results Due: 10-Sep-2020

Date Approved: 05-Jun-2020

Approved By:

Details:



| Client: Priority Geotechnical Ltd | THE PERSON NAMED IN | Chi   | mtest.   | Job No.:  | 20-13473    | 20-13473    | 20-13473    | 20-13473    |
|-----------------------------------|---------------------|-------|----------|-----------|-------------|-------------|-------------|-------------|
| Quotation No.: Q20-19850          |                     | Chemt | est Sar  | nple ID.: | 1010021     | 1010022     | 1010023     | 1010024     |
|                                   |                     | C     | lient Sa | mple ID.: | P5          | P6          | P7          | P8          |
|                                   |                     | 5     | ample    | Location: | 1MXM28      | 1MXM28      | 1MXM28      | 1MXM28      |
|                                   |                     |       | Samp     | ple Type: | WATER       | WATER       | WATER       | WATER       |
|                                   |                     |       | Date 5   | Sampled:  | 01-Apr-2020 | 08-Apr-2020 | 14-Apr-2020 | 26-May-2020 |
| Determinand                       | Accred.             | SOP   | Units    | LOD       | 2           |             |             |             |
| Chloride                          | U                   | 1220  | mg/l     | 1.0       | [B] 300     | [B] 240     | [B] 88      | 130         |
| Sulphate                          | U                   | 1220  | mg/l     | 1.0       | [B] 16      | [B] 29      | [B] 16      | 30          |
| Calcium                           | U                   | 1415  | mg/l     | 5.0       | [B] 180     | [B] 5.5     | [B] 88      | 270         |
| Sodium                            | U                   | 1415  | mg/l     | 0.50      | [B] 320     | [8] 180     | [B] 61      | 65          |
| Arsenic (Dissolved)               | U                   | 1450  | ид/1     | 1.0       | (B) 1.5     | (B) 1.6     | [B] < 1.0   | 1.1         |
| Cadmium (Dissolved)               | U                   | 1450  | μg/Ι     | 0.080     | [B] < 0.080 | [B] < 0.080 | [B] < 0.080 | < 0.080     |
| Chromium (Dissolved)              | U                   | 1450  | µg/I     | 1.0       | [B] 1.4     | [B] 1.4     | [8] < 1.0   | < 1.0       |
| Copper (Dissolved)                | U                   | 1450  | µg/I     | 1.0       | [B] < 1.0   | [B] 5.5     | [B] 2.1     | 4.7         |
| Mercury (Dissolved)               | U                   | 1450  | µg/l     | 0.50      | [B] 19      | [B] 3.2     | [B] 2.5     | 1.4         |
| Nickel (Dissolved)                | U                   | 1450  | µg/I     | 1.0       | [B] 3.9     | [B] 6.6     | [B] 3.1     | 6.5         |
| Lead (Dissolved)                  | U                   | 1450  | µg/I     | 1.0       | [B] < 1.0   | [8] < 1.0   | [B] < 1.0   | < 1.0       |
| Selenium (Dissolved)              | U                   | 1450  | ид/1     | 1.0       | [B] 6.2     | [B] 7.8     | [B] 3.7     | 3.5         |
| Tin (Dissolved)                   | U                   | 1450  | µg/I     | 1.0       | [B] < 1.0   | [B] < 1.0   | [B] < 1.0   | < 1.0       |
| Vanadium (Dissolved)              | U                   | 1450  | µg/l     | 1.0       | [B] 7.2     | [B] 9.5     | [B] 5.7     | 4.4         |
| Zinc (Dissolved)                  | U                   | 1450  | µg/l     | 1.0       | [B] 9.6     | [B] 11      | [B] 4.7     | 6.6         |
| Dibutyl Tin                       | N                   | 1730  | µg/l     | 0.050     | < 0.050     | < 0.050     | < 0.050     | < 0.050     |
| Tributyl Tin                      | N                   | 1730  | µg/l     | 0.0500    | < 0.050     | < 0.050     | < 0.050     | < 0.050     |

Page 2 of 5



In accordance with UKAS Policy on Deviating Samples TPS 63. Chemiest have a procedure to eraure '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 UKASMCERT's accredited but the results may be compromised.

Sample:

Sample Ref:

Sample ID:

Sample Deviation Code(s):

Received:

1010022

В

**1MXM28** 

08-Apr-2020

œ

Plastic Bottle 1000ml Plastic Bottle 1000ml

P7

**1MXM28** 

14-Apr-2020

œ

Plastic Bottle 1000mi B

**1MXM28** 

01-Apr-2020

8

1010021



### **Test Methods**

| SOP  | Title                                      | Parameters included  | Method summary   |
|------|--|--|--|
| 1220 | Anions, Alkalinity & Ammonium<br>in Waters | Fluoride; Chloride; Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.        |
| 1415 | Cations in Waters by ICP-MS                | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS). |
| 1450 | Metals in Waters by ICP-MS                 | Metals, including: Antimony, Arsenic: Barlum;<br>Beryllium; Boron; Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | determination by inductively coupled plasma                                      |
| 1730 | Organo-Leads                               | Organo-Leads   | Solvent extraction / GCMS detection  |



### Report Information

### Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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



Chemtes:
The right chemistry to deliver result

CB8 0AL
Tel: 01638 806079
Email: info@chemtest.com

# Final Report

Report No.:

20-12268-1

Initial Date of Issue: 18-May-2020 Priority Geotechnical Ltd

Client Address:

Unit 12
Owenacurra Business Park
Midleton
County Cork
Ireland

P19188 Howth Colette Kelly

Project

Contact(s):

Quotation No.: Q20-19850

12451

No. of Samples:

Approved By: Date Approved: Turnaround (Wkdays):

18-May-2020

Glynn Harvey, Technical Manager

Results Due:

Date Instructed:

14-May-2020 13-May-2020

Date Received:

22-May-2020

Chemtest

### Results - Water

| Client: Priority Geotechnical Ltd |         | Che   | emtest.  | Job No.:  | 20-12268    | 20-12268    | 20-12268    | 20-12268    |
|-----------------------------------|---------|-------|----------|-----------|-------------|-------------|-------------|-------------|
| Quotation No.: Q20-19850          |         | Chemi | est Sar  | nple ID.: | 1004480     | 1004481     | 1004482     | 1004483     |
|                                   |         | C     | lient Sa | mple ID.: | P5          | P6          | P7          | P8          |
|                                   |         | 5     | ample I  | ocation:  | IMXM14      | IMXM14      | IMXM14      | IMXM14      |
|                                   |         |       | Samp     | ole Type: | WATER       | WATER       | WATER       | WATER       |
|                                   |         |       | Date 5   | ampled:   | 18-Mar-2020 | 25-Mar-2020 | 14-Apr-2020 | 12-May-2020 |
| Determinand                       | Accred. | SOP   | Units    | LOD       |             | TO SECOND   |             |             |
| Chloride                          | U       | 1220  | mg/l     | 1.0       | [B] 220     | [B] 150     | [B] 65      | 56          |
| Sulphate                          | U       | 1220  | mg/l     | 1.0       | [B] 11      | [B] 13      | [B] 16      | 9.7         |
| Calcium                           | U       | 1415  | mg/l     | 5.0       | [B] 42      | [B] 36      | [B] 71      | 49          |
| Sodium                            | U       | 1415  | mg/l     | 0.50      | [B] 150     | [B] 80      | [B] 21      | 6.6         |
| Arsenic (Dissolved)               | U       | 1450  | µg/l     | 1.0       | [B] 1.1     | [B] < 1.0   | [B] < 1.0   | < 1.0       |
| Cadmium (Dissolved)               | U       | 1450  | µg/l     | 0.080     | [B] < 0.080 | [B] < 0.080 | [B] < 0.080 | < 0.080     |
| Chromium (Dissolved)              | U       | 1450  | µg/l     | 1.0       | [B] 2.8     | [B] 1.6     | [B] 1.1     | < 1.0       |
| Copper (Dissolved)                | U       | 1450  | µg/l     | 1.0       | [B] 3.2     | [B] 1.6     | [B] 3.0     | 1.6         |
| Mercury (Dissolved)               | U       | 1450  | µg/1     | 0.50      | [B] 0.67    | (B) < 0.50  | [B] < 0.50  | < 0.50      |
| Nickel (Dissolved)                | U       | 1450  | µg/I     | 1.0       | [B] 4.2     | [B] 4.2     | [B] 7.0     | 2.7         |
| Lead (Dissolved)                  | U       | 1450  | µg/I     | 1.0       | [B] < 1.0   | [B] < 1.0   | [B] < 1.0   | < 1.0       |
| Selenium (Dissolved)              | U       | 1450  | ид/Т     | 1.0       | [B] 7.0     | [B] 4.4     | [B] 2.6     | < 1.0       |
| Tin (Dissolved)                   | U       | 1450  | μдЛ      | 1.0       | [B] 40      | [B] < 1.0   | [B] 14      | 740         |
| Vanadium (Dissolved)              | U       | 1450  | µg/I     | 1.0       | [B] 3.8     | [B] 2.8     | [B] 3.5     | 2.5         |
| Zinc (Dissolved)                  | U       | 1450  | µg/I     | 1.0       | [B] 9.9     | [B] 7.1     | [B] 5.1     | 1.6         |
| Dibutyl Tin                       | N       | 1730  | µg/I     | 0.050     | < 0.050     | < 0.050     | < 0.050     | < 0.050     |
| Tributyl Tin                      | N       | 1730  | µg/l     | 0.0500    | < 0.050     | < 0.050     | < 0.050     | < 0.050     |



### **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 accredited but the results may be compromised.

| Sample: | Sample Ref: | Sample ID: | Sample<br>Location: | Sampled<br>Date: | Deviation Code(s): | Containers<br>Received:  |
|---------|-------------|------------|---------------------|------------------|--------------------|--------------------------|
| 1004480 |             | P5         | IMXM14              | 18-Mar-2020      | В                  | Plastic Bottle<br>1000ml |
| 1004481 |             | P6         | IMXM14              | 25-Mar-2020      | В                  | Plastic Bottle<br>1000ml |
| 1004482 |             | P7         | IMXM14              | 14-Apr-2020      | В                  | Plastic Tub<br>500g      |



### Test Methods

| SOP  | Title                                      | Parameters included  | Method summary   |
|------|--|--|--|
| 1220 | Anions, Alkalinity & Ammonium<br>in Waters | Fluoride; Chloride; Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.        |
| 1415 | Cations in Waters by ICP-MS                | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS). |
| 1450 | Metals in Waters by ICP-MS                 | Metals, including: Antimony, Arsenic: Barium;<br>Beryflium; Boron; Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | determination by inductively coupled plasma                                      |
| 1730 | Organo-Leads                               | Organo-Leads   | Solvent extraction / GCMS detection  |



Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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, Phenois

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





Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

### **Final Report**

Report No.:

20-09764-1

Initial Date of Issue:

06-Apr-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

Quotation No.:

Q20-19850

Date Received:

30-Mar-2020

Order No.:

12451

Date Instructed:

31-Mar-2020

No. of Samples:

4

Turnaround (Wkdays):

Results Due:

08-Apr-2020

Date Approved:

06-Apr-2020

Approved By:

Details:



| Client: Priority Geotechnical Ltd |         | Che   | emtest.   | Job No.:  | 20-09764    | 20-09764    | 20-09764    | 20-09764    |
|-----------------------------------|---------|-------|-----------|-----------|-------------|-------------|-------------|-------------|
| Quotation No.: Q20-19850          |         | Chemi | test San  | nple ID.: | 993946      | 993947      | 993948      | 993949      |
|                                   |         | C     | lient Sar | mple ID.: | P1          | P2          | P3          | P4          |
|                                   |         | 5     | Sample I  | Location: | 1MXM28      | 1MXM28      | 1MXM28      | 1MXM28      |
|                                   |         |       | Samp      | ole Type: | WATER       | WATER       | WATER       | WATER       |
|                                   |         |       | Date S    | Sampled:  | 23-Mar-2020 | 24-Mar-2020 | 25-Mar-2020 | 27-Mar-2020 |
| Determinand                       | Accred. | SOP   | Units     | LOD       |             |             |             |             |
| Chloride                          | U       | 1220  | mg/l      | 1.0       | 270         | 420         | 260         | 270         |
| Sulphate                          | U       | 1220  | mg/l      | 1.0       | 1.4         | 4.1         | 1.9         | 4.3         |
| Calcium                           | U       | 1415  | mg/l      | 5.0       | 46          | 85          | 83          | 77          |
| Sodium                            | U       | 1415  | mg/l      | 0.50      | 200         | 290         | 170         | 170         |
| Arsenic (Dissolved)               | U       | 1450  | µg/I      | 1.0       | < 1.0       | 1.8         | < 1.0       | < 1.0       |
| Cadmium (Dissolved)               | U       | 1450  | µg/l      | 0.080     | < 0.080     | < 0.080     | < 0.080     | < 0.080     |
| Chromium (Dissolved)              | U       | 1450  | µg/l      | 1.0       | 1.4         | 4.8         | 1.5         | 1.5         |
| Copper (Dissolved)                | U       | 1450  | µg/I      | 1.0       | 1.1         | 1.6         | < 1.0       | 1.2         |
| Mercury (Dissolved)               | U       | 1450  | µg/l      | 0.50      | < 0.50      | 2.5         | 0.61        | < 0.50      |
| Nickel (Dissolved)                | U       | 1450  | µg/l      | 1.0       | 1.9         | 3.4         | 1.7         | 2.0         |
| Lead (Dissolved)                  | U       | 1450  | µg/l      | 1.0       | < 1.0       | < 1.0       | < 1.0       | < 1.0       |
| Selenium (Dissolved)              | U       | 1450  | µg/l      | 1.0       | 6.7         | 13          | 5.5         | 5.6         |
| Tin (Dissolved)                   | U       | 1450  | µg/l      | 1.0       | < 1.0       | < 1.0       | < 1.0       | < 1.0       |
| Vanadium (Dissolved)              | U       | 1450  | µg/l      | 1.0       | 2.2         | 3.9         | 2.1         | 2.7         |
| Zinc (Dissolved)                  | U       | 1450  | µg/l      | 1.0       | 7.0         | 13          | 7.1         | 8.0         |
| Dibutyl Tin                       | N       | 1730  | µg/I      | 0.050     | < 0.050     | < 0.050     | < 0.050     | < 0.050     |
| Tributyl Tin                      | N       | 1730  | µg/I      | 0.0500    | < 0.050     | < 0.050     | < 0.050     | < 0.050     |

