

## 13 Habitat designations

### 13.1 Priority Habitat Inventory

Records within 250m

0

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

*This data is sourced from Natural England.*

### 13.2 Habitat Networks

Records within 250m

0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

*This data is sourced from Natural England.*

### 13.3 Open Mosaic Habitat

Records within 250m

0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

*This data is sourced from Natural England.*

### 13.4 Limestone Pavement Orders

Records within 250m

0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

*This data is sourced from Natural England.*



## 14 Geology 1:10,000 scale - Availability



- Site Outline
- Search buffers in metres (m)
- Full coverage
  - Partial coverage
  - No coverage

### 14.1 10k Availability

#### Records within 500m

2

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 78**

| ID | Location | Artificial | Superficial | Bedrock | Mass movement | Sheet No. |
|----|----------|------------|-------------|---------|---------------|-----------|
| 1  | On site  | Full       | Full        | Full    | No coverage   | SZ79NW    |
| 2  | 223m N   | Full       | Full        | Full    | No coverage   | SU70SW    |

*This data is sourced from the British Geological Survey.*



## Geology 1:10,000 scale - Artificial and made ground

### 14.2 Artificial and made ground (10k)

Records within 500m

0

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

*This data is sourced from the British Geological Survey.*



## Geology 1:10,000 scale - Superficial



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— Site Outline  
Search buffers in metres (m)  
 Landslip (10k)  
Superficial geology (10k)  
Please see table for more details.

### 14.3 Superficial geology (10k)

#### Records within 500m

2

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 80**

| ID | Location | LEX Code | Description                                            | Rock description |
|----|----------|----------|--------------------------------------------------------|------------------|
| 1  | On site  | RTDU-CZ  | River Terrace Deposits (undifferentiated) - Silty Clay | Clay, Silty      |
| 2  | 223m N   | RTDU-CZ  | River Terrace Deposits (undifferentiated) - Silty Clay | Clay, Silty      |

*This data is sourced from the British Geological Survey.*

## 14.4 Landslip (10k)

Records within 500m

0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

*This data is sourced from the British Geological Survey.*



## Geology 1:10,000 scale - Bedrock



- Site Outline
- Search buffers in metres (m)
- Bedrock faults and other linear features (10k)
- Bedrock geology (10k)  
Please see table for more details.

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### 14.5 Bedrock geology (10k)

#### Records within 500m

3

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 82**

| ID | Location | LEX Code  | Description                                                                                | Rock age          |
|----|----------|-----------|--------------------------------------------------------------------------------------------|-------------------|
| 1  | On site  | LC-CLSISA | London Clay Formation - Clay, Silt And Sand                                                | Eocene Epoch      |
| 2  | 46m S    | POWH-SSCL | Portsmouth Sand Member And Whitecliff Sand Member (undifferentiated) - Sand, Silt And Clay | Palaeogene Period |
| 3  | 223m N   | LC-CLSISA | London Clay Formation - Clay, Silt And Sand                                                | Eocene Epoch      |



*This data is sourced from the British Geological Survey.*

## 14.6 Bedrock faults and other linear features (10k)

Records within 500m

0

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

*This data is sourced from the British Geological Survey.*



## 15 Geology 1:50,000 scale - Availability



- Site Outline
- Search buffers in metres (m)
- ☐ Geological map tile

### 15.1 50k Availability

#### Records within 500m

1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 84**

| ID | Location | Artificial | Superficial | Bedrock | Mass movement | Sheet No.           |
|----|----------|------------|-------------|---------|---------------|---------------------|
| 1  | On site  | Full       | Full        | Full    | Full          | EW331_portsmouth_v4 |

*This data is sourced from the British Geological Survey.*



## Geology 1:50,000 scale - Artificial and made ground

### 15.2 Artificial and made ground (50k)

Records within 500m

0

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

*This data is sourced from the British Geological Survey.*

### 15.3 Artificial ground permeability (50k)

Records within 50m

0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

*This data is sourced from the British Geological Survey.*



## Geology 1:50,000 scale - Superficial



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- Site Outline
- Search buffers in metres (m)
- Landslip (50k)
- Superficial geology (50k)  
Please see table for more details.

### 15.4 Superficial geology (50k)

#### Records within 500m

1

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 86**

| ID | Location | LEX Code  | Description                               | Rock description    |
|----|----------|-----------|-------------------------------------------|---------------------|
| 1  | On site  | RTDU-XSZC | RIVER TERRACE DEPOSITS (UNDIFFERENTIATED) | SAND, SILT AND CLAY |

*This data is sourced from the British Geological Survey.*

## 15.5 Superficial permeability (50k)

Records within 50m

1

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

| Location | Flow type     | Maximum permeability | Minimum permeability |
|----------|---------------|----------------------|----------------------|
| On site  | Intergranular | High                 | Low                  |

*This data is sourced from the British Geological Survey.*

## 15.6 Landslip (50k)

Records within 500m

0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

*This data is sourced from the British Geological Survey.*

## 15.7 Landslip permeability (50k)

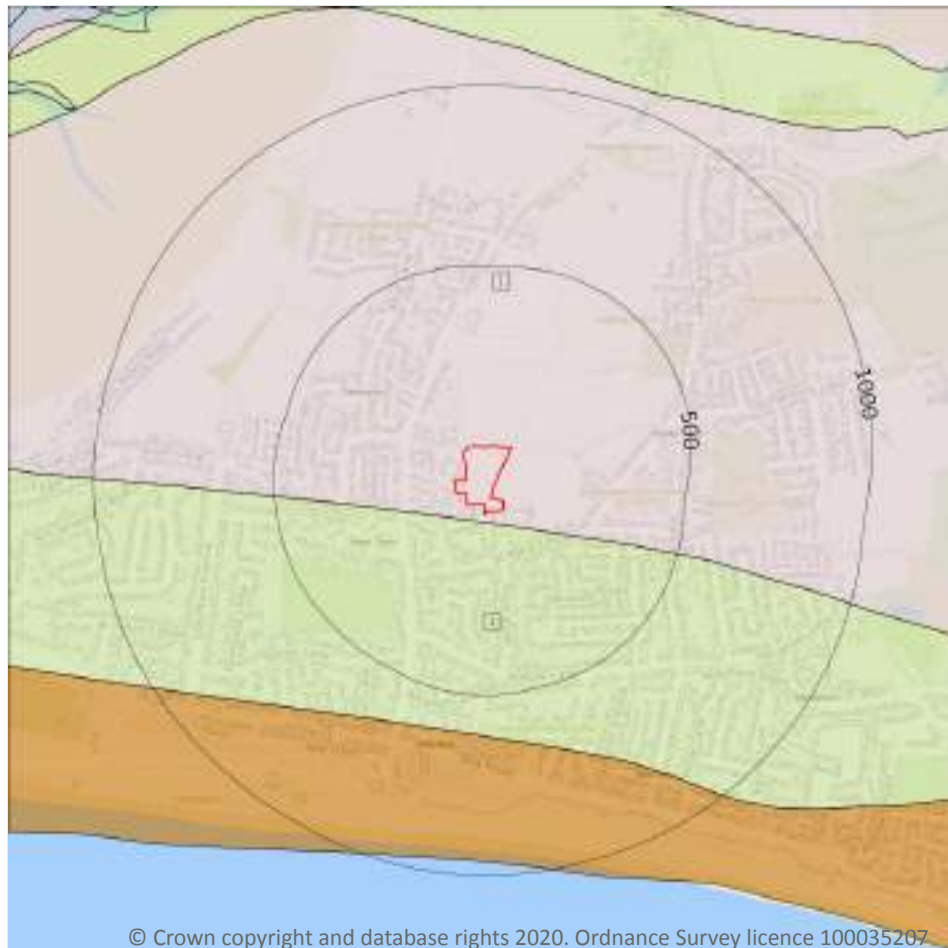
Records within 50m

0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

*This data is sourced from the British Geological Survey.*

## Geology 1:50,000 scale - Bedrock



- Site Outline
- Search buffers in metres (m)
- Bedrock faults and other linear features (50k)
- Bedrock geology (50k)  
Please see table for more details.