Page 2 of 4



### st Methods

| SOP  | Title                                   | Parameters included  | L  |
|------|---|--|--|
| 1220 | Anions, Alkalinity & Ammonium in Waters | Fluoride: Chloride: Nitrite; Nitrate: Total;<br>Oxidisable Nitrogen (TON); Sulfate: Phospha<br>Alkalinity; Ammonium  | sphate: Automated colorimetric analysis using Aquakem 600' Discrete Analyser.  |
| 1415 | Cations in Waters by ICP-MS             | 1415 Cations in Waters by ICP-MS. Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).   |
| 1450 | 1450 Metals in Waters by ICP-MS         | Metals, including; Antimony; Arsenic; Barium;<br>Berytlium; Boron; Cadmium; Chromium; Cobalt; Filtration of samples followed by direct<br>copper; Lead. Marganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium; mass spectrometry (ICP-MS).<br>Zinc. | sarium; r; Cobalt; Fittration of samples followed by direct determination by inductively coupled plasma anadium; mass spectrometry (ICP-MS). |



Kos

U UKAS accredited

M MCERTS and UKAS accredited

N Unaccredited

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

T This analysis has been subcontracted to an unaccredited laboratory

VS Insufficient Sample

U/S Unsuitable Sample

N/E not evaluated

< "less than"

greater than

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







Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

### **Final Report**

Report No.:

20-08345-1

Initial Date of Issue:

24-Mar-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

**Quotation No.:** 

Q20-19850

24-Mar-2020

Date Received:

16-Mar-2020

Order No.:

12451

Date Instructed:

17-Mar-2020

No. of Samples:

4

Turnaround (Wkdays):

Results Due:

25-Mar-2020

Date Approved: Approved By:

/

Details:

Glynn Harvey, Technical Manager

Page 1 of 4



| 3 986714<br>P2<br>4 1MXM14<br>R WATER<br>020 10-Mar-2020<br>270<br>2.5 | 986715<br>P3<br>1MXM14<br>WATER<br>11-Mar-2020                           | 986716<br>P4<br>1MXM14<br>WATER<br>13-Mar-2020  |
|--|--|---|
| 4 1MXM14<br>R WATER<br>020 10-Mar-2020                                 | 1MXM14<br>WATER<br>11-Mar-2020   | 1MXM14<br>WATER<br>13-Mar-2020  |
| R WATER<br>020 10-Mar-2020<br>270                                      | WATER<br>11-Mar-2020   | WATER<br>13-Mar-2020  |
| 020 10-Mar-2020<br>270   | 11-Mar-2020  | 13-Mar-2020   |
| 270  |  |   |
|  | 240  | -   |
|  | 240  | 0.40  |
| 2.5  |  | 310   |
|  | 2.8  | 2.9   |
| < 5.0  | 5.8  | < 5.0   |
| 390  | 210  | 170   |
| 1.6  | 1.2  | 1.0   |
| < 0.080  | < 0.080  | < 0.080   |
| 1.7  | 2.0  | 1.7   |
| 1.7  | 2.6  | 1.4   |
| 0.57   | 2.5  | 0.63  |
| 2.9  | 5.3  | 2.8   |
| < 1.0  | < 1.0  | < 1.0   |
| 7.1  | 4.3  | 3.8   |
| < 1.0  | < 1.0  | < 1.0   |
| 3.2  | 3.3  | 3.4   |
| < 1.0  | 1.9  | 1.6   |
| < 0.050  | < 0.050  | < 0.050   |
| 0.050  | < 0.050  | < 0.050   |
| 0  | < 5.0 390 1.6 < 0.080 1.7 1.7 0.57 2.9 < 1.0 7.1 < 1.0 3.2 < 1.0 < 0.050 | 2.5 2.8   <.5.0 5.8   390 210   1.6 12   0.080 <0.080   1.7 2.0   1.7 2.6   0.57 2.5   2.9 5.3   <1.0 <1.0   7.1 4.3   <1.0 <1.0   3.2 3.3   <1.0 1.9   <.050 <0.050 <0.050 |

Page 2 of 4



### st Methods

| 1450   | 1415   | 1220  | SOP                 |
|--|--|---|---------------------|
| 1450 Metals in Waters by ICP-MS  | 1415 Cations in Waters by ICP-MS   | Anions, Alkalinity & Ammonium in Waters   | Title               |
| Metals, including: Antimony, Arsenic, Barium, Bernin, Boron, Cadmium; Chromium; Cobalt, Filtration of samples followed by direct Copper, Lead, Manganese; Mercury; determination by inductively coupled pi Molybodenum; Nickel; Seienium; Tin; Vanadium; mass spectrometry (ICP-MS).  Zinc | Sodium; Potassium; Calcium; Magnesium  | Anions, Alkalinity & Ammonium Fluoride, Chloride, Nitrile; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; in Waters | Parameters included |
| Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).   | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS). | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.   | Method summary      |



### Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/F not evaluated
- < "less than"
- > "greater than"

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





Chemtest

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

**Final Report** 

Report No.:

20-19235-1

Initial Date of Issue:

31-Jul-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

24-Jul-2020

Quotation No.:

Q20-19850 12451

Date Instructed:

Date Received:

24-Jul-2020

Order No.: No. of Samples:

2

Turnaround (Wkdays):

Results Due:

03-Aug-2020

Date Approved:

31-Jul-2020

Approved By:

Details:

Project: P19188 Howth

| Client: Priority Geotechnical Ltd |         | Ch    | emtest.   | Job No.:  | 20-19235    | 20-19235    |
|-----------------------------------|---------|-------|-----------|-----------|-------------|-------------|
| Quotation No.: Q20-19850          |         | Chemi | test San  | nple ID.: | 1037337     | 1037338     |
|                                   |         | C     | lient Sar | mple ID.: | P7          | P8          |
|                                   |         | 5     | Sample I  | ocation:  | 2mxm90      | 2mxm90      |
|                                   |         |       | Samp      | ole Type: | WATER       | WATER       |
|                                   |         |       | Date S    | Sampled:  | 26-Jun-2020 | 23-Jul-2020 |
| Determinand                       | Accred. | SOP   | Units     | LOD       |             |             |
| Chloride                          | U       | 1220  | mg/l      | 1.0       | [B] 190     | 110         |
| Sulphate                          | U       | 1220  | mg/l      | 1.0       | [B] 95      | 28          |
| Calcium                           | U       | 1415  | mg/l      | 5.0       | [B] 8.9     | 54          |
| Sodium                            | U       | 1415  | mg/l      | 0.50      | [B] 190     | 34          |
| Arsenic (Dissolved)               | u       | 1450  | µg/I      | 1.0       | [B] 4.1     | < 1.0       |
| Cadmium (Dissolved)               | U       | 1450  | рд/1      | 0.080     | [B] < 0.080 | < 0.080     |
| Chromium (Dissolved)              | U       | 1450  | μgЛ       | 1.0       | [B] 4.3     | < 1.0       |
| Copper (Dissolved)                | U       | 1450  | ид/1      | 1.0       | [B] 30      | 16          |
| Mercury (Dissolved)               | U       | 1450  | µg/l      | 0.50      | [B] < 0.50  | < 0.50      |
| Nickel (Dissolved)                | U       | 1450  | µg/l      | 1.0       | [B] 5.6     | 8.7         |
| Lead (Dissolved)                  | U       | 1450  | µg/l      | 1.0       | [B] 3.5     | < 1.0       |
| Selenium (Dissolved)              | U       | 1450  | µg/I      | 1.0       | [B] 4.7     | 2.5         |
| Tin (Dissolved)                   | U       | 1450  | ид/1      | 1.0       | (B) < 1.0   | < 1.0       |
| Vanadium (Dissolved)              | U       | 1450  | µg/I      | 1.0       | [B] 34      | 2.5         |
| Zinc (Dissolved)                  | U       | 1450  | µg/l      | 1.0       | [B] 6.1     | 3.7         |
| Dibutyl Tin                       | N       | 1730  | µg/I      | 0.050     | < 0.050     | < 0.050     |
| Tributyl Tin                      | N       | 1730  | µg/l      | 0.0500    | < 0.050     | < 0.050     |

Page 2 of 5

# 1100

Deviations

|   | Sample:             | assess when   |
|---|---------------------|---|
|   | Sample Ref:         | son a sample is declared as   |
|   | Sample ID:          | deviating is detailed belo  |
|   | Sample<br>Location: | w. Where applicable be compromised  |
|   | Sampled<br>Date:    | the analysis remai  |
|   | Deviation Code(s):  | assess writting the sample is declared as devaling is detailed below. Where applicable the analysis remains UKASMCERTs accredited but the result. The reason a sample is declared as devaling is detailed below. Where applicable the analysis remains UKASMCERTs accredited but the result.  be compromised. |
| 2 | Cont                | but the resi  |

### **Test Methods**

| SOP  | Title                                      | Parameters included  | Method summary  |
|------|--|--|---|
| 1220 | Anions, Alkalinity & Ammonium<br>in Waters | Fluoride; Chloride: Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.           |
| 1415 | Cations in Waters by ICP-MS                | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled<br>plasma - mass spectrometry (ICP-MS). |
| 1450 | Metals in Waters by ICP-MS                 | Metals, including: Antimony; Arsenic, Barium;<br>Beryllium; Boron, Cadmium; Chromium; Cobalt,<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum, Nickel; Selenium; Tin; Vanadium;<br>Zinc | determination by inductively coupled plasma   |
| 1730 | Organo-Leads                               | Organo-Leads   | Solvent extraction / GCMS detection   |

Page 4 of 5

### Report Information

| Key |   |
|-----|---|
| U   | UKAS accredited   |
| M   | MCERTS and UKAS accredited  |
| N   | Unaccredited  |
| 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 |
| T   | This analysis has been subcontracted to an unaccredited laboratory  |
| 1/5 | Insufficient Sample   |
| U/S | Unsuitable Sample   |
| N/E | not evaluated   |
| <   | "less than"   |
| >   | "greater than"  |

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





Chemtest

Eurofins Chemtest Ltd.
Depot Road
Newmarket
C88 0AL
Tel: 01638 606070
Email: info@chemtest.com

### **Final Report**

Report No.: 20-17645-1

Initial Date of Issue: 15-Jul-2020

Client Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project
Quotation No.:

P19188 Howth Q20-19850

Date Received:

10-Jul-2020

Order No.:

12451

Date Instructed:

10-Jul-2020

No. of Samples:

2

Turnaround (Wkdays): 7

Results Due:

20-Jul-2020

Date Approved:

15-Jul-2020

Approved By:

Details:

Glynn Harvey, Technical Manager

## Results - Water

| Project, Publico nowth            |        |       |                  |                      |             |             |
|-----------------------------------|--------|-------|------------------|----------------------|-------------|-------------|
| Client: Priority Geotechnical Ltd |        | S     | emfest           | Chemiest Job No.:    | 20-17645    | 20-17645    |
| Quotation No.: Q20-19850          |        | Chemi | lest Sar         | Chemiest Sample ID.: | 1029595     | 1029596     |
|                                   |        | O     | lient Sa         | Client Sample ID.:   | P7          | PB          |
|                                   |        | 0,    | ample            | Sample Location:     | 2mxm76      | 2mxm76      |
|                                   |        |       | Sam              | Sample Type:         | WATER       | WATER       |
|                                   |        |       | Date:            | Date Sampled:        | 10-Jun-2020 | 08-Jul-2020 |
| Determinand                       | Accred | SOP   | Units            | 100                  |             |             |
| Chloride                          | ח      | 1220  | ∩gm              | 1.0                  | [8] 230     | 170         |
| Sulphate                          | >      | 1220  | ₽ <sub>0</sub> m | 1.0                  | [8] 110     | 92          |
| Calcium                           | ,      | 1415  | ₽ <sub>0</sub> m | 5.0                  | (B) < 5.0   | 7.0         |
| Sodium                            | 0      | 1415  | ſ/gω             | 0.50                 | [B] 200     | 150         |
| Arsenic (Dissolved)               | Þ      | 1450  | 1/61             | 1.0                  | [B] 4.6     | 2.8         |
| Cadmium (Dissolved)               | 2      | 1450  | 1/61             | 0.080                | [B] < 0.080 | < 0.080     |
| Chromium (Dissolved)              | 0      | 1450  | 1/6/1            | 1.0                  | [8] 7.4     | 5.0         |
| Copper (Dissolved)                | n      | 1450  | 1/6rl            | 1.0                  | [B] 27      | 13          |
| Mercury (Dissolved)               | ם      | 1450  | /6ri             | 0.50                 | [B] < 0.50  | < 0.50      |
| Nickel (Dissolved)                | э      | 1450  | 1/6/1            | 1.0                  | [8] 4.8     | 1.9         |
| Lead (Dissolved)                  | n      | 1450  | V6ri             | 1.0                  | [B] < 1.0   | × 1.0       |
| Selenium (Dissolved)              | n      | 1450  | l/gu             | 1.0                  | [B] 5.4     | 3.4         |
| Tin (Dissolved)                   | 0      | 1450  | l/gu             | 1.0                  | [B] < 1.0   | <10         |
| Vanadium (Dissolved)              | ח      | 1450  | l/gu             | 1.0                  | (B) 31      | 20          |
| Zinc (Dissolved)                  | n      | 1450  | иби              | 1.0                  | [8] 5.5     | 5.6         |
| Dibutyi Tin                       | z      | 1730  | ηđη              | 0.050                | < 0.050     | < 0.050     |
| Tributyl Tin                      | z      | 1730  | V6rl             | 0.0500               | < 0.050     | < 0.050     |
|                                   |        |       |                  |                      |             |             |

### **Deviations**

In accordance with UKAS Policy on Deviating Samples TPS 63. Eurofine Chemitest 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 accredited but the results may be compromised.

| Sample: | Sample Ref: | Sample ID: | Sample<br>Location: | Sampled<br>Date: | Deviation Code(s): | Containers<br>Received:  |
|---------|-------------|------------|---------------------|------------------|--------------------|--------------------------|
| 1029595 |             | P7         | 2mxm76              | 10-Jun-2020      | В                  | Plastic Bottle<br>1000ml |

Page 3 of 5

### **Test Methods**

| SOP  | Title                                   | Parameters included  | Method summary  |
|------|---|--|---|
| 1220 | Anions, Alkalinity & Ammonium in Waters | Fluoride; Chloride; Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.                                       |
| 1415 | Cations in Waters by ICP-MS             | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).                                |
| 1450 | Metals in Waters by ICP-MS              | Metals, including: Antimony, Arsenic: Barlum;<br>Beryllium; Boron; Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS) |
| 1730 | Organo-Leads                            | Organo-Leads   | Solvent extraction / GCMS detection   |

Key

U UKAS accredited

M MCERTS and UKAS accredited

N Unaccredited

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

T This analysis has been subcontracted to an unaccredited laboratory

I/S Insufficient Sample

U/S Unsuitable Sample

N/E not evaluated

< "less than"

> "greater than"

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





Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Fmail: info@chemtest.com

### **Final Report**

Report No.:

20-14333-1

Initial Date of Issue: 10-Jun-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project Quotation No.: P19188 Howth