### 15.8 Bedrock geology (50k)

#### Records within 500m

2

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 88**

| ID | Location | LEX Code | Description                                                                 | Rock age |
|----|----------|----------|-----------------------------------------------------------------------------|----------|
| 1  | On site  | LC-XCZS  | LONDON CLAY FORMATION - CLAY, SILT AND SAND                                 | YPRESIAN |
| 2  | 21m S    | POWH-S   | PORTSMOUTH SAND MEMBER AND WHITECLIFF SAND MEMBER (UNDIFFERENTIATED) - SAND | -        |

*This data is sourced from the British Geological Survey.*



## 15.9 Bedrock permeability (50k)

### Records within 50m

**2**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

| Location       | Flow type     | Maximum permeability | Minimum permeability |
|----------------|---------------|----------------------|----------------------|
| <b>On site</b> | <b>Mixed</b>  | <b>Moderate</b>      | <b>Very Low</b>      |
| 21m SE         | Intergranular | High                 | High                 |

*This data is sourced from the British Geological Survey.*

## 15.10 Bedrock faults and other linear features (50k)

### Records within 500m

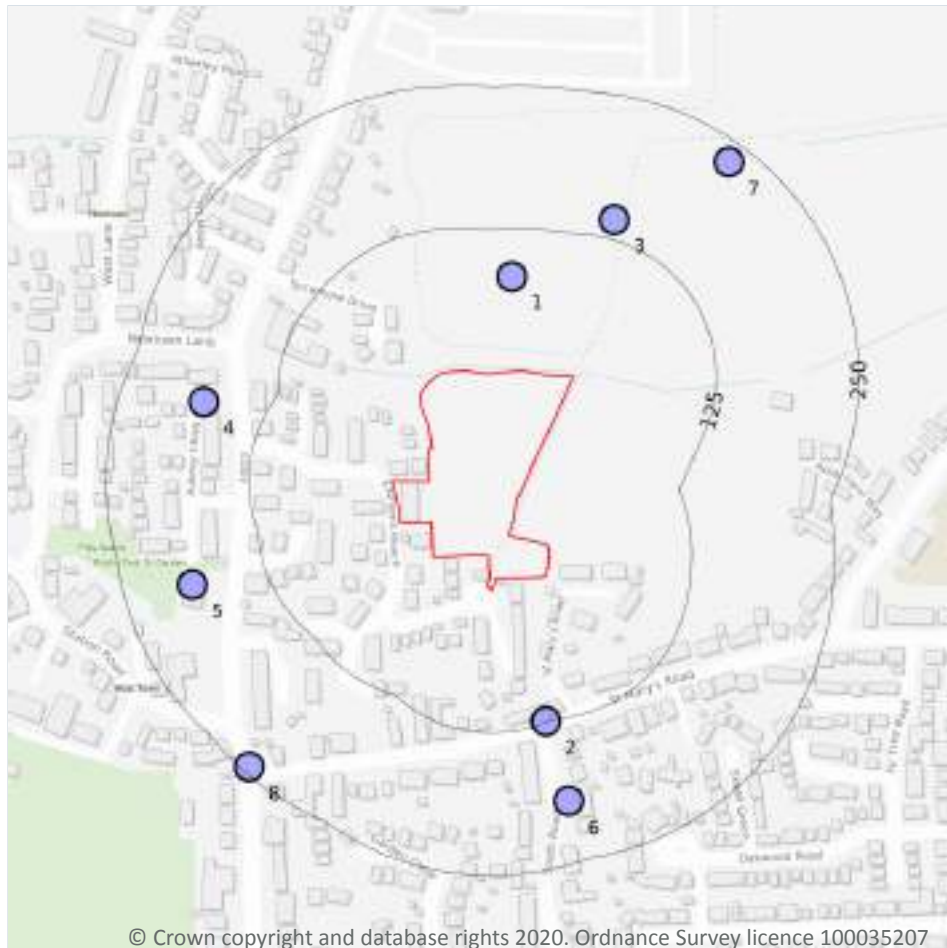
**0**

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

*This data is sourced from the British Geological Survey.*



## 16 Boreholes



— Site Outline  
Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

### 16.1 BGS Boreholes

Records within 250m

8

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on **page 90**

| ID | Location | Grid reference | Name                                      | Length | Confidential | Web link               |
|----|----------|----------------|-------------------------------------------|--------|--------------|------------------------|
| 1  | 83m N    | 471690 99860   | HAYLING ISLAND MAIN DRAINAGE NO.101       | 4.26   | N            | <a href="#">455972</a> |
| 2  | 124m SE  | 471720 99470   | SOUTH HAYLING SURFACE WATER DRAINAGE 2/19 | 3.0    | N            | <a href="#">456055</a> |

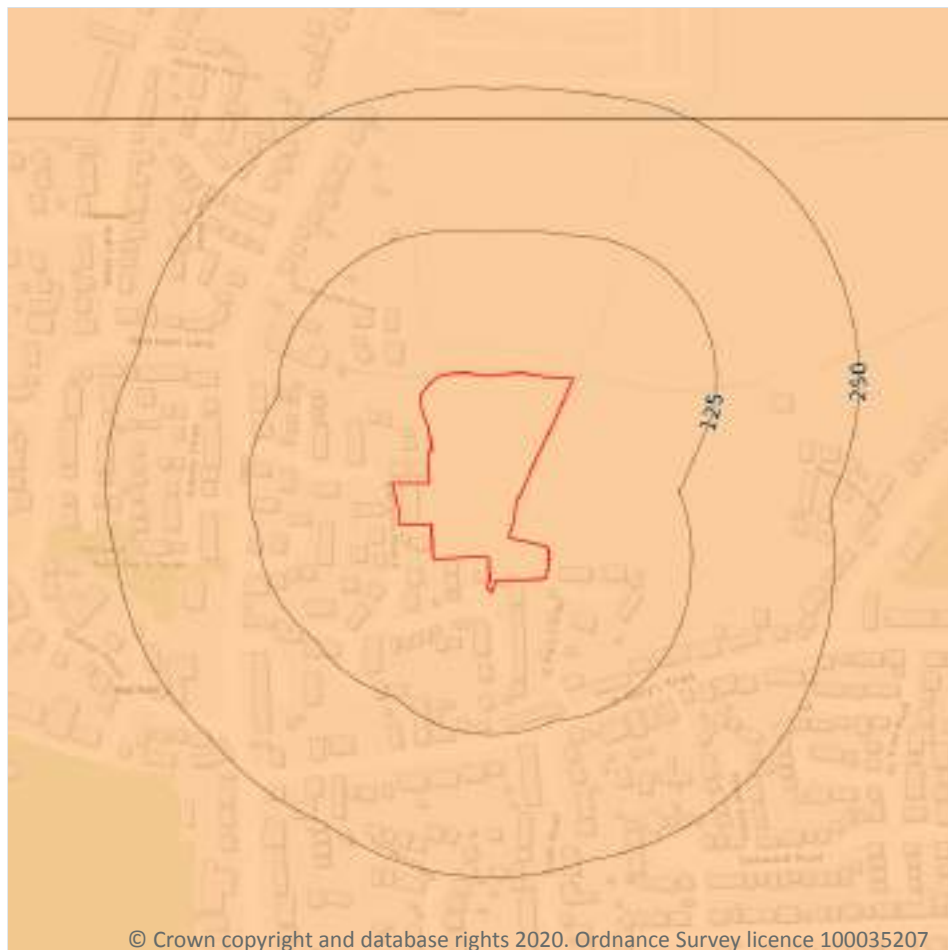


| ID | Location | Grid reference | Name                                         | Length | Confidential | Web link               |
|----|----------|----------------|----------------------------------------------|--------|--------------|------------------------|
| 3  | 143m N   | 471780 99910   | HAYLING ISLAND MAIN DRAINAGE NO.100          | 4.26   | N            | <a href="#">455973</a> |
| 4  | 179m NW  | 471420 99750   | HAYLING ISLAND MAIN DRAINAGE NO.123          | 3.65   | N            | <a href="#">455971</a> |
| 5  | 190m W   | 471410 99590   | HAYLING ISLAND MAIN DRAINAGE NO.103          | 1.82   | N            | <a href="#">455969</a> |
| 6  | 197m S   | 471740 99400   | SOUTH HAYLING SURFACE WATER DRAINAGE<br>2/20 | 3.0    | N            | <a href="#">456056</a> |
| 7  | 232m NE  | 471880 99960   | HAYLING ISLAND MAIN DRAINAGE NO.119          | 6.71   | N            | <a href="#">455974</a> |
| 8  | 244m SW  | 471460 99430   | SOUTH HAYLING SURFACE WATER DRAINAGE<br>1/1A | 3.0    | N            | <a href="#">456015</a> |