Q20-19850

Date Received:

08-Jun-2020

Order No.:

12451

10-Jun-2020

Date Instructed:

08-Jun-2020

No. of Samples: 2

Turnaround (Wkdays):

Results Due:

16-Jun-2020

Date Approved: Approved By:

Details:



| Client: Priority Geotechnical Ltd | 100     | Chi   | emtest.  | Job No.:  | 20-14333    | 20-14333    |
|-----------------------------------|---------|-------|----------|-----------|-------------|-------------|
| Quotation No.: Q20-19850          |         | Chemi | test Sar | nple ID.: | 1013965     | 1013966     |
|                                   | 3       | C     | lient Sa | mple ID.: | P5          | P6          |
|                                   |         | 5     | Sample   | Location: | 2MXM90      | 2MXM90      |
|                                   |         |       | Sam      | ole Type: | WATER       | WATER       |
|                                   |         |       | Date 5   | Sampled:  | 26-May-2020 | 05-Jun-2020 |
| Determinand                       | Accred. | SOP   | Units    | LOD       |             |             |
| Chloride                          | U       | 1220  | mg/l     | 1.0       | 74          | 65          |
| Sulphate                          | U       | 1220  | mg/l     | 1.0       | 5.8         | 15          |
| Calcium                           | U       | 1415  | mg/l     | 5.0       | 5.5         | < 5.0       |
| Sodium                            | U       | 1415  | mg/l     | 0.50      | 67          | 88          |
| Arsenic (Dissolved)               | U       | 1450  | µg/I     | 1.0       | < 1.0       | 2.4         |
| Cadmium (Dissolved)               | U       | 1450  | µg/l     | 0.080     | < 0.080     | < 0.080     |
| Chromium (Dissolved)              | U       | 1450  | µg/l     | 1.0       | < 1.0       | 2.2         |
| Copper (Dissolved)                | U       | 1450  | µg/I     | 1.0       | 7.6         | 15          |
| Mercury (Dissolved)               | U       | 1450  | µg/I     | 0.50      | < 0.50      | 6.8         |
| Nickel (Dissolved)                | Ü       | 1450  | µg/I     | 1.0       | < 1.0       | < 1.0       |
| Lead (Dissolved)                  | U       | 1450  | µg/l     | 1.0       | < 1.0       | < 1.0       |
| Selenium (Dissolved)              | U       | 1450  | µg/l     | 1.0       | 1.3         | 3.8         |
| Tin (Dissolved)                   | U       | 1450  | µg/I     | 1.0       | < 1.0       | < 1.0       |
| Vanadium (Dissolved)              | U       | 1450  | µg/l     | 1.0       | 4.3         | 14          |
| Zinc (Dissolved)                  | U       | 1450  | µg/l     | 1.0       | < 1.0       | 1.1         |
| Dibutyl Tin                       | N       | 1730  | µg/l     | 0.050     | < 0.050     | < 0.050     |
| Tributyl Tin                      | N       | 1730  |          | 0.0500    | < 0.050     | < 0.050     |
|                                   |         |       |          |           |             |             |

Page 2 of 4



### Test Methods



Organo-Leads

Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).

Solvent extraction / GCMS detection

Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).

Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.



Key

U UKAS accredited

M MCERTS and UKAS accredited

N Unaccredited

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

T This analysis has been subcontracted to an unaccredited laboratory

I/S Insufficient Sample

U/S Unsuitable Sample

N/E not evaluated

< "less than"

> "greater than"

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





Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

29-May-2020

### **Final Report**

Report No.: 20-13484-1

Initial Date of Issue: 04-Jun-2020

Client Priority Geotechnical Ltd

Client Address: Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

12451

Contact(s): Colette Kelly

Project P19188 Howth

Quotation No.: Q20-19850 Date Received: 28-May-2020

Date Instructed:

No. of Samples: 2

Turnaround (Wkdays): 7 Results Due: 08-Jun-2020

Date Approved: 04-Jun-2020

Approved By:

Order No.:

Details:



| Client: Priority Geotechnical Ltd |         | Chi   | emtest. | Job No.:  | 20-13484    | 20-13484    |
|-----------------------------------|---------|-------|---------|-----------|-------------|-------------|
| Quotation No.: Q20-19850          | 3 /     | Chemi | est Sar | nple ID.: | 1010085     | 1010086     |
|                                   |         | C     | lent Sa | mple ID.: | P5          | P6          |
|                                   |         | 5     | ample I | Location: | 2MXM76      | 2MXM76      |
|                                   |         |       | Sam     | ole Type: | WATER       | WATER       |
|                                   |         |       | Date 8  | Sampled:  | 14-May-2020 | 21-May-2020 |
| Determinand                       | Accred. | SOP   | Units   | LOD       |             |             |
| Chloride                          | U       | 1220  | mg/l    | 1.0       | [B] 79      | 110         |
| Sulphate                          | U       | 1220  | mg/l    | 1.0       | [B] 2.9     | 11          |
| Calcium                           | U       | 1415  | mg/l    | 5.0       | [B] 24      | 14          |
| Sodium                            | U       | 1415  | mg/f    | 0.50      | [B] 64      | 110         |
| Arsenic (Dissolved)               | U       | 1450  | μg/Ι    | 1.0       | [B] < 1.0   | < 1.0       |
| Cadmium (Dissolved)               | U       | 1450  | µg/l    | 0.080     | [B] < 0.080 | < 0.080     |
| Chromium (Dissolved)              | U       | 1450  | µg/l    | 1.0       | [B] 2.3     | 1.1         |
| Copper (Dissolved)                | U       | 1450  | µg/I    | 1.0       | [B] 7.0     | 11          |
| Mercury (Dissolved)               | U       | 1450  | µg/I    | 0.50      | [B] < 0.50  | < 0.50      |
| Nickel (Dissolved)                | U       | 1450  | µg/l    | 1.0       | [B] < 1.0   | 1.8         |
| Lead (Dissolved)                  | U       | 1450  | µg/l    | 1.0       | [B] < 1.0   | < 1.0       |
| Selenium (Dissolved)              | U       | 1450  | µд/1    | 1.0       | [B] 1.5     | 2.3         |
| Tin (Dissolved)                   | U       | 1450  | μg/Ι    | 1.0       | [B] < 1.0   | < 1.0       |
| Vanadium (Dissolved)              | U       | 1450  | μg/Ι    | 1.0       | [B] 5.1     | 7.6         |
| Zinc (Dissolved)                  | U       | 1450  | µg/I    | 1.0       | (B) 2.1     | 3.4         |
| Dibutyl Tin                       | N       | 1730  | µg/l    | 0.050     | < 0.050     | < 0.050     |
| Tributyl Tin                      | N       | 1730  | µg/I    | 0.0500    | < 0.050     | < 0.050     |

Page 2 of 5



in accordance with UAUS Policy on Deviating Samples 179 S3. Chemitest have a procedure to ensure 'upon receipt of each sample a competent laboratory that assess whether the sample is suitable with regard to the requested test(s). This policy and the respective holding times soptied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable me analysis remains UAUS/MCERTs according but the results may be compromised.

| ple: | Sample Ref: | Sample ID: | Sample<br>Location: | Sampled<br>Date: | Deviation Code(s): | Containers<br>Received:  |
|------|-------------|------------|---------------------|------------------|--------------------|--------------------------|
| 085  |             | P5         | 2MXM76              | 14-May-2020      | В                  | Plastic Bottle<br>1000ml |



### **Test Methods**

| SOP  | Title                                      | Parameters included  | Method summary   |
|------|--|--|--|
| 1220 | Anions, Alkalinity & Ammonium<br>in Waters | Fluoride; Chloride; Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.        |
| 1415 | Cations in Waters by ICP-MS                | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS). |
| 1450 | Metals in Waters by ICP-MS                 | Metals, including: Antimony, Arsenic, Barlum;<br>Beryllium; Boron; Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | determination by inductively coupled plasma                                      |
| 1730 | Organo-Leads                               | Organo-Leads   | Solvent extraction / GCMS detection  |



### Report Information

### Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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, Phenois

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



Depot Road CB8 OAL Tel: 01638 606070 Email: info@chemtest.com

### **Final Report**

Report No.:

20-13474-1

Initial Date of Issue:

04-Jun-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

**Quotation No.:** 

Q20-19850

Date Received: 28-May-2020

Order No.:

12451

**Date Instructed:** 

28-May-2020

No. of Samples:

4

Turnaround (Wkdays):

Results Due:

05-Jun-2020

Date Approved:

04-Jun-2020

Approved By:

Details:

Glynn Harvey, Technical Manager

Results - Water

| Client: Priority Geotechnical Ltd |        | 5     | mtest          | Chemtest Job No.:    | 20-13474    | 20-13474            | 20-13474    |
|-----------------------------------|--------|-------|----------------|----------------------|-------------|---------------------|-------------|
| Quotation No.: Q20-19850          |        | Chemt | est Sar        | Chemtest Sample ID.: | 1010025     | 1010026             | 1010027     |
|                                   |        | Ö     | ent Sa         | Client Sample ID.:   | PS          | 9d                  | P7          |
|                                   |        | S     | ample          | Sample Location:     | 2MXM28      | 2MX0M28             | 2MXM28      |
|                                   |        |       | Sam            | Sample Type:         | WATER       | WATER               | WATER       |
|                                   |        |       | Date 5         | Date Sampled:        | 01-Apr-2020 | 08-Apr-2020         | 14-Apr-2020 |
| Determinand                       | Accred | SOP   | Units          | 100                  | THE STATE   | THE PERSON NAMED IN | 2000        |
| Chloride                          | ח      | 1220  | l/gm           | 1.0                  | [B] 190     | [B] 240             | [8] 93      |
| Sulphate                          | ח      | 1220  | √gm            | 1.0                  | [B] 18      | (8) 51              | [B] 26      |
| Calcium                           | a      | 1415  | µ6m            | 5.0                  | [8] 8.1     | [8] < 5.0           | (B) < 5.0   |
| Sodium                            | ח      | 1415  | l/gm           | 0.50                 | [8] 170     | [B] 210             | 02 [8]      |
| Arsenic (Dissolved)               | n      | 1450  | Pgd            | 1.0                  | [8] 1.5     | [8] 3.9             | [B] < 1.0   |
| Cadmium (Dissolved)               | D      | 1450  | V6d            | 0.080                | [8] < 0.080 | (B) < 0.080         | (B) < 0.080 |
| Chromium (Dissolved)              | ח      | 1450  | l/gu           | 1.0                  | [B] < 1.0   | [8] 9.5             | (B) < 1.0   |
| Copper (Dissolved)                | n      | 1450  | 1/6rl          | 1.0                  | [B] 11      | [B] 28              | [8] 8.1     |
| Mercury (Dissolved)               | ח      | 1450  | Pg4            | 0.50                 | [B] 0.59    | (B) < 0.50          | [B] < 0.50  |
| Nickel (Dissolved)                | ח      | 1450  | 1/6rl          | 1.0                  | [8] 2.1     | [8] 4.4             | [8] 1.2     |
| Lead (Dissolved)                  | ח      | 1450  | /6ri           | 1.0                  | [B] < 1.0   | [8] < 1.0           | [B] < 1.0   |
| Selenium (Dissolved)              | ח      | 1450  | l/gu           | 1.0                  | [8] 1.5     | [8] 4.8             | [8] 1.1     |
| Tin (Dissolved)                   | ລ      | 1450  | ₩ <sub>0</sub> | 1.0                  | [B] < 1.0   | [B] < 1.0           | (B) < 1.0   |
| Vanadium (Dissolved)              | ח      | 1450  | 1/6rt          | 1.0                  | [B] 6.3     | [8] 22              | [B] 2.6     |
| Zinc (Dissolved)                  | n      | 1450  | l/6rl          | 1.0                  | 9.6 (B)     | [8] 12              | [8] 1.6     |
| Dibutyl Tin                       | z      | 1730  | l⁄gu           | 0.050                | < 0.050     | < 0.050             | < 0.050     |
| Tributyl Tin                      | z      | 1730  | l/pu           | 0.0500               | < 0.050     | < 0.050             | < 0.050     |

M Chemtest



### **Deviations**

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemiest 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 accredited but the results may be compromised.

| Sample: | Sample Ref: | Sample ID: | Sample<br>Location: | Sampled<br>Date: | Deviation Code(s): | Containers<br>Received:  |
|---------|-------------|------------|---------------------|------------------|--------------------|--------------------------|
| 1010025 |             | P5         | 2MXM28              | 01-Apr-2020      | В                  | Plastic Bottle<br>1000ml |
| 1010026 |             | P6         | 2MXM28              | 08-Apr-2020      | В                  | Plastic Bottle<br>1000ml |
| 1010027 |             | P7         | 2MXM28              | 14-Apr-2020      | В                  | Plastic Bottle<br>1000ml |
| 1010028 |             | P8         | 2MXM28              | 26-Apr-2020      | В                  | Plastic Tub<br>500g      |



### **Test Methods**

| SOP  | Title                                   | Parameters included  | Method summary   |
|------|---|--|--|
| 1220 | Anions, Alkalinity & Ammonium in Waters | Fluoride; Chloride; Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.  |
| 1415 | Cations in Waters by ICP-MS             | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).                                 |
| 1450 | Metals in Waters by ICP-MS              | Copper; Lead; Manganese; Mercury;  | Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS). |
| 1730 | Organo-Leads                            | Organo-Leads   | Solvent extraction / GCMS detection  |



Key

U UKAS accredited

M MCERTS and UKAS accredited

N Unaccredited

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

T This analysis has been subcontracted to an unaccredited laboratory

I/S Insufficient Sample

U/S Unsuitable Sample

N/E not evaluated

< "less than"

> "greater than"

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: <u>customerservices@chemtest.com</u>

Page 5 of 5





Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

### **Final Report**

Report No.:

20-13341-1

Initial Date of Issue:

01-Jun-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

Quotation No.:

Q20-19850

Date Received:

27-May-2020

Order No.:

12451

Date Instructed:

27-May-2020

No. of Samples:

4

Turnaround (Wkdays):

Results Due:

04-Jun-2020

Date Approved:

01-Jun-2020

Approved By:

Details:

Glynn Harvey, Technical Manager

Page 1 of 4



| Client: Priority Geotechnical Ltd |         | Ch    | emtest.  | Job No.:  | 20-13341    | 20-13341    | 20-13341    | 20-13341    |
|-----------------------------------|---------|-------|----------|-----------|-------------|-------------|-------------|-------------|
| Quotation No.: Q20-19850          |         | Chemi | lest Sar | nple ID.: | 1009373     | 1009374     | 1009375     | 1009376     |
|                                   |         | C     | ient Sa  | mple ID.: | P1          | P2          | P3          | P4          |
|                                   |         |       | Sample I | Location: | 2MXM90      | 2MXM90      | 2MXM90      | 2MXM90      |
|                                   |         |       | Samp     | ple Type: | WATER       | WATER       | WATER       | WATER       |
|                                   |         |       | Date S   | Sampled   | 20-May-2020 | 21-May-2020 | 22-May-2020 | 25-May-2020 |
| Determinand                       | Accred. | SOP   | Units    | LOD       |             |             |             |             |
| Chloride                          | U       | 1220  | mg/l     | 1.0       | 63          | 76          | 38          | 69          |
| Sulphate                          | U       | 1220  | mg/l     | 1.0       | < 1.0       | < 1.0       | 1.6         | 5.2         |
| Calcium                           | U       | 1415  | mg/l     | 5.0       | 8.2         | 6.2         | 10          | 9.4         |
| Sodium                            | U       | 1415  | mg/l     | 0.50      | 49          | 56          | 30          | 53          |
| Arsenic (Dissolved)               | U       | 1450  | µg/I     | 1.0       | < 1.0       | < 1.0       | < 1.0       | < 1.0       |
| Cadmium (Dissolved)               | U       | 1450  | µg/ī     | 0.080     | < 0.080     | < 0.080     | < 0.080     | < 0.080     |
| Chromium (Dissolved)              | U       | 1450  | µg/I     | 1.0       | < 1.0       | < 1.0       | < 1.0       | < 1.0       |
| Copper (Dissolved)                | U       | 1450  | µg/I     | 1.0       | < 1.0       | < 1.0       | < 1.0       | 1.8         |
| Mercury (Dissolved)               | U       | 1450  | µg/l     | 0.50      | 0.89        | 0.79        | 0.70        | 1.0         |
| Nickel (Dissolved)                | U       | 1450  | µg/l     | 1.0       | < 1.0       | <1.0        | < 1.0       | < 1.0       |
| Lead (Dissolved)                  | U       | 1450  | µg/I     | 1.0       | < 1.0       | < 1.0       | < 1.0       | < 1.0       |
| Selenium (Dissolved)              | U       | 1450  | ид/1     | 1.0       | < 1.0       | < 1.0       | < 1.0       | < 1.0       |
| Tin (Dissolved)                   | U       | 1450  | µg/I     | 1.0       | < 1.0       | < 1.0       | < 1.0       | < 1.0       |
| Vanadium (Dissolved)              | U       | 1450  | µg/I     | 1.0       | < 1.0       | < 1.0       | < 1.0       | 2.6         |
| Zinc (Dissolved)                  | U       | 1450  | µg/l     | 1.0       | < 1.0       | < 1.0       | 8.1         | 1.1         |
| Dibutyl Tin                       | N       | 1730  | µg/1     | 0.050     | < 0.050     | < 0.050     | < 0.050     | < 0.050     |
| Tributyl Tin                      | N       | 1730  | ид/1     | 0.0500    | < 0.050     | < 0.050     | < 0.050     | < 0.050     |

Page 2 of 4



### Test Methods

| SOP    | Title  | Parameters included  | Method summary   |
|--------|--|--|--|
| 1220   | 1220 Anions, Alkalinity & Ammonium in Waters | Fluoride: Chloride: Nitrite: Nitrate: Total;<br>Oxidisable Nitrogen (TON): Sulfate: Phosphate:<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>Aquakem 600' Discrete Analyser:             |
| 1415   | ations in Waters by ICP-MS                   | 1415 Cations in Waters by ICP-MS Sodium; Potassium; Calcium; Magnesium   | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).     |
| 1450 N | 1450 Metals in Waters by ICP-MS              | Metals, including, Antimony, Arsenic, Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Filtration of samples followed by direct Copper; Lead; Manganese; Mercury; determination by inductively coupled p | Filtration of samples followed by direct determination by inductively coupled plasma |

Solvent extraction / GCMS detection



Ke

U UKAS accredited

M MCERTS and UKAS accredited

N Unaccredited

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

T This analysis has been subcontracted to an unaccredited laboratory

I/S Insufficient Sample

U/S Unsuitable Sample

N/E not evaluated

< "less than"

> "greater than"

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





Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

### **Final Report**

Report No.:

20-12272-1

Initial Date of Issue:

19-May-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

Quotation No.:

Q20-19850

Date Received:

13-May-2020

Order No.:

12451

Date Instructed:

14-May-2020

No. of Samples:

Turnaround (Wkdays):

4

\_

Results Due:

22-May-2020

Date Approved: Approved By: 19-May-2020

Color March

Details:



| Client: Priority Geotechnical Ltd |         | Che   | emtest.  | Job No.:  | 20-12272    | 20-12272    | 20-12272    | 20-12272    |
|-----------------------------------|---------|-------|----------|-----------|-------------|-------------|-------------|-------------|
| Quotation No.: Q20-19850          |         | Chemi | est Sar  | nple ID.: | 1004496     | 1004497     | 1004498     | 1004499     |
|                                   |         | C     | lient Sa | mple ID.: | P1          | P2          | P3          | P4          |
|                                   |         | 5     | ample I  | Location: | 2MXM76      | 2MXM76      | 2MXM76      | 2MXM76      |
|                                   |         |       | Sam      | ple Type: | WATER       | WATER       | WATER       | WATER       |
|                                   |         |       | Date S   | Sampled:  | 06-May-2020 | 07-May-2020 | 08-May-2020 | 11-May-2020 |
| Determinand                       | Accred. | SOP   | Units    | LOD       |             |             |             |             |
| Chloride                          | U       | 1220  | mg/l     | 1.0       | 68          | 61          | 70          | 81          |
| Sulphate                          | U       | 1220  | mg/l     | 1.0       | < 1.0       | 1.0         | 2.0         | 3.7         |
| Calcium                           | U       | 1415  | mg/l     | 5.0       | 16          | 8.8         | 11          | 6.4         |
| Sodium                            | U       | 1415  | mg/l     | 0.50      | 80          | 70          | 53          | 86          |
| Arsenic (Dissolved)               | U       | 1450  | µg/I     | 1.0       | < 1.0       | < 1.0       | < 1.0       | < 1.0       |
| Cadmium (Dissolved)               | U       | 1450  | µg/l     | 0.080     | < 0.080     | < 0.080     | < 0.080     | < 0.080     |
| Chromium (Dissolved)              | U       | 1450  | NgA      | 1.0       | 1.0         | 1.2         | 1.2         | < 1.0       |
| Copper (Dissolved)                | U       | 1450  | ид/1     | 1.0       | < 1.0       | < 1.0       | 1.5         | 4.6         |
| Mercury (Dissolved)               | U       | 1450  | µg/l     | 0.50      | < 0.50      | < 0.50      | < 0.50      | 3.3         |
| Nickel (Dissolved)                | U       | 1450  | μg/ῖ     | 1.0       | < 1.0       | < 1.0       | < 1.0       | 1.3         |
| Lead (Dissolved)                  | U       | 1450  | µg/l     | 1.0       | < 1.0       | < 1.0       | < 1.0       | 1.1         |
| Selenium (Dissolved)              | U       | 1450  | µg/l     | 1.0       | 1.2         | 1.7         | 1.1         | 2.6         |
| Tin (Dissolved)                   | U       | 1450  | µg/l     | 1.0       | 3.0         | 1.7         | < 1.0       | < 1.0       |
| Vanadium (Dissolved)              | U       | 1450  | µg/l     | 1.0       | 1.3         | 1.6         | 1.8         | 1.3         |
| Zinc (Dissolved)                  | U       | 1450  | µg/l     | 1.0       | < 1.0       | < 1.0       | < 1.0       | 40          |
| Dibutyl Tin                       | N       | 1730  | µg/l     | 0.050     | < 0.050     | < 0.050     | < 0.050     | < 0.050     |
| Tributyl Tin                      | N.      | 1730  | μg/Ι     | 0.0500    | < 0.050     | < 0.050     | < 0.050     | < 0.050     |

Page 2 of 4



### st Methods

| 1730                                | 1450  | 1415   | 1220   | SOP                 |
|-------------------------------------|---|--|--|---------------------|
| 1730 Organo-Leads                   | 1450 Metals in Waters by ICP-MS   | Cations in Waters by ICP-MS  | Anions, Alkalinity & Ammonium in Waters  | Title               |
| Organo-Leads                        | Metals, including: Antimony, Arsenic; Barium; Berylium; Boron; Cadmium; Chromium; Cobalt; Filtration of samples followed by direct Copper; Lead, Manganese; Mercury; determination by inductively coupled pl Molybdenum; Nickel; Selenium; Tin; Variadium; mass spectrometry (ICP-MS); Zinc | 1415 Cations in Waters by ICP-MS Sodium; Potassium; Calcium; Magnesium           | Fluoride: Chloride: Nitrite: Nitrate: Total: Oxidisable Nitrogen (TON): Sulfate: Phosphate: Alkalinity: Ammonium | Parameters included |
| Solvent extraction / GCMS detection | Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS). | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.  | Method summary      |



Key

U UKAS accredited

M MCERTS and UKAS accredited

N Unaccredited

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

T This analysis has been subcontracted to an unaccredited laboratory

I/S Insufficient Sample

U/S Unsuitable Sample

N/E not evaluated

< "less than"

> "greater than"

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, Phenois

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





Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

### **Final Report**

Report No.:

20-12264-1

Initial Date of Issue:

19-May-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

Quotation No.:

Q20-19850

Date Received:

13-May-2020

Order No.:

12451

Date Instructed:

14-May-2020

No. of Samples:

4

Turnaround (Wkdays):

Results Due:

22-May-2020

Date Approved:

19-May-2020

Approved By:

Details:



| Client: Priority Geotechnical Ltd | (A) = (A) = (A) | Ch    | emtest.   | Job No.:  | 20-12264    | 20-12264    | 20-12264    | 20-12264    |
|-----------------------------------|-----------------|-------|-----------|-----------|-------------|-------------|-------------|-------------|
| Quotation No.: Q20-19850          |                 | Chemi | test San  | nple ID.: | 1004464     | 1004465     | 1004466     | 1004467     |
|                                   |                 | C     | lient Sar | mple ID.: | P5          | P6          | P7          | P8          |
|                                   |                 |       | Sample I  | ocation:  | 2MXM14      | 2MXM14      | 2MXM14      | 2MXM14      |
|                                   |                 |       | Samp      | ole Type: | WATER       | WATER       | WATER       | WATER       |
|                                   |                 |       | Date 5    | ampled:   | 18-Mar-2020 | 25-Mar-2020 | 14-Apr-2020 | 12-May-2020 |
| Determinand                       | Accred.         | SOP   | Units     | LOD       |             |             |             |             |
| Chloride                          | U               | 1220  | mg/l      | 1.0       | [B] 230     | [B] 170     | (B) 65      | 36          |
| Sulphate                          | U               | 1220  | mg/l      | 1.0       | [B] 7.0     | [B] 12      | [B] 48      | 20          |
| Calcium                           | U               | 1415  | mg/l      | 5.0       | [B] 22      | [B] 9.5     | [B] 30      | 18          |
| Sodium                            | U               | 1415  | mg/l      | 0.50      | [B] 150     | [B] 120     | [B] 50      | 15          |
| Arsenic (Dissolved)               | U               | 1450  | µg/l      | 1.0       | [B] 1.3     | [B] < 1.0   | (B) < 1.0   | < 1.0       |
| Cadmium (Dissolved)               | U               | 1450  | µg/l      | 0.080     | [B] < 0.080 | [B] < 0.080 | [B] < 0.080 | < 0.080     |
| Chromium (Dissolved)              | U               | 1450  | µg/l      | 1.0       | [B] 2.9     | [B] 3.4     | [B] 1.3     | < 1.0       |
| Copper (Dissolved)                | U               | 1450  | рд/1      | 1.0       | [B] 2.8     | [B] 7.3     | [B] 8.3     | 5.4         |
| Mercury (Dissolved)               | U               | 1450  | µg/t      | 0.50      | [B] 0.57    | [B] 27      | [B] < 0.50  | < 0.50      |
| Nickel (Dissolved)                | U               | 1450  | µg/ī      | 1.0       | [B] 1.4     | [B] < 1.0   | [B] 2.5     | 1.0         |
| Lead (Dissolved)                  | U               | 1450  | µg/l      | 1.0       | [B] < 1.0   | [B] 5.9     | (B) < 1.0   | < 1.0       |
| Selenium (Dissolved)              | U               | 1450  | µg/l      | 1.0       | [B] 4.6     | [B] 6.4     | [B] 2.5     | < 1.0       |
| Tin (Dissolved)                   | U               | 1450  | µg/l      | 1.0       | [B] < 1.0   | [B] 2.9     | [B] 6.3     | < 1.0       |
| Vanadium (Dissolved)              | U               | 1450  | µg/l      | 1.0       | [B] 4.0     | [B] 4.8     | [B] 6.7     | 4.9         |
| Zinc (Dissolved)                  | U               | 1450  | µg/I      | 1.0       | [B] 7.8     | [B] 69      | [B] 2.8     | 1.6         |
| Dibutyl Tin                       | N               | 1730  | µg/I      | 0.050     | < 0.050     | < 0.050     | < 0.050     | < 0.050     |
| Tributyl Tin                      | N               | 1730  | µg/l      | 0.0500    | < 0.050     | < 0.050     | < 0.050     | < 0.050     |

Page 2 of 5



In accordance with UKAS Policy on Deviating Samples TPS 63. Chemitest 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 solicy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below the reapplicable the analysis remains UKAS/MCERTs accredited but the results may be compromised. Sample Ref: Sample ID: P PS Deviations Sample Location: 2MXM14 2MXM14 Sampled Date: 25-Mar-2020 18-Mar-2020 Deviation Code(s):

Sample: 1004464

1004466 1004465

P7

2MXM14

14-Apr-2020

В 8

Plastic Bottle 1000ml

8

Plastic Bottle 1000ml

Containers Received:



### **Test Methods**

| SOP  | Title                                      | Parameters included  | Method summary   |
|------|--|--|--|
| 1220 | Anions, Alkalinity & Ammonium<br>in Waters | Fluoride; Chloride: Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.        |
| 1415 | Cations in Waters by ICP-MS                | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS). |
| 1450 | Metals in Waters by ICP-MS                 | Metals, including: Antimony, Arsenic; Barium,<br>Beryllium; Boron; Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | determination by inductively coupled plasma                                      |
| 1730 | Organo-Leads                               | Organo-Leads   | Solvent extraction / GCMS detection  |

Page 4 of 5



### Report Information

### Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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





CB8 OAL Tel: 01638 606070 Email: info@chemtest.com

### **Final Report**

Report No.:

20-09761-1

Initial Date of Issue:

06-Apr-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

Quotation No.:

Q20-19850

Date Received:

30-Mar-2020

Order No.:

12451

Date Instructed:

31-Mar-2020

No. of Samples:

4

Turnaround (Wkdays):

Results Due:

08-Apr-2020

Date Approved:

06-Apr-2020

Approved By:

Details:

| Project: P19188 Howth             |        |       |          |                      |             |             |             |
|-----------------------------------|--------|-------|----------|----------------------|-------------|-------------|-------------|
| Client: Priority Geotechnical Ltd |        | Che   | mtest    | Chemtest Job No.:    | 20-09761    | 20-09761    | 20-09761    |
| Quotation No.: Q20-19850          |        | Chemt | est Sar  | Chemtest Sample ID.: | 983838      | 993937      | 983938      |
|                                   |        | ō     | ient Sai | Client Sample ID.:   | PI          | P2          | P3          |
|                                   |        | S     | ample    | Sample Location:     | 2MCM28      | 2MCM28      | 2MCM28      |
|                                   |        |       | Samp     | Sample Type:         | WATER       | WATER       | WATER       |
|                                   |        |       | Date 5   | Date Sampled:        | 23-Mar-2020 | 24-Mar-2020 | 25-Mar-2020 |
| Determinand                       | Accred | SOP   | Units    | 100                  |             | 1           |             |
| Chloride                          | ם      | 1220  | Ng/I     | 1.0                  | 170         | 220         | 110         |
| Sulphate                          | ס      | 1220  | ₽6m      | 1.0                  | < 1.0       | < 1.0       | < 1.0       |
| Calcium                           | ח      | 1415  | l/gm     | 5.0                  | 40          | 43          | 35          |
| Sodium                            | ס      | 1415  | Ng/I     | 0.50                 | 150         | 140         | 76          |
| Arsenic (Dissolved)               | n      | 1450  | hgų.     | 1.0                  | < 1.0       | < 1.0       | < 1.0       |
| Cadmium (Dissolved)               | 0      | 1450  | hgy      | 0.080                | < 0.080     | < 0.080     | < 0.080     |
| Chromium (Dissolved)              | ח      | 1450  | hg4      | 1.0                  | 1.4         | 1.4         | < 1.0       |
| Copper (Dissolved)                | n      | 1450  | l/gri    | 1.0                  | < 1.0       | 1.2         | 1.0         |
| Mercury (Dissolved)               | ח      | 1450  | 1/6ri    | 0.50                 | < 0.50      | < 0.50      | < 0.50      |
| Nickel (Dissolved)                | n      | 1450  | l/gu     | 1.0                  | < 1.0       | 1.1         | < 1.0       |
| Lead (Dissolved)                  | n      | 1450  | 1/6ri    | 1.0                  | < 1.0       | < 1.0       | < 1.0       |
| Selenium (Dissolved)              | ס      | 1450  | l/grt    | 1.0                  | 4.1         | 5.1         | 3.2         |
| Tin (Dissolved)                   | n      | 1450  | l/gri    | 1.0                  | < 1.0       | < 1.0       | < 1.0       |
| Vanadium (Dissolved)              | n      | 1450  | hgd      | 1.0                  | 1.7         | 2.0         | 1.3         |
| Zinc (Dissolved)                  | n      | 1450  | hgd      | 1.0                  | 3.0         | 4.2         | 1.5         |
| Dibutyl Tin                       | z      | 1730  | ligit.   | 0.050                | < 0.050     | < 0.050     | < 0.050     |
| Tributyl Tin                      | z      | 1730  | V6ri     | 0.0500               | < 0.050     | < 0.050     | < 0.050     |



### **Test Methods**

| SOP  | Title                                   | Parameters included  | Method summary   |
|------|---|--|--|
| 1220 | Anions, Alkalinity & Ammonium in Waters | Fluoride; Chloride; Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.        |
| 1415 | Cations in Waters by ICP-MS             | Sodium; Potassium, Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS). |
| 1450 | Metals in Waters by ICP-MS              | Metals, including: Antimony, Arsenic: Barium,<br>Beryllium; Boron: Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury,<br>Molybdenum; Nickel; Selenium, Tin; Vanadium;<br>Zinc | determination by inductively coupled plasma                                      |
| 1730 | Organo-Leads                            | Organo-Leads   | Solvent extraction / GCMS detection  |

Page 3 of 4



### Report Information

### Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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





### **Final Report**

Report No.:

20-08347-1

Initial Date of Issue:

24-Mar-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

**Quotation No.:** 

Q20-19850

Date Received:

16-Mar-2020

Order No.:

P2451

Date Instructed:

17-Mar-2020

4 No. of Samples:

Turnaround (Wkdays):

Results Due:

25-Mar-2020

Date Approved:

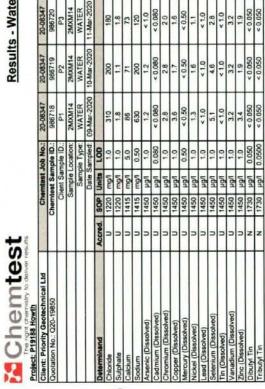
24-Mar-2020

Approved By:

Details:

Glynn Harvey, Technical Manager

## Results - Water





### **Test Methods**

| SOP  | Title                                   | Parameters included  | Method summary   |
|------|---|--|--|
| 1220 | Anions, Alkalinity & Ammonium in Waters | Fluoride; Chloride; Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.        |
| 1415 | Cations in Waters by ICP-MS             | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS). |
| 1450 | Metals in Waters by ICP-MS              | Metals, including: Antimony; Azsenic; Barium;<br>Beryllium; Boron; Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | determination by inductively coupled plasma                                      |
| 1730 | Organo-Leads                            | Organo-Leads   | Solvent extraction / GCMS detection  |

Page 3 of 4



### Report Information

### Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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





Depot Road CB8 OAL Tel: 01638 606070 Email: info@chemtest.com

### **Final Report**

Report No.:

20-13475-1

Initial Date of Issue:

04-Jun-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Colette Kelly

Contact(s): Project

P19188 Howth

**Quotation No.:** 

Q20-19850

Date Received:

28-May-2020

12451

Date Instructed:

28-May-2020

Order No.:

No. of Samples:

Turnaround (Wkdays):

Results Due:

05-Jun-2020

Date Approved:

04-Jun-2020

Approved By:

Details:

Glynn Harvey, Technical Manager

Results - Water





### Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemiest 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 accredited but the results may be compromised.

| Sample: | Sample Ref: | Sample ID: | Sample<br>Location: | Sampled<br>Date: | Deviation Code(s): | Containers<br>Received:  |
|---------|-------------|------------|---------------------|------------------|--------------------|--------------------------|
| 1010029 |             | P5         | 3MXM28              | 01-Apr-2020      | В                  | Plastic Bottle<br>1000ml |
| 1010030 |             | P6         | 3MXM28              | 08-Apr-2020      | В                  | Plastic Bottle<br>1000ml |
| 1010031 |             | P7         | 3MXM28              | 14-Apr-2020      | В                  | Plastic Bottle<br>1000ml |

Page 3 of 5



### **Test Methods**

| SOP  | Title                                   | Parameters included  | Method summary   |
|------|---|--|--|
| 1220 | Anions, Alkalinity & Ammonium in Waters | Fluoride; Chloride; Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.  |
| 1415 | Cations in Waters by ICP-MS             | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).                                 |
| 1450 | Metals in Waters by ICP-MS              | Metals, including: Antimony, Arsenic: Barium:<br>Beryllium: Boron: Cadmium: Chromium; Cobalt:<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | Fittration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS). |
| 1730 | Organo-Leads                            | Organo-Leads   | Solvent extraction / GCMS detection  |

Page 4 of 5



Key

U UKAS accredited

M MCERTS and UKAS accredited

N Unaccredited

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

T This analysis has been subcontracted to an unaccredited laboratory

I/S Insufficient Sample

U/S Unsuitable Sample

N/E not evaluated

< "less than"

> "greater than"

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





Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 60670
Email: infot@chemtest.com

13-May-2020

### **Final Report**

Report No.:

Initial Date of Issue: 19-May-2020

Client Priority Geotechnical Ltd

Client Address: Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

20-12265-1

Contact(s): Colette Kelly

Project P19188 Howth

Quotation No.: Q20-19850

12451 Date Instructed: 14-May-2020

Date Received:

No. of Samples: 4

Turnaround (Wkdays): 7

: 7 Results Due: 22-May-2020

Date Approved: 19-May-2020

Approved By:

Order No.:

Details:



### Results - Water

| Client: Priority Geotechnical Ltd |         | Che   | mtest.    | Job No.:  | 20-12265    | 20-12265    | 20-12265    | 20-12265    |
|-----------------------------------|---------|-------|-----------|-----------|-------------|-------------|-------------|-------------|
| Quotation No.: Q20-19850          |         | Chemi | est Sar   | nple ID.: | 1004468     | 1004469     | 1004470     | 1004471     |
|                                   |         | C     | lient Sar | mple ID.: | P5          | P6          | P7          | P8          |
|                                   |         | 5     | sample I  | Location: | 3MXM14      | 3MXM14      | 3MXM14      | 3MXM14      |
|                                   |         |       | Samp      | ole Type: | WATER       | WATER       | WATER       | WATER       |
|                                   |         |       | Date S    | Sampled:  | 18-Mar-2020 | 25-Mar-2020 | 14-Apr-2020 | 12-May-2020 |
| Determinand                       | Accred. | SOP   | Units     | LOD       |             |             |             |             |
| Chloride                          | U       | 1220  | mg/l      | 1.0       | [B] 190     | [B] 150     | [B] 180     | 36          |
| Sulphate                          | U       | 1220  | mg/l      | 1.0       | [B] 4.4     | [B] 6.6     | [B] 42      | 16          |
| Calcium                           | u       | 1415  | mg/I      | 5.0       | [8] 9.9     | [B] 9.8     | [B] 12      | 15          |
| Sodium                            | U       | 1415  | mg/l      | 0.50      | [B] 130     | [8] 99      | [B] 92      | 18          |
| Arsenic (Dissolved)               | U       | 1450  | hg/l      | 1.0       | [B] < 1.0   | [B] < 1.0   | [B] 1.5     | < 1.0       |
| Cadmium (Dissolved)               | U       | 1450  | ид/1      | 0.080     | [B] < 0.080 | [B] < 0.080 | [B] < 0.080 | < 0.080     |
| Chromium (Dissolved)              | U       | 1450  | μg/Ι      | 1.0       | [B] 2.3     | [B] < 1.0   | [B] 2.6     | < 1.0       |
| Copper (Dissolved)                | U       | 1450  | µg/I      | 1.0       | [B] 2.3     | [B] 2.0     | [B] 11      | 3.3         |
| Mercury (Dissolved)               | U       | 1450  | µg/l      | 0.50      | [B] < 0.50  | [B] 8.3     | [B] < 0.50  | < 0.50      |
| Nickel (Dissolved)                | U       | 1450  | ид/1      | 1.0       | [B] < 1.0   | [B] < 1.0   | [B] 2.0     | < 1.0       |
| Lead (Dissolved)                  | U       | 1450  | µg/I      | 1.0       | [B] < 1.0   | [B] 1.8     | [B] < 1.0   | < 1.0       |
| Selenium (Dissolved)              | U       | 1450  | µg/l      | 1.0       | [B] 4.8     | [B] 2.7     | [B] 5.5     | < 1.0       |
| Tin (Dissolved)                   | U       | 1450  | µg/l      | 1.0       | [B] < 1.0   | [B] 1.2     | [B] 2300    | 93          |
| Vanadium (Dissolved)              | U       | 1450  | µg/l      | 1.0       | [B] 4.0     | [B] 1.9     | [B] 11      | 4.4         |
| Zinc (Dissolved)                  | U       | 1450  | µg/I      | 1.0       | [B] 3.5     | [B] 31      | [B] 6.2     | 2.0         |
| Dibutyl Tin                       | N       | 1730  | µg/l      | 0.050     | < 0.050     | < 0.050     | < 0.050     | < 0.050     |
| Tributyl Tin                      | N       | 1730  | µg/l      | 0.0500    | < 0.050     | < 0.050     | < 0.050     | < 0.050     |

Page 2 of 5



In accordance with UKAS Policy on Deviating Samples TPS 63, Chemitest 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 teat(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 UKASMCERTs accredited but the results may be compromised.

| Sample: | Sample Ref: | Sample ID: | Sample<br>Location: | Sampled<br>Date: | Deviation Code(s): | Container              |
|---------|-------------|------------|---------------------|------------------|--------------------|------------------------|
| 1004468 |             | P5         | 3MXM14              | 18-Mar-2020      | В                  | Plastic Bott<br>1000ml |
| 1004469 |             | 3          | 3MXM14              | 25-Mar-2020      | В                  | Plastic Bott<br>1000ml |
| 1004470 |             | P7         | 3MXM14              | 14-Apr-2020      | 8                  | Plastic Tut            |



| SOP  | Title                                   | Parameters included  | Method summary   |
|------|---|--|--|
| 1220 | Anions, Alkalinity & Ammonium in Waters | Fluoride: Chloride: Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate.<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.        |
| 1415 | Cations in Waters by ICP-MS             | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS). |
| 1450 | Metals in Waters by ICP-MS              | Metals, including: Antimony, Arsenic, Barium;<br>Beryllium; Boron; Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | determination by inductively coupled plasma                                      |
| 1730 | Organo-Leads                            | Organo-Leads   | Solvent extraction / GCMS detection  |



#### Report Information

#### Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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



Depot Road Newmarket CB8 0AL Tel: 01638 606070 Email: info@chemtest.com

# **Final Report**

Report No.:

20-09760-1

Initial Date of Issue:

06-Apr-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

**Quotation No.:** 

Q20-19850

Date Received:

30-Mar-2020

Order No.:

12451

Date Instructed:

31-Mar-2020

No. of Samples:

4

Turnaround (Wkdays):

**Results Due:** 

08-Apr-2020

Date Approved:

06-Apr-2020

Approved By:

Details:

Glynn Harvey, Technical Manager

Results - Water

Chemtest

| Cilent: Priority Geotechnical Ltd |         | S     | emtest,           | Chemtest Job No.:    | 20-09760    | 20-09760    | 20-09760               | 8    |
|-----------------------------------|---------|-------|-------------------|----------------------|-------------|-------------|------------------------|------|
| Quotation No.: Q20-19850          |         | Chemi | lest Sar          | Chemtest Sample ID.: | 993932      | 993933      | 993934                 | 86   |
|                                   |         | O     | lient Sar         | Client Sample ID.:   | P1          | P2          | P3                     |      |
|                                   |         | 0,    | Sample !          | Sample Location:     | 3MXM28      | 3MXM28      | 3MXM28                 | 3M   |
|                                   |         |       | Samp              | Sample Type:         | WATER       | WATER       | WATER                  | ×.   |
|                                   |         |       | Date S            | Date Sampled:        | 23-Mar-2020 | 24-Mar-2020 | 25-Mar-2020            | 27-M |
| Determinand                       | Accred. | SOP   | Units             | rop                  |             |             | NAME OF TAXABLE PARTY. | -    |
| Chloride                          | n       | 1220  | ng/l              | 1.0                  | 98          | 110         | 59                     |      |
| Sulphate                          | ח       | 1220  | l/6m              | 1.0                  | < 1.0       | × 1.0       | <1,0                   |      |
| Calcium                           | ח       | 1415  | ſ/gm              | 5.0                  | 31          | 31          | 21                     |      |
| Sodium                            | ח       | 1415  | νgω               | 0.50                 | 71          | 73          | 44                     |      |
| Arsenic (Dissolved)               | n       | 1450  | l/6rt             | 1.0                  | < 1.0       | < 1.0       | < 1.0                  |      |
| Cadmium (Dissolved)               | n       | 1450  | V6ri              | 0.080                | < 0.080     | < 0.080     | < 0.080                | ٧    |
| Chromium (Dissolved)              | ח       | 1450  | 1/64              | 1.0                  | < 1.0       | < 1.0       | <1.0                   |      |
| Copper (Dissolved)                | n       | 1450  | l/6rt             | 1.0                  | < 1.0       | c 1.0       | < 1.0                  |      |
| Mercury (Dissolved)               | n       | 1450  | /6d               | 0.50                 | < 0.50      | < 0.50      | < 0.50                 | 1    |
| Vickel (Dissolved)                | n       | 1450  | V6rl              | 1.0                  | < 1.0       | c 1.0       | < 1.0                  | L    |
| Lead (Dissolved)                  | ח       | 1450  | V6ri              | 1.0                  | < 1.0       | < 1.0       | < 1.0                  |      |
| Selenium (Dissolved)              | ם       | 1450  | l/gr              | 1.0                  | 1.7         | 1.3         | < 1.0                  |      |
| Tin (Dissolved)                   | n       | 1450  | l <sub>l</sub> gq | 1.0                  | < 1.0       | < 1.0       | < 1.0                  |      |
| Vanadium (Dissolved)              | n       | 1450  | l/gu              | 1.0                  | < 1.0       | <1.0        | < 1.0                  |      |
| Zinc (Dissolved)                  | ח       | 1450  | l/gu              | 1.0                  | 1.8         | < 1.0       | < 1.0                  |      |
| Dibutyl Tin                       | z       | 1730  | l/gu              | 0.050                | < 0.050     | < 0.050     | < 0.050                | ٧    |
| Inbutyl Tin                       | z       | 1730  | NO.               | 0.0500               | < 0.050     | < 0.050     | < 0.050                | v    |

Page 1 of 4



| SOP  | Title                                   | Parameters included  | Method summary   |
|------|---|--|--|
| 1220 | Anions, Alkalinity & Ammonium in Waters | Fluoride: Chloride: Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.        |
| 1415 | Cations in Waters by ICP-MS             | Sodium, Potassium, Calcium, Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS). |
| 1450 | Metals in Waters by ICP-MS              | Metals, including: Antimony; Arsenic: Barium;<br>Beryllium: Boron; Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | determination by inductively coupled plasma                                      |
| 1730 | Organo-Leads                            | Organo-Leads   | Solvent extraction / GCMS detection  |



#### Report Information

#### Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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, Phenois

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





Depot Road Newmarket CB8 OAL Tel: 01638 606070

# **Final Report**

Report No.:

20-08348-1

Initial Date of Issue:

24-Mar-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

**Quotation No.:** 

Q20-19850

Date Received:

16-Mar-2020

Order No.:

12451

Date Instructed:

17-Mar-2020

No. of Samples:

Turnaround (Wkdays): 7

Results Due:

25-Mar-2020

Date Approved:

24-Mar-2020

Approved By:

Details:

Glynn Harvey, Technical Manager

| CONTRACT OF THE PARTY OF THE PA |         |       |           |                      |             |             |             |       |
|--|---------|-------|-----------|----------------------|-------------|-------------|-------------|-------|
| Client: Priority Geotechnical Ltd  |         | 5     | emtest    | Chemtest Job No.:    | 20-08348    | 20-08348    | 20-08348    | 20-0  |
| Quotation No.: Q20-19850   |         | Chemi | test Sar  | Chemtest Sample ID.: | 986722      | 986723      | 986724      | 986   |
|  |         | O     | lient Sa  | Client Sample ID.:   | P1          | P2          | 23          | -     |
|  |         | 0,    | Sample    | Sample Location:     | 3MXM14      | 3MXM14      | 3MXM14      | 3MD   |
|  |         |       | Sam       | Sample Type:         | WATER       | WATER       | WATER       | WA    |
|  |         |       | Date 5    | Date Sampled:        | 09-Mar-2020 | 10-Mar-2020 | 11-Mar-2020 | 13-Ma |
| Determinand  | Accred. | SOP   | SOP Units | 700                  |             |             |             | 100   |
| Chloride   | n       | 1220  | L/Gm      | 1.0                  | 280         | 170         | 160         | 6.3   |
| Sulphate   | ח       | 1220  | l/gm      | 1.0                  | < 1.0       | < 1.0       | < 1.0       |       |
| Calcium  | n       | 1415  | T/gm      | 5.0                  | 42          | 99          | 49          |       |
| Sodium   | 2       | 1415  | T/gm      | 0.50                 | 120         | 160         | 73          |       |
| Arsenic (Dissolved)  | n       | 1450  | hgu       | 1.0                  | < 1.0       | < 1.0       | < 1.0       | ٧     |
| Cadmium (Dissolved)  | n       | 1450  | l/gu      | 0.080                | < 0.080     | < 0.080     | < 0.080     | × 0   |
| Chromium (Dissolved)   | ח       | 1450  | l/gr      | 1.0                  | 1.1         | < 1.0       | < 1.0       | *     |
| Copper (Dissolved)   | n       | 1450  | hg4       | 1.0                  | 1.1         | 1.5         | 1.5         |       |
| Mercury (Dissolved)  | n       | 1450  | ν6π       | 0.50                 | 3.7         | 1.3         | 69.0        | 0     |
| Nickel (Dissolved)   | n       | 1450  | μg/l      | 1.0                  | < 1.0       | < 1.0       | < 1.0       | *     |
| Lead (Dissolved)   | ח       | 1450  | hg4       | 1.0                  | < 1.0       | < 1.0       | < 1.0       | ٧     |
| Selenium (Dissolved)   | ס       | 1450  |           | 1.0                  | 4.4         | 8,8         | 2.7         |       |
| Fin (Dissolved)  | n       | 1450  | l/gri     | 1.0                  | < 1.0       | < 1.0       | < 1.0       | ٧     |
| Vanadium (Dissolved)   | n       | 1450  | 1/6/      | 1.0                  | 2.3         | 3.5         | 2.9         |       |
| Zinc (Dissolved)   | n       | 1450  | √6π       | 1.0                  | < 1.0       | 1.3         | 1.3         |       |
| Dibutyl Tin  | z       | 1730  | hg4       | 0.050                | < 0.050     | < 0.050     | < 0.050     | 0 >   |
| Tributyl Tin   | z       | 1730  | _         | µg/1 0.0500          | < 0.050     | < 0.050     | < 0.050     | 0 >   |



| SOP  | Title                                   | Parameters included  | Method summary   |
|------|---|--|--|
| 1220 | Anions, Alkalinity & Ammonium in Waters | Fluoride; Chloride; Nîtrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.        |
| 1415 | Cations in Waters by ICP-MS             | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS). |
| 1450 | Metals in Waters by ICP-MS              | Metals, including: Antimony; Arsenic, Barium;<br>Beryllium; Boron; Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | determination by inductively coupled plasma                                      |
| 1730 | Organo-Leads                            | Organo-Leads   | Solvent extraction / GCMS detection  |



#### Report Information

#### Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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





**Final Report** 

Chemtest **Eurofins Chemtest Ltd** Depot Road Newmarket CB8 OAL Tel: 01638 606070 Email: info@chemtest.com

Report No.: 20-19276-1

Initial Date of Issue:

31-Jul-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

**Quotation No.:** 

Q20-19850

Date Received:

24-Jul-2020

Order No.:

12451

Date Instructed:

24-Jul-2020

No. of Samples:

2

Turnaround (Wkdays):

Results Due:

03-Aug-2020

Date Approved:

31-Jul-2020

Approved By:

Details:

Glynn Harvey, Technical Manager

Results - Water

| Client: Priority Geotechnical Ltd |         | CF    | emtest.  | Chemtest Job No.:    | 20-19276    | 20-19276    |
|-----------------------------------|---------|-------|----------|----------------------|-------------|-------------|
| Quotation No.: Q20-19850          |         | Chemi | ost San  | Chemtest Sample ID.: | 1037555     | 1037556     |
|                                   |         | O     | lent Sar | Client Sample ID.:   | P7          | P8          |
|                                   |         | 65    | ample (  | Sample Location:     | 4mxm90      | 4mxm90      |
|                                   |         |       | Samp     | Sample Type:         | WATER       | WATER       |
|                                   |         |       | Date S   | Date Sampled:        | 26-Jun-2020 | 23-Jul-2020 |
| Determinand                       | Accred. | SOP   | Units    | COD                  |             |             |
| Chloride                          | ס       | 1220  | f-gm     | 1.0                  | [8] 170     | 150         |
| Sulphate                          | ח       | 1220  | l/gm     | 1.0                  | 96 (B)      | 110         |
| Calcium                           | ח       | 1415  | l/gm     | 5.0                  | (8) 11      | 15          |
| Sodium                            | ח       | 1415  | ₩<br>U   | 0.50                 | [B] 160     | 150         |
| Arsenic (Dissolved)               | ס       | 1450  | νδd      | 1.0                  | [8] 4.0     | 3.1         |
| Cadmium (Dissolved)               | ם       | 1450  | Ng4      | 0.080                | (B) < 0.080 | < 0.080     |
| Chromium (Dissolved)              | ס       | 1450  | l/gu     | 1.0                  | [8] 6.2     | 5.5         |
| Capper (Dissolved)                | ס       | 1450  | V6d      | 1.0                  | [B] 29      | 23          |
| Mercury (Dissolved)               | ס       | 1450  | Ngư      | 0.50                 | (B) < 0.50  | < 0.50      |
| Vickel (Dissolved)                | ם       | 1450  | Ngu.     | 1.0                  | [8] 6.7     | 5.2         |
| Lead (Dissolved)                  | ס       | 1450  | l/gu     | 1.0                  | [B] < 1.0   | < 1.0       |
| Selenium (Dissolved)              | ס       | 1450  | ηbdγ     | 1.0                  | [8] 4.1     | 3.6         |
| Tin (Dissolved)                   | ח       | 1450  | hgu,     | 1.0                  | [8] 2.5     | 1.6         |
| /anadium (Dissolved)              | ח       | 1450  | l/gu     | 1.0                  | [B] 31      | 27          |
| Zinc (Dissolved)                  | כ       | 1450  | l/gu     | 1.0                  | [8] 8.1     | 8.8         |
| Dibutyl Tin                       | z       | 1730  | l/gu     | 0.050                | < 0.050     | < 0.050     |
| Tributyl Tin                      | z       | 1730  | lou.     | 0.0500               | < 0.050     | < 0.050     |

#### Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemitest 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 accredited but the results may be compromised.

| Sample: | Sample Ref: | Sample ID: | Sample<br>Location: | Sampled<br>Date: | Deviation Code(s): | Containers<br>Received:  |
|---------|-------------|------------|---------------------|------------------|--------------------|--------------------------|
| 1037555 |             | P7         | 4mxm90              | 26-Jun-2020      | В                  | Plastic Bottle<br>1000ml |

# Test Methods

| SOP  | Title                                   | Parameters included  | Method summary   |
|------|---|--|--|
| 1220 | Anions, Alkalinity & Ammonium in Waters | Fluoride; Chloride; Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.  |
| 1415 | Cations in Waters by ICP-MS             | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).                                 |
| 1450 | Metals in Waters by ICP-MS              | Metals, including: Antimony, Arsenic; Barium;<br>Beryllium; Boron; Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS). |
| 1730 | Organo-Leads                            | Organo-Leads   | Solvent extraction / GCMS detection  |

#### Report Information

Key U **UKAS** accredited MCERTS and UKAS accredited

Unaccredited

This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for

This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited SN for this analysis

This analysis has been subcontracted to an unaccredited laboratory T

Insufficient Sample I/S

U/S Unsuitable Sample

N/E not evaluated

"less than"

"greater than"

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, Phenois

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

Page 5 of 5



**Eurofins Chemtest Ltd.** Depot Road CB8 OAL Tel: 01638 606070 Email: Info@chemtest.com

Chemtest

**Final Report** 

Report No.:

UKAS

20-17642-1

Initial Date of Issue:

14-Jul-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

**Quotation No.:** 

Q20-19850

Date Received:

10-Jul-2020

Order No.:

12451

Date Instructed:

10-Jul-2020

No. of Samples:

2

Turnaround (Wkdays):

Results Due:

20-Jul-2020

Date Approved:

14-Jul-2020

Approved By:

Details:

#### Project: P19188 Howth

| Client: Priority Geotechnical Ltd |         | Che   | emtest.  | Job No.:  | 20-17642    | 20-17642      |
|-----------------------------------|---------|-------|----------|-----------|-------------|---------------|
| Quotation No.: Q20-19850          |         | Chemi | est Sar  | nple ID.: | 1029588     | 1029589       |
|                                   |         | C     | lient Sa | mple ID.: | P7          | P8            |
|                                   |         | S     | ample I  | Location: | 4mxm 76     | 4mxm 76       |
|                                   |         |       | Samp     | ple Type: | WATER       | WATER         |
|                                   |         |       | Date 5   | sampled:  | 10-Jun-2020 | 08-Jul-2020   |
| Determinand                       | Accred. | SOP   | Units    | LOD       |             | Marine Marine |
| Chloride                          | U       | 1220  | mg/l     | 1.0       | [B] 180     | 150           |
| Sulphate                          | U       | 1220  | mg/l     | 1.0       | [B] 60      | 39            |
| Calcium                           | U       | 1415  | mg/l     | 5.0       | (B) < 5.0   | 19            |
| Sodium                            | U       | 1415  | mg/l     | 0.50      | [B] 150     | 73            |
| Arsenic (Dissolved)               | U       | 1450  | µg/l     | 1.0       | [B] 1.5     | 1.1           |
| Cadmium (Dissolved)               | U       | 1450  | µд/1     | 0.080     | [B] < 0.080 | < 0.080       |
| Chromium (Dissolved)              | U       | 1450  | µg/l     | 1.0       | [B] 5.7     | 4.8           |
| Copper (Dissolved)                | U       | 1450  | µg/I     | 1.0       | [B] 26      | 20            |
| Mercury (Dissolved)               | U       | 1450  | ид/1     | 0.50      | (B) < 0.50  | < 0.50        |
| Nickel (Dissolved)                | U       | 1450  | µg/l     | 1.0       | [B] 8.4     | 6.1           |
| Lead (Dissolved)                  | U       | 1450  | µg/I     | 1.0       | [B] < 1.0   | < 1.0         |
| Selenium (Dissolved)              | U       | 1450  | µg/t     | 1.0       | [8] 5.3     | 3.2           |
| Tin (Dissolved)                   | U       | 1450  | µg/I     | 1.0       | [B] < 1.0   | < 1.0         |
| Vanadium (Dissolved)              | U       | 1450  | µg/I     | 1.0       | [B] 9.8     | 5.0           |
| Zinc (Dissolved)                  | U       | 1450  | ид/1     | 1.0       | [B] 4.2     | 3.1           |
| Dibutyl Tin                       | N       | 1730  | µg/l     | 0.050     | < 0.050     | < 0.050       |
| Tributyl Tin                      | N       | 1730  | µg/l     | 0.0500    | < 0.050     | < 0.050       |

Page 2 of 5

# Deviations

| Sample ID: Sample Sampled Deviation Code(s | Sample Ref: |
|--|-------------|
|--|-------------|

| SOP  | Title                                   | Parameters included   | Method summary   |
|------|---|---|--|
| 1220 | Anions, Alkalinity & Ammonium in Waters | Fluoride; Chloride; Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium  | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.        |
| 1415 | Cations in Waters by ICP-MS             | Sodium; Potassium; Calcium; Magnesium   | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS). |
| 1450 | Metals in Waters by ICP-MS              | Metals, including: Antimony; Arsenic, Barium;<br>Beryllium; Boron; Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury.<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc. | determination by inductively coupled plasma                                      |
| 1730 | Organo-Leads                            | Organo-Leads  | Solvent extraction / GCMS detection  |

Page 4 of 5

#### Report Information

#### Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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





Chemisty to deliver results

Chemists Ltd.