*This data is sourced from the British Geological Survey.*



## 17 Natural ground subsidence - Shrink swell clays



- Site Outline
- Search buffers in metres (m)
- ☐ No data
  - ☐ Negligible
  - ☐ Very low
  - ☐ Low
  - ☐ Moderate
  - ☐ High

### 17.1 Shrink swell clays

#### Records within 50m

1

The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

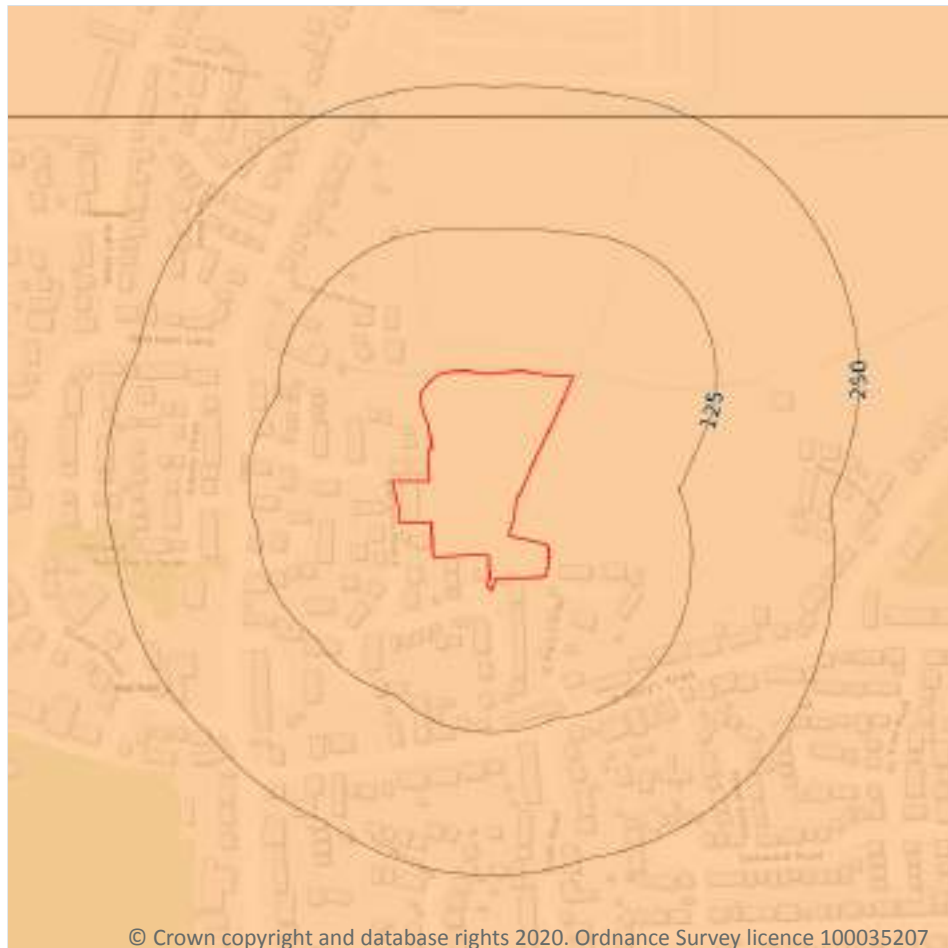
Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 92**

| Location | Hazard rating | Details                                            |
|----------|---------------|----------------------------------------------------|
| On site  | Low           | Ground conditions predominantly medium plasticity. |

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Running sands



- Site Outline
- Search buffers in metres (m)
- ☐ No data
  - ☐ Negligible
  - ☐ Very low
  - ☐ Low
  - ☐ Moderate
  - ☐ High

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### 17.2 Running sands

#### Records within 50m

1

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

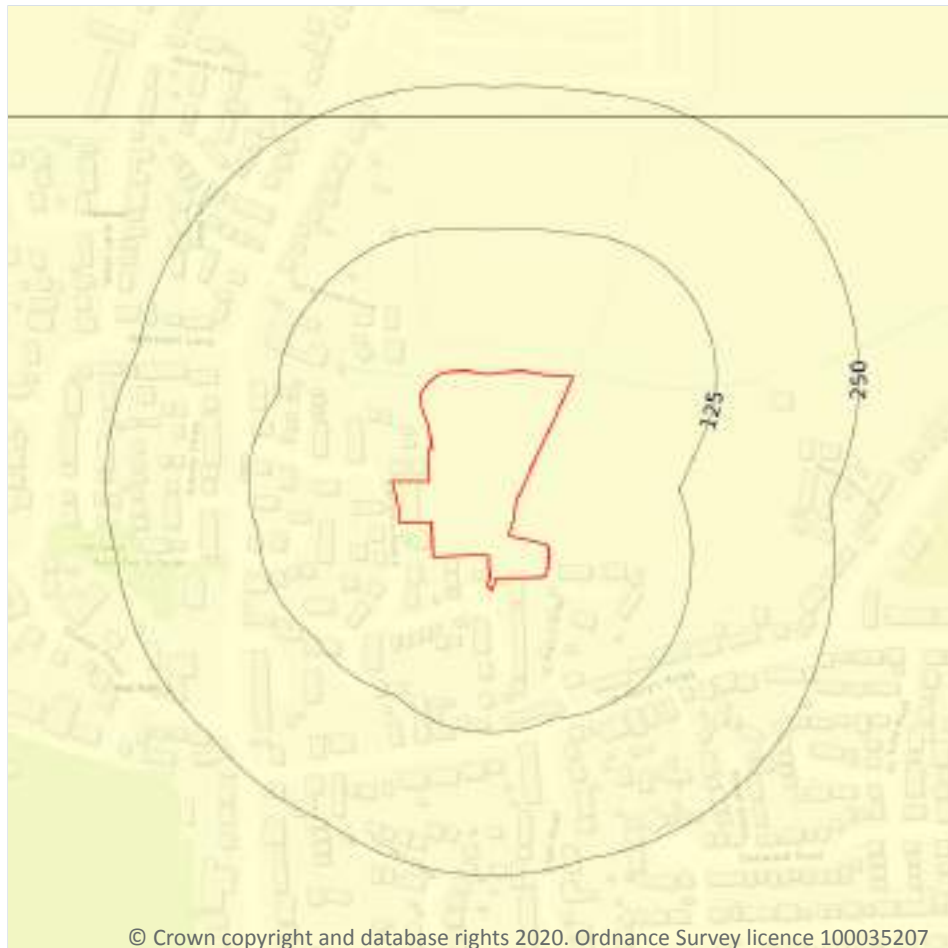
Features are displayed on the Natural ground subsidence - Running sands map on **page 93**

| Location | Hazard rating | Details                                                                                                                              |
|----------|---------------|--------------------------------------------------------------------------------------------------------------------------------------|
| On site  | Low           | Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water. |

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Compressible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
  - ☐ Negligible
  - ☐ Very low
  - ☐ Low
  - ☐ Moderate
  - ☐ High