Depot Road

Newmarket

CB8 0AL

Tel: 01538 606070

Email: info@chemist.com

# **Final Report**

Report No.:

20-14335-1

Initial Date of Issue:

10-Jun-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

**Quotation No.:** 

Q20-19850

Date Received:

08-Jun-2020

Order No.:

12451

2

Date Instructed:

08-Jun-2020

No. of Samples:

r Gampies.

Turnaround (Wkdays):

Results Due:

16-Jun-2020

Date Approved:

10-Jun-2020

Approved By:

Details:

Glynn Harvey, Technical Manager

Results - Water





| SOP  | Title                                   | Parameters included  | Method summary   |
|------|---|--|--|
| 1220 | Anions, Alkalinity & Ammonium in Waters | Fluoride; Chloride; Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.        |
| 1415 | Cations in Waters by ICP-MS             | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS). |
| 1450 | Metals in Waters by ICP-MS              | Metals, including: Antimony; Arsenic; Barlum;<br>Beryllium: Boron; Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | determination by inductively coupled plasma                                      |
| 1730 | Organo-Leads                            | Organo-Leads   | Solvent extraction / GCMS detection  |





#### Report Information

#### Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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





Depot Road CB8 OAL Tel: 01638 606070

# **Final Report**

Report No.: 20-13519-1

Initial Date of Issue: 05-Jun-2020

Client Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

**Quotation No.:** 

Project

P19188 Howth

Q20-19850

Date Received: **Date Instructed:**  29-May-2020 29-May-2020

Order No.: No. of Samples: 12451

Turnaround (Wkdays):

Results Due:

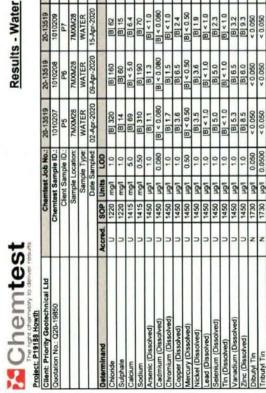
08-Jun-2020

Date Approved:

05-Jun-2020

Approved By:

Details:





#### **Deviations**

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemiest 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 accredited but the results may be compromised.

| Sample: | Sample Ref: | Sample ID: | Sample<br>Location: | Sampled<br>Date: | Deviation Code(s): | Containers<br>Received: |
|---------|-------------|------------|---------------------|------------------|--------------------|-------------------------|
| 1010207 |             | P5         | 7MXM28              | 02-Apr-2020      | В                  | Plastic Tub<br>500g     |
| 1010208 |             | P6         | 7MXM28              | 09-Apr-2020      | В                  | Plastic Tub<br>500g     |
| 1010209 |             | P7         | 7MXM28              | 15-Apr-2020      | В                  | Plastic Tub<br>500g     |

Page 3 of 5



### **Test Methods**

| SOP Title |   | Parameters included  | Method summary  |  |  |  |
|-----------|---|--|---|--|--|--|
| 1220      | Anions, Alkalinity & Ammonium in Waters | Fluoride; Chloride; Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.                                       |  |  |  |
| 1415      | Cations in Waters by ICP-MS             | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).                                |  |  |  |
| 1450      | Metals in Waters by ICP-MS              | Copper; Lead; Manganese; Mercury;  | Fitration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS). |  |  |  |
| 1730      | Organo-Leads                            | Organo-Leads   | Solvent extraction / GCMS detection   |  |  |  |



#### Report Information

Key

U UKAS accredited

M MCERTS and UKAS accredited

N Unaccredited

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

T This analysis has been subcontracted to an unaccredited laboratory

I/S Insufficient Sample

U/S Unsuitable Sample

N/E not evaluated

< "less than"

> "greater than"

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

All Asbestos testing is performed at the indicated laboratory

For all other tests the samples were dried at < 37°C prior to analysis

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





Email: info@chemtest.com

# **Final Report**

Report No.:

20-13489-1

Initial Date of Issue:

05-Jun-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

**Quotation No.:** 

Date Received:

28-May-2020

Order No.:

12451

Date Instructed:

29-May-2020

No. of Samples:

A

Turnaround (Wkdays):

Results Due:

08-Jun-2020

Date Approved:

05-Jun-2020

Approved By:

Details:



# Results - Water

| Client: Priority Geotechnical Ltd |                  | Che   | emtest.  | Job No.:  | 20-13489             | 20-13489             | 20-13489             | 20-13489    |
|-----------------------------------|------------------|-------|----------|-----------|----------------------|----------------------|----------------------|-------------|
| Quotation No.:                    |                  | Chemi | est Sar  | nple ID.: | 1010097              | 1010098              | 1010099              | 1010100     |
|                                   |                  | C     | lient Sa | mple ID.  | P5                   | P6                   | P7                   | P8          |
|                                   | Sample Location: |       |          |           | 4MXM28               | 4MXM28               | 4MXM28               | 4MXM28      |
|                                   |                  |       | Sam      | ole Type: | WATER<br>01-Apr-2020 | WATER<br>08-Apr-2020 | WATER<br>14-Apr-2020 | WATER       |
|                                   |                  |       | Date 5   | Sampled:  |                      |                      |                      | 26-May-2020 |
| Determinand                       | Accred.          | SOP   | Units    | LOD       |                      |                      |                      |             |
| Chloride                          | U                | 1220  | mg/l     | 1.0       | [B] 300              | [B] 190              | [B] 92               | 99          |
| Sulphate                          | U                | 1220  | mg/l     | 1.0       | [B] 14               | [B] 50               | [B] 12               | 28          |
| Calcium                           | U                | 1415  | mg/l     | 5.0       | [B] 15               | [B] 52               | [8] 28               | 72          |
| Sodium                            | U                | 1415  | mg/l     | 0.50      | [B] 270              | [B] 160              | [B] 48               | 42          |
| Arsenic (Dissolved)               | U                | 1450  | µg/I     | 1.0       | [B] < 1.0            | [B] 1.6              | [B] < 1.0            | < 1.0       |
| Cadmium (Dissolved)               | U                | 1450  | µg/l     | 0.080     | [B] < 0.080          | [B] < 0.080          | [B] < 0.080          | < 0.080     |
| Chromium (Dissolved)              | U                | 1450  | µg/I     | 1.0       | [B] 1.5              | [B] 1.9              | [B] < 1.0            | < 1.0       |
| Copper (Dissolved)                | U                | 1450  | ид/1     | 1.0       | [B] 2.9              | [B] 6.3              | [B] 1.4              | 3.6         |
| Mercury (Dissolved)               | U                | 1450  | µg/I     | 0.50      | [B] 0.63             | [B] < 0.50           | [B] < 0.50           | < 0.50      |
| Nickel (Dissolved)                | U                | 1450  | µд/1     | 1.0       | [B] 4.2              | [B] 7.3              | [B] 2.3              | 6.0         |
| Lead (Dissolved)                  | U                | 1450  | µg/l     | 1.0       | [B] < 1.0            | [B] < 1.0            | [B] < 1.0            | < 1.0       |
| Selenium (Dissolved)              | U                | 1450  | µg/l     | 1.0       | [B] 5.8              | [B] 6.3              | [B] 2.0              | 3.5         |
| Tin (Dissolved)                   | U                | 1450  | µg/l     | 1.0       | [B] < 1.0            | [B] < 1.0            | [B] < 1.0            | < 1.0       |
| Vanadium (Dissolved)              | U                | 1450  | μg/Ι     | 1.0       | [B] 3.7              | [B] 5.6              | [8] 2.7              | 2.8         |
| Zinc (Dissolved)                  | U                | 1450  | µg/l     | 1.0       | [B] 5.0              | [B] 14               | [B] 4.0              | 6.7         |
| Dibutyl Tin                       | N                | 1730  | ид/1     | 0.050     | < 0.050              | < 0.050              | < 0.050              | < 0.050     |
| Tributyl Tin                      | N                | 1730  |          | 0.0500    | < 0.050              | < 0.050              | < 0.050              | < 0.050     |

Page 2 of 5



in accordance with UKAS Policy on Deviating Samples TPS 63. Chemitest have a procedure to ensure "upon receipt of each sample is 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 explicable the analysis remains UKASMCERT's accredited but the results may be compromised.

| Plastic Tub         | В                  | 14-Apr-2020      | 4MXM28              | P7         |             | 1010099 |
|---------------------|--------------------|------------------|---------------------|------------|-------------|---------|
| Plastic Tub<br>500g | В                  | 08-Apr-2020      | 4MXM28              | P6         |             | 1010098 |
| Plastic Tub<br>500g | В                  | 01-Apr-2020      | 4MXM28              | P5         |             | 1010097 |
| Received:           | Deviation Code(s): | Sampled<br>Date: | Sample<br>Location: | Sample ID: | Sample Ref: | Sample: |



| SOP  | Title                                      | Parameters included  | Method summary   |
|------|--|--|--|
| 1220 | Anions, Alkalinity & Ammonium<br>in Waters | Fluoride; Chloride; Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.  |
| 1415 | Cations in Waters by ICP-MS                | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).                                 |
| 1450 | Metals in Waters by ICP-MS                 | Metals, including: Antimony; Arsenic: Barium;<br>Beryllium; Boron; Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS). |
| 1730 | Organo-Leads                               | Organo-Leads   | Solvent extraction / GCMS detection  |



#### Report Information

#### Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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





Depot Road CB8 OAL Tel: 01638 606070

# **Final Report**

Report No.:

20-13482-1

Initial Date of Issue:

04-Jun-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork

Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

**Quotation No.:** 

Q20-19850

Date Received:

28-May-2020

Order No.:

12451

Date Instructed:

29-May-2020

No. of Samples:

Turnaround (Wkdays):

Results Due:

08-Jun-2020

Date Approved:

04-Jun-2020

Approved By:

Details:

Glynn Harvey, Technical Manager

Results - Water





#### Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemitest 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 accredited but the results may be compromised.

| Sample: | Sample Ref: | Sample ID: | Sample<br>Location: | Sampled Date: | Deviation Code(s): | Containers<br>Received:  |
|---------|-------------|------------|---------------------|---------------|--------------------|--------------------------|
| 1010081 |             | P5         | 4MXM76              | 14-May-2020   | В                  | Plastic Bottle<br>1000ml |



#### **Test Methods**

| SOP Title |   | Parameters included  | Method summary   |
|-----------|---|--|--|
| 1220      | Anions, Alkalinity & Ammonium in Waters | Fluoride; Chloride; Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.  |
| 1415      | Cations in Waters by ICP-MS             | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).                                 |
| 1450      | Metals in Waters by ICP-MS              | Metals, including: Antimony; Arsenic; Barium;<br>Beryllium; Boron; Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum; Nickel; Selenium; Tin; Vanadium;<br>Zinc | Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS). |
| 1730      | Organo-Leads                            | Organo-Leads   | Solvent extraction / GCMS detection  |



#### Report Information

UKAS accredited U

M MCERTS and UKAS accredited

N Unaccredited

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

T This analysis has been subcontracted to an unaccredited laboratory

I/S Insufficient Sample

U/S Unsuitable Sample

N/E not evaluated

< "less than"

> "greater than"

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





Denot Road CBS OAL Tel: 01638 606070

# **Final Report**

Report No.:

20-13324-1

Initial Date of Issue:

01-Jun-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

**Quotation No.:** 

Q20-19850

Date Received:

27-May-2020

Order No.:

12451

Date Instructed:

27-May-2020

No. of Samples:

4

Turnaround (Wkdays):

Results Due:

04-Jun-2020

**Date Approved:** 

01-Jun-2020

Approved By:

Details:



# Results - Water

| Client: Priority Geotechnical Ltd |   | Che   | emtest .  | Job No.:  | 20-13324                       | 20-13324    | 20-13324    | 20-13324    |
|-----------------------------------|---|-------|-----------|-----------|--------------------------------|-------------|-------------|-------------|
| Quotation No.: Q20-19850          |   | Chemi | test San  | nple ID.: | 1009274                        | 1009275     | 1009276     | 1009277     |
|                                   |   | C     | lient Sar | mple ID.: | P1                             | P2          | P3          | P4          |
|                                   | Sample Location:<br>Sample Type:<br>Date Sampled: |       |           |           | 4MXM90<br>WATER<br>20-May-2020 | 4MXM90      | 4MXM90      | 4MXM90      |
|                                   |   |       |           |           |                                | WATER       | WATER       | WATER       |
|                                   |   |       |           |           |                                | 21-May-2020 | 22-May-2020 | 25-May-2020 |
| Determinand                       | Accred.   | SOP   | Units     | LOD       |                                |             |             |             |
| Chloride                          | U   | 1220  | mg/I      | 1.0       | 240                            | 280         | 150         | 250         |
| Sulphate                          | U   | 1220  | mg/l      | 1.0       | 22                             | 6.6         | 3.0         | 12          |
| Calcium                           | U   | 1415  | mg/l      | 5.0       | 37                             | 50          | 76          | 56          |
| Sodium                            | U   | 1415  | mg/l      | 0.50      | 240                            | 270         | 190         | 260         |
| Arsenic (Dissolved)               | U   | 1450  | µg/I      | 1.0       | < 1.0                          | < 1.0       | < 1.0       | < 1.0       |
| Cadmium (Dissolved)               | U   | 1450  | µg/I      | 0.080     | < 0.080                        | < 0.080     | < 0.080     | < 0.080     |
| Chromium (Dissolved)              | U   | 1450  | µg/l      | 1.0       | < 1.0                          | < 1.0       | < 1.0       | < 1.0       |
| Copper (Dissolved)                | U   | 1450  | µg/l      | 1.0       | < 1.0                          | < 1.0       | < 1.0       | 2.6         |
| Mercury (Dissolved)               | U   | 1450  | µg/l      | 0.50      | < 0.50                         | < 0.50      | < 0.50      | < 0.50      |
| Nickel (Dissolved)                | U   | 1450  | µg/l      | 1.0       | 5.0                            | 5.2         | 2.8         | 5.9         |
| Lead (Dissolved)                  | U   | 1450  | µg/I      | 1.0       | < 1.0                          | < 1.0       | < 1.0       | < 1.0       |
| Selenium (Dissolved)              | U   | 1450  | µg/I      | 1.0       | < 1.0                          | < 1.0       | < 1.0       | < 1.0       |
| Tin (Dissolved)                   | U   | 1450  | µg/I      | 1.0       | < 1.0                          | < 1.0       | < 1.0       | < 1.0       |
| Vanadium (Dissolved)              | U   | 1450  | µg/l      | 1.0       | 1.7                            | 1.5         | < 1.0       | 2.3         |
| Zinc (Dissolved)                  | U   | 1450  | µg/l      | 1.0       | 6.6                            | 11          | 4.3         | 11          |
| Dibutyl Tin                       | N   | 1730  | µg/l      | 0.050     | < 0.050                        | < 0.050     | < 0.050     | < 0.050     |
| Tributyl Tin                      | N   | 1730  | µg/l      | 0.0500    | < 0.050                        | < 0.050     | < 0.050     | < 0.050     |

Page 2 of 4



# est Methods

|   | 1450   | 1415   | 1220   | SOP                 |
|---|--|--|--|---------------------|
| - | 1450 Metals in Waters by ICP-MS  | Cations in Waters by ICP-MS  | Anions, Alkalinity & Ammonium<br>in Waters   | Title               |
| ) | Metals, including: Antimony, Arsenic: Barium: Beryllium: Boror: Cadmium; Chromium; Cobalt; Filtration of samples followed by direct Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium, mass spectrometry (ICP-MS). Zinc. | 1415 Cations in Waters by ICP-MS Sodium; Potassium; Calcium; Magnesium           | Fluoride: Chloride: Nitrite: Nitrate: Total:<br>Oxidisable Nitrogen (TON); Sulfate: Phosphate:<br>Alkalinity: Ammonium | Parameters included |
| 2 | Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).   | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS). | Automated colorimetric analysis using<br>Aquakem 600 Discrete Analyser.  | Method summary      |



#### Report Information

Key

U UKAS accredited

M MCERTS and UKAS accredited

N Unaccredited

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

T This analysis has been subcontracted to an unaccredited laboratory

I/S Insufficient Sample

U/S Unsuitable Sample

N/E not evaluated

< "less than"

greater than

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





Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

# **Final Report**

Report No.:

20-12270-1

Initial Date of Issue:

19-May-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

Quotation No.:

Q20-19850

Date Received:

13-May-2020

Order No.:

12451

Date Instructed:

14-May-2020

No. of Samples:

4

Turnaround (Wkdays):

Results Due:

22-May-2020

Date Approved:

19-May-2020

Approved By:

Details:



# Results - Water

| Client: Priority Geotechnical Ltd | Chemtest Job No.:                                 |       |          | 20-12270  | 20-12270                       | 20-12270    | 20-12270    |             |
|-----------------------------------|---|-------|----------|-----------|--------------------------------|-------------|-------------|-------------|
| Quotation No.: Q20-19850          |   | Chemi | est Sar  | nple ID.: | 1004487                        | 1004488     | 1004489     | 1004490     |
|                                   |   | C     | lient Sa | mple ID.: | P1                             | P2          | P3          | P4          |
|                                   | Sample Location:<br>Sample Type:<br>Date Sampled: |       |          |           | 4MXM76<br>WATER<br>06-May-2020 | 4MXM76      | 4MXM76      | 4MXM76      |
|                                   |   |       |          |           |                                | WATER       | WATER       | WATER       |
|                                   |   |       |          |           |                                | 07-May-2020 | 08-May-2020 | 11-May-2020 |
| Determinand                       | Accred.   | SOP   | Units    | LOD       |                                |             |             |             |
| Chloride                          | U   | 1220  | mg/l     | 1.0       | 120                            | 340         | 140         | 240         |
| Sulphate                          | U   | 1220  | mg/l     | 1.0       | 1.7                            | 4.8         | 2.2         | 6.5         |
| Calcium                           | U   | 1415  | mg/l     | 5.0       | 37                             | 9.3         | 33          | 27          |
| Sodium                            | U   | 1415  | mg/l     | 0.50      | 110                            | 270         | 130         | 270         |
| Arsenic (Dissolved)               | U   | 1450  | µg/I     | 1.0       | < 1.0                          | 1.1         | < 1.0       | < 1.0       |
| Cadmium (Dissolved)               | U   | 1450  | µg/I     | 0.080     | < 0.080                        | < 0.080     | < 0.080     | < 0.080     |
| Chromium (Dissolved)              | U   | 1450  | µg/I     | 1.0       | 1.6                            | 3.3         | 1.9         | 1.7         |
| Copper (Dissolved)                | U   | 1450  | µg/t     | 1.0       | 1.8                            | 1.8         | 1.9         | 1.9         |
| Mercury (Dissolved)               | U   | 1450  | µg/ī     | 0.50      | < 0.50                         | 0.51        | < 0.50      | 5.3         |
| Nickel (Dissolved)                | U   | 1450  | µg/l     | 1.0       | 1.9                            | 4.2         | 2.1         | 2.9         |
| Lead (Dissolved)                  | U   | 1450  | µg/l     | 1.0       | < 1.0                          | < 1.0       | < 1.0       | < 1.0       |
| Selenium (Dissolved)              | U   | 1450  | µg/I     | 1.0       | 3.1                            | 7.3         | 3.1         | 2.2         |
| Tin (Dissolved)                   | U   | 1450  | µg/I     | 1.0       | 160                            | 5.2         | 1200        | < 1.0       |
| Vanadium (Dissolved)              | U   | 1450  | µg/l     | 1.0       | 2.6                            | 3.0         | 2.4         | 1.7         |
| Zinc (Dissolved)                  | U   | 1450  | µg/ī     | 1.0       | < 1.0                          | 8.4         | 6.0         | 53          |
| Dibutyl Tin                       | N   | 1730  | µg/I     | 0.050     | < 0.050                        | < 0.050     | < 0.050     | < 0.050     |
| Tributyl Tin                      | N   | 1730  | µg/l     | 0.0500    | < 0.050                        | < 0.050     | < 0.050     | < 0.050     |

Page 2 of 4



# est Methods

| SOP  | Title  |  | included  |
|------|--|--|---|
| 1220 | 1220 Anions, Alkalinity & Ammonium in Waters | Fluoride, Chloride, Nitrite, Nitrate, Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity, Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser,                                       |
| 1415 | Cations in Waters by ICP-MS                  | 1415 Cations in Waters by ICP-MS Sodium; Potassium; Calcium; Magnesium   | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).                                |
| 1450 | 1450 Metals in Waters by ICP-MS              | Metals, including: Antimony, Arsenic, Banum; Beryllium, Boron; Cadonium; Chromium; Cobalt; Filtration of samples followed by direct Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; mass spectrometry (ICP-MS). Zinc. | Fitration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS). |
| 1730 | 1730 Organo-Leads                            | Organo-Leads   | Solvent extraction / GCMS detection   |



#### Report Information

Key

U UKAS accredited

M MCERTS and UKAS accredited

N Unaccredited

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

T This analysis has been subcontracted to an unaccredited laboratory

I/S Insufficient Sample

U/S Unsuitable Sample

N/E not evaluated

< "less than"

> "greater than"

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, Phenois

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





Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

**Final Report** 

Report No.:

20-12266-1

Initial Date of Issue:

18-May-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

**Quotation No.:** 

Q20-19850

Date Received:

13-May-2020

Order No.:

12451

Date Instructed:

14-May-2020

No. of Samples: Turnaround (Wkdays):

4

1

Results Due:

22-May-2020

Date Approved:

18-May-2020

Approved By:

Details:



# Results - Water

| Client: Priority Geotechnical Ltd |  | Che  | emtest. | Job No.:  | 20-12266    | 20-12266    | 20-12266    | 20-12266    |
|-----------------------------------|--|------|---------|-----------|-------------|-------------|-------------|-------------|
| Quotation No.: Q20-19850          | Chemtest Sample ID.:<br>Client Sample ID.: |      |         |           | 1004472     | 1004473     | 1004474     | 1004475     |
|                                   |  |      |         |           | P5          | P6          | P7          | P8          |
|                                   |  | 5    | Sample  | Location: | 4MXM14      | 4MXM14      | 4MXM14      | 4MXM14      |
|                                   |  |      | Samp    | ole Type: | WATER       | WATER       | WATER       | WATER       |
|                                   |  |      | Date S  | Sampled:  | 18-Mar-2020 | 25-Mar-2020 | 14-Apr-2020 | 12-May-2020 |
| Determinand                       | Accred.                                    | SOP  | Units   | LOD       |             |             |             | 1000        |
| Chloride                          | U  | 1220 | mg/l    | 1.0       | [B] 190     | [B] 120     | (B) 63      | 58          |
| Sulphate                          | U  | 1220 | mg/l    | 1.0       | [B] 12      | [B] 12      | [B] 13      | 9.6         |
| Calcium                           | U  | 1415 | mg/l    | 5.0       | [B] 9.3     | [B] 65      | [B] 66      | 31          |
| Sodium                            | U  | 1415 | mg/l    | 0.50      | [B] 140     | [B] 77      | (B) 14      | 3.6         |
| Arsenic (Dissolved)               | u  | 1450 | µg/l    | 1.0       | [B] < 1.0   | [B] < 1.0   | [B] < 1.0   | < 1.0       |
| Cadmium (Dissolved)               | U  | 1450 | ид/1    | 0.080     | [B] < 0.080 | [B] < 0.080 | [B] 0.17    | 0.089       |
| Chromium (Dissolved)              | U  | 1450 | µg/I    | 1.0       | [B] 2.3     | [B] 1.7     | [B] < 1.0   | < 1.0       |
| Copper (Dissolved)                | U  | 1450 | ид/1    | 1.0       | [B] 2.5     | [B] 1.6     | [B] 3.1     | 1.6         |
| Mercury (Dissolved)               | U  | 1450 | µg/I    | 0.50      | [B] < 0.50  | [B] < 0.50  | [8] 6.5     | 1.2         |
| Nickel (Dissolved)                | U  | 1450 | µg/I    | 1.0       | [B] 3.8     | [B] 3.8     | [B] 7.1     | 3.5         |
| Lead (Dissolved)                  | U  | 1450 | ид/1    | 1.0       | [B] < 1.0   | [B] < 1.0   | [B] < 1.0   | < 1.0       |
| Selenium (Dissolved)              | U  | 1450 | µg/I    | 1.0       | [B] 5.3     | [B] 4.1     | [B] 2.1     | 1.1         |
| Tin (Dissolved)                   | U  | 1450 | µg/I    | 1.0       | [B] 8.3     | [B] 88      | [B] 13      | < 1.0       |
| Vanadium (Dissolved)              | U  | 1450 | µg/I    | 1.0       | [B] 2.7     | [B] 2.2     | [B] 2.4     | 2.5         |
| Zinc (Dissolved)                  | U  | 1450 | µg/I    | 1.0       | [B] 8.5     | [B] 7.0     | [B] 4.2     | 2.4         |
| Dibutyl Tin                       | N  | 1730 | µg/l    | 0.050     | < 0.050     | < 0.050     | < 0.050     | < 0.050     |
| Tributyl Tin                      | N  | 1730 | µg/I    | 0.0500    | < 0.050     | < 0.050     | < 0.050     | < 0.050     |

Page 2 of 5



in accordance with UKAS Policy on Deviating Samples TPS 63. Chemitest 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 spicity and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below there applicable the analysis remains UKASMCERTs accredited but the results may be compromised. Deviations

Sample: Sample Ref: Sample ID: P6 25 Sample Location: 4MXM14 4MXM14 25-Mar-2020 Sampled Date: 18-Mar-2020 Deviation Code(s): 8 8 Plastic Bottle 1000ml Plastic Tub 500g Containers Received: Plastic Bottle 1000ml

1004472

1004474 1004473

P7

4MXM14

14-Apr-2020

В



| SOP  | Title                       | Parameters included  | Method summary   |  |  |
|------|-----------------------------|--|--|--|--|
|      |                             | Fluoride; Chloride; Nitrite; Nitrate; Total;<br>Oxidisable Nitrogen (TON); Sulfate; Phosphate;<br>Alkalinity; Ammonium   | Automated colorimetric analysis using<br>'Aquakem 600' Discrete Analyser.        |  |  |
| 1415 | Cations in Waters by ICP-MS | Sodium; Potassium; Calcium; Magnesium  | Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS). |  |  |
| 1450 |                             | Metals, including: Antimony, Arsenic, Barium,<br>Beryllium: Boron: Cadmium; Chromium; Cobalt;<br>Copper; Lead; Manganese; Mercury;<br>Molybdenum: Nickel; Selenium; Tin; Vanadium;<br>Zinc | determination by inductively coupled plasma                                      |  |  |
| 1730 | Organo-Leads                | Organo-Leads   | Solvent extraction / GCMS detection  |  |  |





#### Report Information

#### Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- 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
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

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





Depot Road CB8 OAL Tel: 01638 606070 info@chemtest.com

# **Final Report**

20-09759-1 Report No.:

Initial Date of Issue: 06-Apr-2020

Client

Priority Geotechnical Ltd

Client Address:

Unit 12

Owenacurra Business Park

Midleton County Cork Ireland

Contact(s):

Colette Kelly

Project

P19188 Howth

**Quotation No.:** 

Q20-19850

30-Mar-2020

Order No.:

12451

Date Received: Date Instructed:

31-Mar-2020

No. of Samples:

Turnaround (Wkdays):

Results Due:

08-Apr-2020

Date Approved:

06-Apr-2020

Approved By:

Details:

Glynn Harvey, Technical Manager

Results - Water