### 17.3 Compressible deposits

#### Records within 50m

1

The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

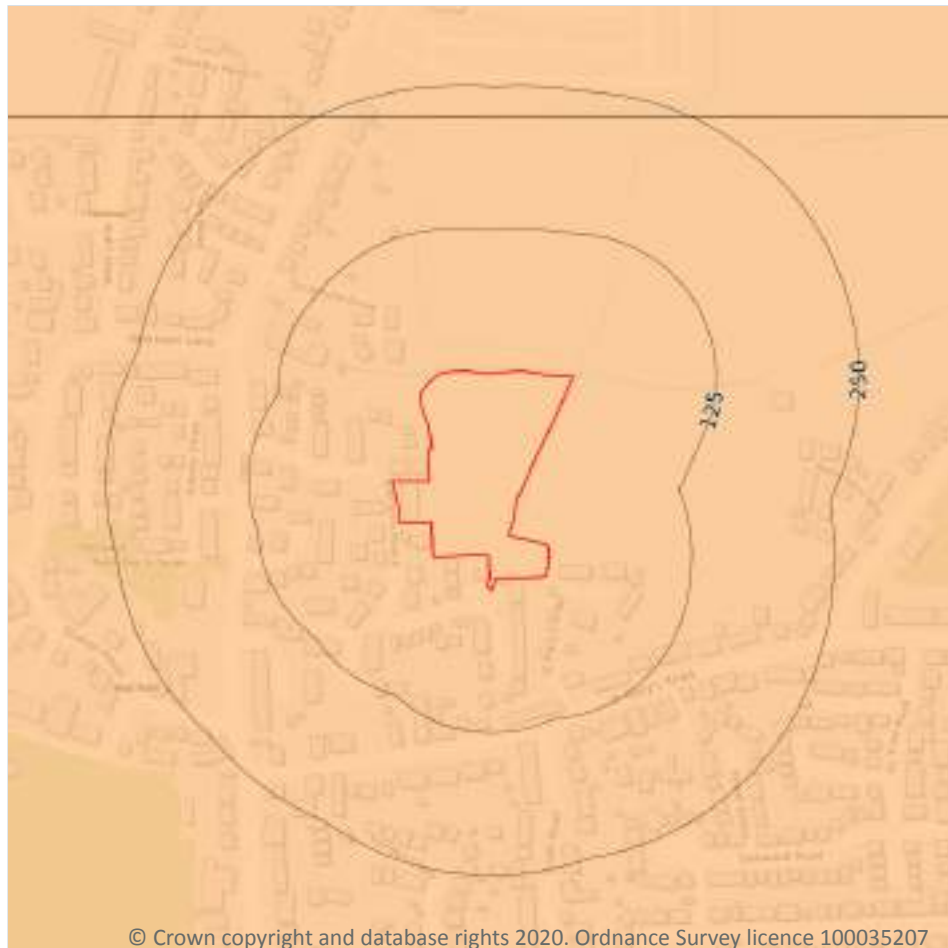
Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 94**

| Location | Hazard rating | Details                                       |
|----------|---------------|-----------------------------------------------|
| On site  | Negligible    | Compressible strata are not thought to occur. |

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Collapsible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
  - ☐ Negligible
  - ☐ Very low
  - ☐ Low
  - ☐ Moderate
  - ☐ High

### 17.4 Collapsible deposits

#### Records within 50m

1

The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

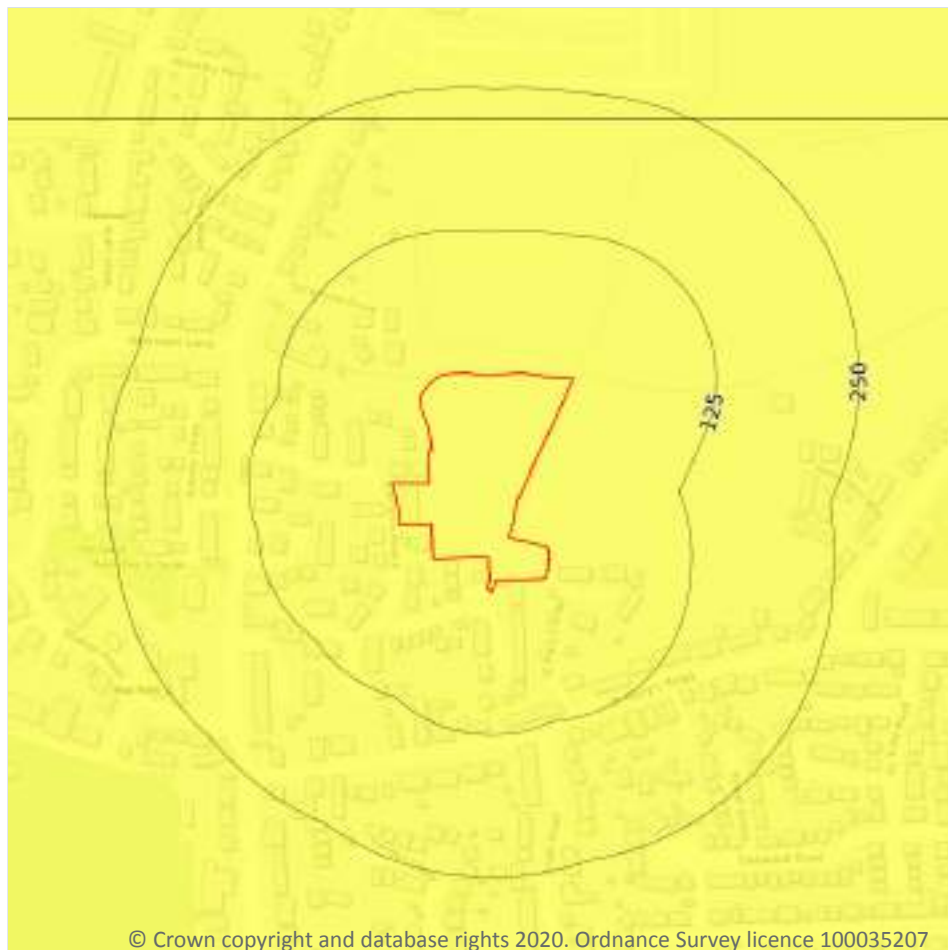
Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 95**

| Location | Hazard rating | Details                                                                                       |
|----------|---------------|-----------------------------------------------------------------------------------------------|
| On site  | Low           | Deposits with potential to collapse when loaded and saturated are possibly present in places. |

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Landslides



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- Site Outline
- Search buffers in metres (m)
- ☐ No data
  - ☐ Negligible
  - ☒ Very low
  - ☐ Low
  - ☐ Moderate
  - ☐ High

### 17.5 Landslides

#### Records within 50m

1

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

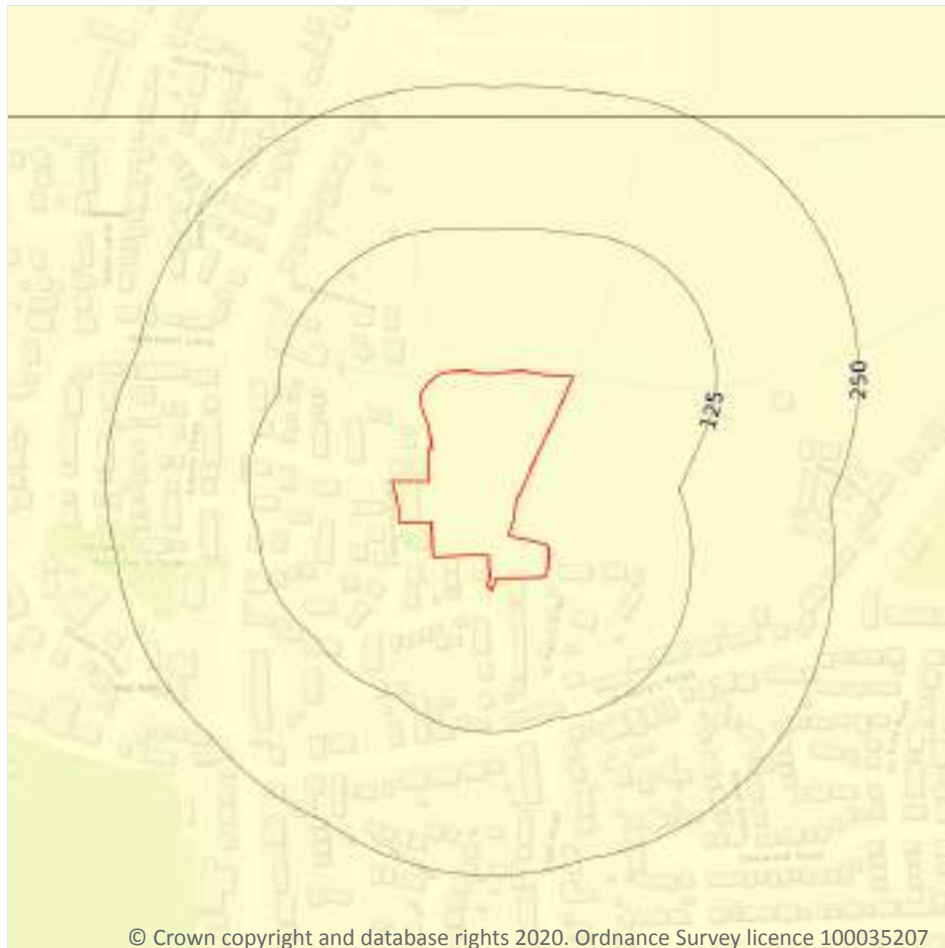
Features are displayed on the Natural ground subsidence - Landslides map on **page 96**

| Location | Hazard rating | Details                                                                                                                                                         |
|----------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| On site  | Very low      | Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered. |

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Ground dissolution of soluble rocks



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- Site Outline
- Search buffers in metres (m)
- ☐ No data
  - ☐ Negligible
  - ☒ Very low
  - ☐ Low
  - ☐ Moderate
  - ☐ High

### 17.6 Ground dissolution of soluble rocks

#### Records within 50m

1

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 97**

| Location | Hazard rating | Details                                                                                                                                             |
|----------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| On site  | Negligible    | Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present. |

*This data is sourced from the British Geological Survey.*



## 18 Mining, ground workings and natural cavities



- Site Outline
- Search buffers in metres (m)
- Natural cavities (Area)
- Natural cavities (Point)
- BritPits
- Surface ground workings
- Underground workings
- Historical Mineral Planning Areas
- Mining Cavities
- Non Coal Mining
- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

### 18.1 Natural cavities

Records within 500m

0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

*This data is sourced from Peter Brett Associates (PBA).*

## 18.2 BritPits

**Records within 500m****0**

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

*This data is sourced from the British Geological Survey.*

## 18.3 Surface ground workings

**Records within 250m****5**

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining, ground workings and natural cavities map on **page 98**

| ID | Location | Land Use | Year of mapping | Mapping scale |
|----|----------|----------|-----------------|---------------|
| A  | 94m W    | Pond     | 1938            | 1:10560       |
| A  | 94m W    | Pond     | 1931            | 1:10560       |
| B  | 221m SE  | Pond     | 1938            | 1:10560       |
| B  | 221m SE  | Pond     | 1931            | 1:10560       |
| B  | 221m SE  | Pond     | 1907            | 1:10560       |

*This is data is sourced from Ordnance Survey/Groundsure.*

## 18.4 Underground workings

**Records within 1000m****0**

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

*This is data is sourced from Ordnance Survey/Groundsure.*

## 18.5 Historical Mineral Planning Areas

**Records within 500m****1**

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.



Features are displayed on the Mining, ground workings and natural cavities map on **page 98**

| ID | Location | Site Name     | Mineral         | Type                    | Planning Status | Planning Status Date |
|----|----------|---------------|-----------------|-------------------------|-----------------|----------------------|
| 1  | 1m N     | Higworth Farm | Sand and gravel | Surface mineral working | Refused         | 27/1/1967            |

*This data is sourced from the British Geological Survey.*

## 18.6 Non-coal mining

|                             |          |
|-----------------------------|----------|
| <b>Records within 1000m</b> | <b>0</b> |
|-----------------------------|----------|

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

*This data is sourced from the British Geological Survey.*

## 18.7 Mining cavities

|                             |          |
|-----------------------------|----------|
| <b>Records within 1000m</b> | <b>0</b> |
|-----------------------------|----------|

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

*This data is sourced from Peter Brett Associates (PBA).*

## 18.8 JPB mining areas

|                        |          |
|------------------------|----------|
| <b>Records on site</b> | <b>0</b> |
|------------------------|----------|

Areas which could be affected by former coal mining. This data includes some mine plans unavailable to the Coal Authority.

*This data is sourced from Johnson Poole and Bloomer.*

## 18.9 Coal mining

|                        |          |
|------------------------|----------|
| <b>Records on site</b> | <b>0</b> |
|------------------------|----------|

Areas which could be affected by past, current or future coal mining.

*This data is sourced from the Coal Authority.*

## 18.10 Brine areas

|                 |   |
|-----------------|---|
| Records on site | 0 |
|-----------------|---|

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

*This data is sourced from the Cheshire Brine Subsidence Compensation Board.*

## 18.11 Gypsum areas

|                 |   |
|-----------------|---|
| Records on site | 0 |
|-----------------|---|

Generalised areas that may be affected by gypsum extraction.

*This data is sourced from British Gypsum.*

## 18.12 Tin mining

|                 |   |
|-----------------|---|
| Records on site | 0 |
|-----------------|---|

Generalised areas that may be affected by historical tin mining.

*This data is sourced from Mining Searches UK.*

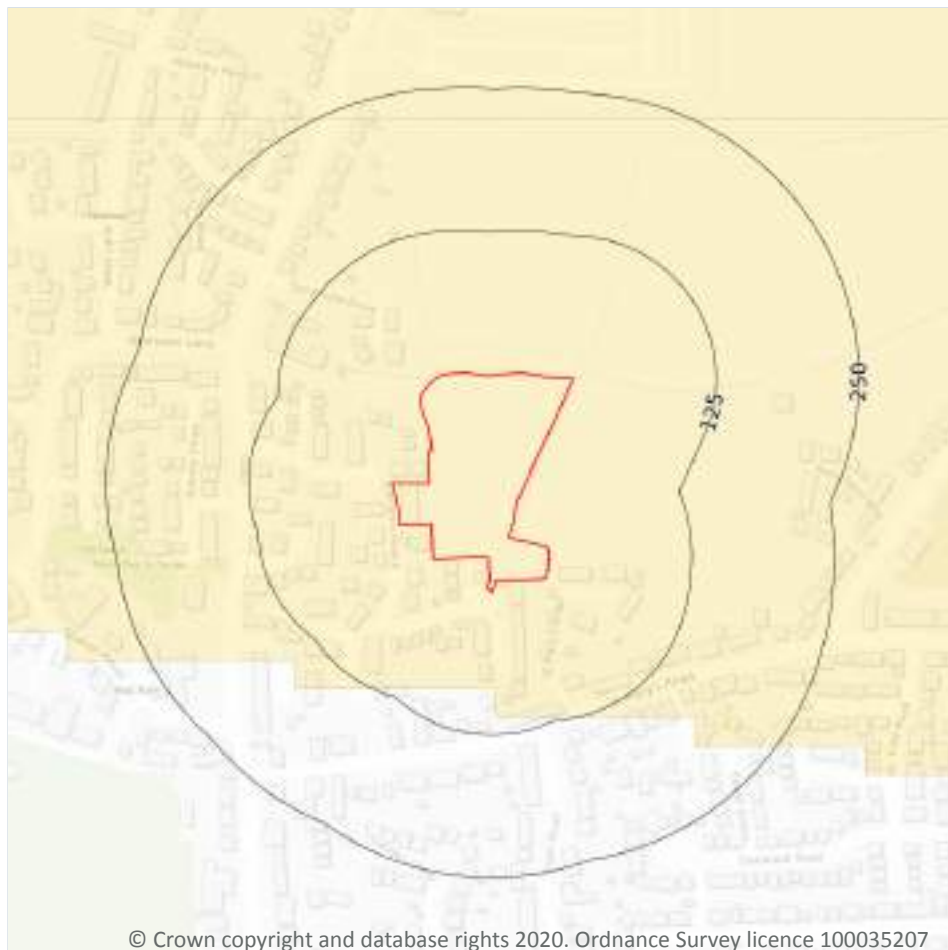
## 18.13 Clay mining

|                 |   |
|-----------------|---|
| Records on site | 0 |
|-----------------|---|

Generalised areas that may be affected by kaolin and ball clay extraction.

*This data is sourced from the Kaolin and Ball Clay Association (UK).*

## 19 Radon



- Site Outline
- Search buffers in metres (m)
- Greater than 30%
  - Between 10% and 30%
  - Between 5% and 10%
  - Between 3% and 5%
  - Between 1% and 3%
  - Less than 1%

### 19.1 Radon

#### Records on site

1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 102**

| Location | Estimated properties affected | Radon Protection Measures required |
|----------|-------------------------------|------------------------------------|
| On site  | Between 1% and 3%             | None                               |

*This data is sourced from the British Geological Survey and Public Health England.*



## 20 Soil chemistry

### 20.1 BGS Estimated Background Soil Chemistry

Records within 50m

2

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km<sup>2</sup>. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km<sup>2</sup>; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

| Location | Arsenic       | Bioaccessible Arsenic | Lead      | Bioaccessible Lead | Cadmium   | Chromium      | Nickel        |
|----------|---------------|-----------------------|-----------|--------------------|-----------|---------------|---------------|
| On site  | 15 mg/kg      | No data               | 100 mg/kg | 60 mg/kg           | 1.8 mg/kg | 60 - 90 mg/kg | 15 - 30 mg/kg |
| 21m S    | 15 - 25 mg/kg | No data               | 100 mg/kg | 60 mg/kg           | 1.8 mg/kg | 60 - 90 mg/kg | 15 - 30 mg/kg |

*This data is sourced from the British Geological Survey.*

### 20.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km<sup>2</sup>).

*This data is sourced from the British Geological Survey.*

### 20.3 BGS Measured Urban Soil Chemistry

Records within 50m

0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km<sup>2</sup>.

*This data is sourced from the British Geological Survey.*



## 21 Railway infrastructure and projects

### 21.1 Underground railways (London)

**Records within 250m****0**

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

*This data is sourced from publicly available information by Groundsure.*

### 21.2 Underground railways (Non-London)

**Records within 250m****0**

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

*This data is sourced from publicly available information by Groundsure.*

### 21.3 Railway tunnels

**Records within 250m****0**

Railway tunnels taken from contemporary Ordnance Survey mapping.

*This data is sourced from the Ordnance Survey.*

### 21.4 Historical railway and tunnel features

**Records within 250m****0**

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

*This data is sourced from Ordnance Survey/Groundsure.*

### 21.5 Royal Mail tunnels

**Records within 250m****0**

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.



*This data is sourced from Groundsure/the Postal Museum.*

## 21.6 Historical railways

**Records within 250m**

**0**

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

*This data is sourced from OpenStreetMap.*

## 21.7 Railways

**Records within 250m**

**0**

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

*This data is sourced from Ordnance Survey and OpenStreetMap.*

## 21.8 Crossrail 1

**Records within 500m**

**0**

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

*This data is sourced from publicly available information by Groundsure.*

## 21.9 Crossrail 2

**Records within 500m**

**0**

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

*This data is sourced from publicly available information by Groundsure.*

## 21.10 HS2

**Records within 500m**

**0**

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

*This data is sourced from HS2 Ltd.*



## Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see <https://www.groundsure.com/sources-reference>.

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Groundsure's Terms and Conditions can be accessed at this link: <https://www.groundsure.com/terms-and-conditions-jan-2020/>.



## Zetica UXB Risk Maps

# REGIONAL UNEXPLODED BOMB RISK

## HAMPSHIRE

| DENSITY OF BOMBS PER BOROUGH |                |                |            |
|------------------------------|----------------|----------------|------------|
| Borough                      | High explosive | Anti-personnel | Incendiary |
| Aldershot                    | 57             | 0              | 8          |
| Bournemouth                  | 266            | 5              | 16         |
| Christchurch                 | 166            | 0              | 8          |
| Eastleigh                    | 160            | 10             | 3          |
| Fareham                      | 447            | 11             | 22         |
| Gosport                      | 587            | 4              | 10         |
| Havant & Waterlooville       | 375            | 39             | 13         |
| Lymington                    | 177            | 0              | 9          |
| Portsmouth                   | 1221           | 34             | 40         |
| Southampton                  | 2510           | 30             | 12         |

On average, 10% of high explosive and 50% of incendiary bombs failed to explode.

**OTHER WWII TARGETS**

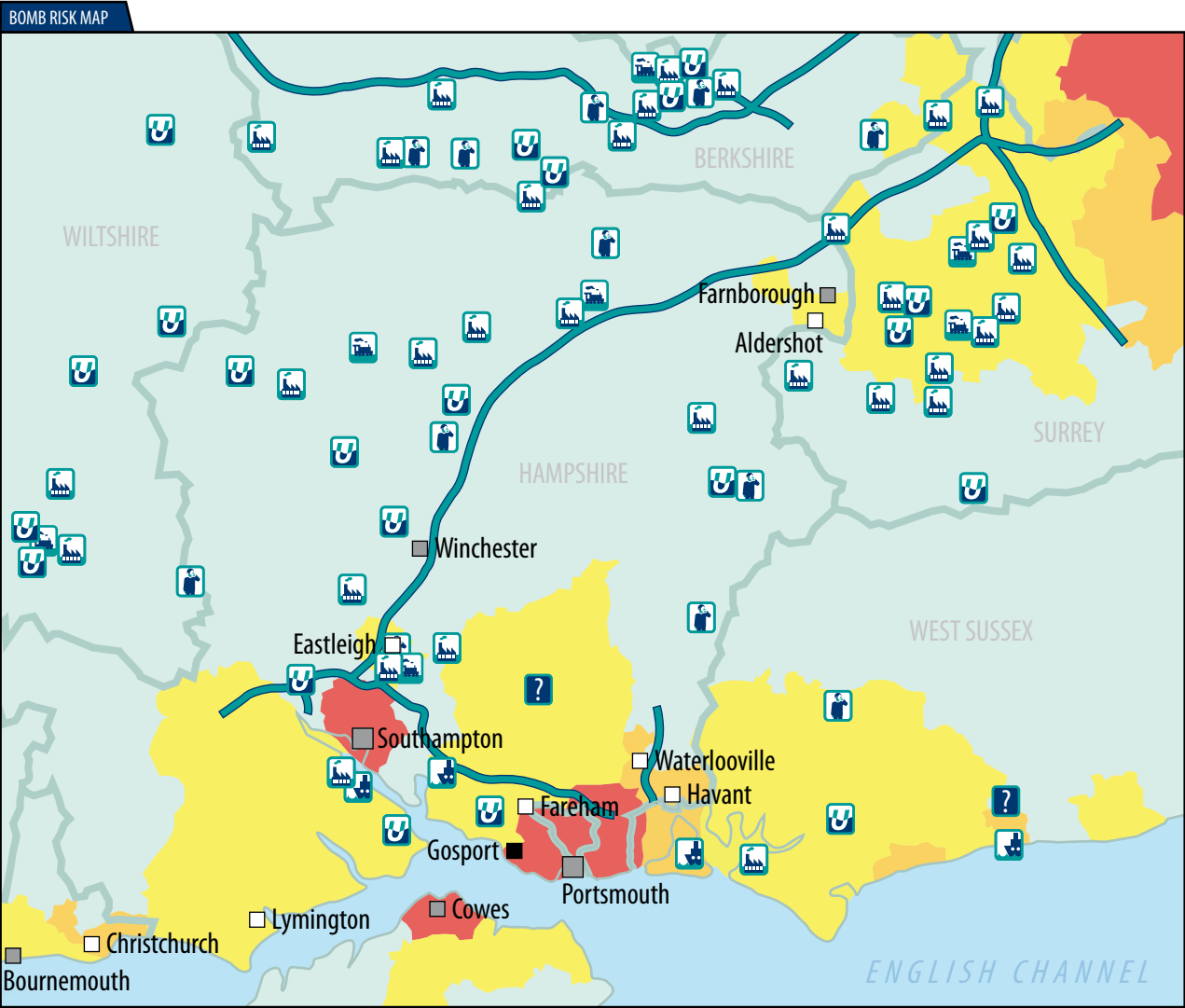
- military
- transport
- utilities
- industry
- docks
- other

**BOMB TONNAGE**

- >1000
- >500
- >100
- >0
- unverified

**BOMB RISK**

- high
- moderate
- low



The information in this regional UXB risk map is derived from a number of sources and should be read in conjunction with the "Users' Guide" (printed overleaf). Zetica cannot guarantee the accuracy or completeness of the information or data.

This map covers regions of coast with beaches, estuaries and alike. Further consideration of the bomb risk is required in these areas. The often inaccessible nature and changing ground conditions (e.g. movement of silt that may contain ordnance) means that historical bombing records for these areas are often poor or inaccurate and further assessment of the bomb risk may be required as part of a site specific study.

### A FOUR-STEP PROCESS

- Risk assessment and method statement from a qualified explosive ordnance clearance (EOC) operative.
- Surface geophysical survey to allow shallow groundwork.
- MAGCONE detects UXBs and obstructions on piling layout to the no-risk depth.
- Detected UXBs can be dealt with by our EOC engineers and a Clearance Certificate issued for the site.

For more details on this and related services, telephone: +44 (0) 1993 886682 or visit our website: [www.zetica.com](http://www.zetica.com)



# BOMB MAP USERS' GUIDE

## Sources of information and explanation of bomb risk

### Why?

Unexploded bombs (UXB) still present a risk to construction projects long after the end of the Second World War (WWII). UXBs often entered the ground unnoticed at high velocity and penetrated to a depth of several metres. Here they remain – vulnerable to disturbances from construction work. Beyond the depth of shallow excavation work, the greatest risk is to piling, drilling and probing crews. A piling rig could repeatedly hit a UXBs with considerable force before the crew realises an obstruction has been impacted. It could then be up to 72 hours before the detonator activates.

### Who?

The responsibility for avoiding UXB risk usually lies with construction companies or house builders particularly those who are redeveloping urban sites. In addition, project engineering or environmental consultants are expected to advise their clients of a site's history. Other interested parties include those organisations whose employees are physically at most risk from intrusive works, normally piling companies, drillers or probing operators.

### How?

UXB risk should be assessed for every site, but especially those in known heavily bombed areas or those situated near war-time strategic installations that were priority targets for enemy aircraft, for example, airfields. Zetica's regional bomb risk map is therefore a first point of reference from which the relative, potential abundance of UXBs can be judged. Consultants then advise their clients that an ordnance-risk desk study is required, which they may obtain from external sources. Construction companies or house builders who assess their own risk could choose to come direct to Zetica.

### When?

Do not wait for the piling or drilling company to be on site before thinking about UXB risk – it will inevitably cause delays and higher costs. Request the regional bomb risk map from Zetica as soon as a site is being considered, and then use it to help you or your clients to decide if an ordnance-risk desk study is required.

### Where?

Maps can be obtained for any county in England, Scotland, Wales or Northern Ireland – or for any London borough. They can help determine the areas that were most heavily bombed – but no part of the country should be considered 100% safe from UXB risk. Even remote rural areas can have a high risk if, for example, they were locations for decoy airfields or beacons that were lit to fool enemy pilots into thinking they had located a burning city that had been successfully hit by others in the raid.

### How to use this regional map

This map is designed to give you an indication of the potential risk from UXBs in your area. If you are conducting work that involves excavation, piling or other disturbance of the ground, then you should use the map to identify the category of risk for your site.

The risk boundaries are a guide, compiled from data based on the political areas for which records are held; being just outside a high-risk area does not mean there is no UXB risk. You should use the map to assist in your decision of whether to investigate the UXB risk further.

### Information on the regional risk remaining from UXBs in the UK

Zetica has built the largest UXB database of its kind in the UK. It includes a unique digital library of bomb census data, and maps showing key strategic points and bombing densities from the First and Second World Wars. The main sources of information include records from central government (Public Records Office), the Ministry of Defence, and the German Luftwaffe.

Using information from this database, Zetica has published maps of UXB risk on a regional, county and borough scale. The maps indicate relative degrees of UXB risk based on available records for bombing densities and known targeted areas for regions within the UK. The risk is broken down into individual boroughs, towns or cities. The data are based on the historical boroughs and are then overlaid onto the modern map. It is important to note that more-detailed research may be required for individual sites, particularly where proximity to a potential WWII target means the local risk may be higher.

### High risk

Areas designated as high risk are those that show a high density of bombing hits (50+ bombs per 1000 acres) and abundant potential WWII targets. In high-risk regions, further action to mitigate UXB risk is considered essential.

### Moderate risk

Moderate-risk regions are those that show a bomb density of between 11 and 50 bombs per 1000 acres and that may contain potential WWII targets. Action to mitigate the risk is considered essential, albeit more likely that a reduced scope of work is required compared with that needed for high-risk regions.

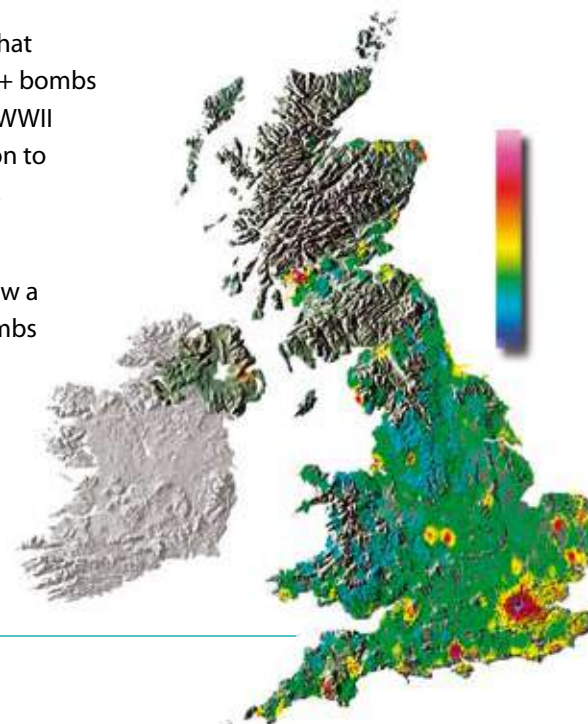
### Low risk

Low-risk regions are those with a bombing density of up to 10 bombs per 1000 acres. These areas are considered to have a significant but low UXB risk. In general, further action to mitigate the risk is considered prudent, although not essential. Care is required when assessing the risk for specific sites where the risk may be higher because of local wartime activity.

### Other WWII targets

Other regions with the risk of UXBs are key strategic points as defined by the government during WWII as representing potential enemy targets. Where these exist outside areas mapped as high, moderate or low risk, a site-specific assessment of the UXB risk may be required.

### Relative UXB risk across UK



### What to do if...

#### ...you have a site that has a potential UXB risk

In the absence of current legislation requiring you to address the risk from UXBs, your responsibilities under health and safety legislation and regulations such as construction design and management require that you address all identified risks. The first stage is to request further advice from a professional adviser such as Zetica, or to gain more site-specific information by commissioning an ordnance-risk desk study. Then a strategy to deal with the risk can be established that is tailored to your proposed work.

#### ...you find a suspect item or require advice

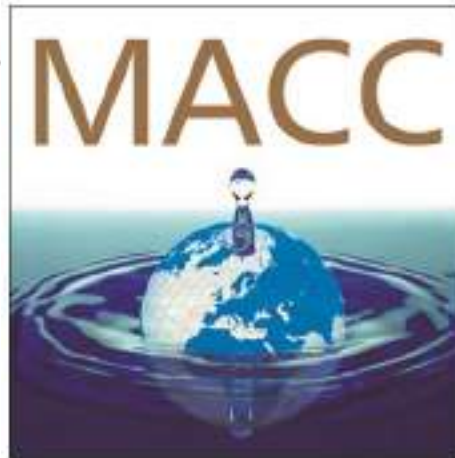
If during site works you find a suspect (ordnance-related) item, it is very important that you do not touch or move it (even if it has already been moved by an excavator). If it is clearly ordnance related, then dial 999 and ask for the police. Ensure that the area around the item is kept as clear as possible without placing yourself at risk. If you are unsure and do not wish to cause undue alarm, or you just require some advice, then you can call Zetica. We have experienced qualified UXB specialists on hand who can offer support and advice during any site works.

More-detailed procedures should be established in advance if you are in an area where the risk of finding a UXB is shown to be significant (moderate to high).

### Site-specific desktop studies

Zetica is able to provide high-quality, site-specific UXB risk information for any residential, industrial or commercial property in the UK. These desktop studies provide details of the bombing density within an area and for the site itself, in order to indicate the risks of UXBs still being present. A risk assessment is provided to facilitate informed decision making on whether any further risk mitigation measures are required.

## Preliminary UXO Desk Top Study



# **PRELIMINARY UNEXPLODED ORDNANCE RISK ASSESSMENT**

**Fathoms Reach  
Hayling Island  
West Sussex, PO11 0RR**

Prepared for: Hydrock

Project Number: 6690

Version: 1.0

Dated: 10/09/2020

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## REFERENCES

### Publications

Sources of information used in the compilation of this assessment included:

German Air Raids on Britain 1914-18. Morris 1925  
Unexploded Ordnance (UXO) – A guide for the Construction Industry. CIRIA C681  
Dangerous Energy. Cocroft 2000  
The Blitz Then and Now Volumes 1 to 3. Ramsey 1987  
Advanced German Weapons WW2. Ford 2000  
Dealing with Munitions in Marine Aggregates. UMA 2008  
United Nations International Mine Action Standards (IMAS). UN 2010  
Military Engineering Volume XII. War Office 1956  
German Bomb Fuzes. USN 1945  
Fields of Deception & Anti Aircraft Command. Dobinson 1988  
Target Reconnaissance Photography. Luftwaffe 1939-44

### Internet Information

Additional information was provided through the following credible internet sites, their assistance is credited where appropriate:

Army EOD Incidents  
RAF EOD Incidents & Air Situation Reports 1939-45  
Luftwaffe Strategy & Tactics  
Luftwaffe Bomber Specifications  
WO Defence Arrangements 1939-45  
News Reports Witness Accounts 1939-45  
Latest News Reports

### Project Information

Site and project information was provided by Hydrock.

## **TERMS AND DEFINITIONS**

### **Anti Aircraft Ammunition (AAA)**

High Explosive shells ranging from 30mm to 155mm used by air defence batteries to attack or deter enemy air attack.

### **Air Dropped Munition**

A bomb or container dropped from an aircraft which is designed to detonate at a pre determined altitude, on impact or using a delay mechanism; after impact.

### **Air Dropped Sub-Munitions (Bomblet)**

Small sub-munitions dispensed from a larger carrier which may be fixed to the aircraft or dropped as a single container munition which was designed to open above the target spreading its contents over a large area. Some designs are extremely dangerous and fitted with anti-handling devices.

### **Area Clearance**

This is the term used for the systematic clearance of explosive ordnance from land, including military property, firing and bombing ranges, airfields and training areas. When the land is a former wartime battle ground, the term used is Battle Area Clearance (BAC)

### **Blast Zone**

This term refers to the area around an explosive detonation where the explosive overpressure (Blast) can cause damage, injury or death.

### **Explosive Ordnance (EO)**

All manufactured or improvised items designed to contain explosive, propellant, pyrotechnic and fissionable material or biological or chemical agents or pre-cursors which when coupled with an initiation or dispersal system are designed to cause damage, injury or death.

### **Explosive Ordnance Disposal (EOD)**

A series of recognised procedures and protocols which are used by specialists in the detection, identification, evaluation, risk assessment, render safe, recovery and disposal of any item of explosive ordnance or improvised explosive device.

### **Fragmentation Zone**

This is the term which refers to the danger area in which a piece of an item of explosive ordnance will travel on detonation. This zone is normally greater than the blast zone.

### **Geophysical Survey**

The use of magnetometers, ground penetrating radar or other geophysical data gathering systems, which is then used for evaluation, risk assessment and to quantify further mitigation requirements.

### **High Explosive (HE)**

High explosives react/detonate at a rate of around 9,000 metres per second, to all intents and purposes, instantaneously.

### **Incendiary Bomb (IB)**

Incendiary bombs ranged from 1kg in size to 500kg the larger sizes were designated as Oil Bombs. Fills range from Thermite mixtures, Phosphorus, Kerosene or other pyrotechnic mixtures.

### **Intrusive Search**

This term refers to the process of introducing a specialist magnetometer by pushing or drilling the sensor in to the ground to a pre determined depth, thus allowing construction activities such as: piling, soil testing and deep intrusive ground works to be conducted safely.

### **Land Service Ammunition (LSA)**

LSA is a term that refers to all items containing explosives, pyrotechnic or noxious compounds which are placed, thrown or projected during land battles.

### **Oil Bomb (OB)**

Large airdropped bomb or modified ordnance container containing flammable material and accelerant, these weapons normally range in weight from 250 – 500kg.

### **Parachute Mine (PM)**

Air-dropped mine designed to detonate at a pre set altitude above the ground. Essentially a large blast bomb with an explosive content of 1600 kg commonly fitted with anti-handling or anti-removal fuzes.

### **Unexploded Bomb (UXB)**

Any air dropped bomb that has failed to function as designed.

### **Unexploded Ordnance (UXO)**

Explosive ordnance that has been primed, fused, armed or otherwise prepared for use or used. It may have been fired, dropped, launched or projected yet remains unexploded either through malfunction or design or for any other cause.

### **War Office (WO)**

This was the United Kingdom Government department responsible for defence of the realm, forerunner of the Ministry of Defence (MoD).

### **White Phosphorus (WP)**

Munitions filled with WP are designed for signalling, screening and incendiary purposes. They achieve their effect by dispersing WP, which burns on contact with the air.

## **1 INTRODUCTION**

### **1.1 Instruction & Scope**

MACC International Ltd was commissioned by Hydrock to conduct a Preliminary Unexploded Ordnance (UXO) Risk Assessment for land at Fathoms Reach, Hayling Island, West Sussex, PO11 0RR (See Annex 'A'). The scope of the assessment is to determine the likelihood of an uncontrolled encounter with UXO within the context of ground investigations.

### **1.2 Methodology & Purpose**

The methodology used in the assessment complies with the United Nations (IMAS) standards, the CIRIA C681 "Unexploded Ordnance (UXO) – A guide for the Construction Industry" and the recognised best practice advocated by the Health and Safety Executive (HSE). The quality and environmental aspects of the assessment comply with UKAS Accredited ISO 9001:2015 and ISO 14001:2015 standards. The purpose of the assessment is that of evaluation and to provide an aid in decision making by our client.

## **2 DETERMINING THE LIKELIHOOD OF ENCOUNTER**

### **2.1 Aim, Research Restrictions & Indemnity**

This assessment has drawn upon archive records which are within the public domain; however, these are acknowledged to be incomplete. Consequently, some incidents may have occurred where the records no longer exist or could not be located. The Secretary of State of the United Kingdom and MACC International Ltd does not accept responsibility for the accuracy or completeness of the information contained within the records. Some records regarding the UXO situation on some sites may not yet be within the public domain. Consequently, such information was not available for evaluation by MACC International Ltd.

### **2.2 Relevant Publications & Credible Internet Information**

Published sources of information used in the compilation of this assessment are listed within the reference section of this assessment including those provided by the client. Additional information was provided through credible internet sites, their assistance is credited where appropriate and details are listed within the reference section of this assessment.

## **3 FUTURE DEVELOPMENT**

Future intentions for the site were not disclosed. It has however been assumed that Geo-environmental investigations will be undertaken prior to the commencement of any subsequent development works.

## **4 HISTORICAL INFORMATION**

### **4.1 British Archives**

Prior to 1942 the United Kingdom did not operate a national recording system for EO/UXO incidents or military use of land. The records compiled during 1939-1942 were conducted under local arrangements and were only as detailed and accurate as the availability of time, personnel and the ease of access to information would allow. In April 1942 the Ministry of Home Security instigated a training programme for all personnel maintaining bomb census records, these standardised national records and greatly improved the accuracy of the information.

### **4.2 Manned Air Raids & Unmanned Rocket Attack Reports**

WWI: No records were found to confirm a bomb strike within the site footprint or immediate surrounding area during this period. Consequently, this source of UXO contamination is not considered to be credible.

WWII: The general area suffered a significant level of enemy bombing during WWII. Multiple bombing decoys were established at Hayling Island, notably to the south-west of the site at Sinah Common, to attract enemy attention and in turn divert raids from the more densely populated Portsmouth. Records indicate that the West Town area suffered serious damage as a result of enemy bombing including extensive damage caused by land mines dropped in the area on 17<sup>th</sup> April 1941. HE bomb strikes were also recorded to the east of the site at Elm Lane, to the south at Hollow Lane and to the north-east near Church Road. Consequently, this source of UXO contamination is considered to be credible at a preliminary level.

### **4.3 Other Sources of UXO Contamination**

Several Anti-Aircraft gun sites were located in the area to defend against air attack, the nearest of which was an Anti-Aircraft Searchlight battery located c.a.450m to the south-east. Combat engagements with enemy aircraft did take place during WWII; consequently, this source of UXO contamination is considered credible.

There was an extensive military presence on Hayling Island during WWII. Various holiday camps were requisitioned for military use and training activities took place across the island. Whilst no records were found to confirm any military use of the site footprint, this source of potential UXO contamination cannot be ruled out entirely at a preliminary level.

## **5 DETERMINING THE NATURE OF RISK**

### **5.1 General**

While HE bombs are very unlikely to detonate if left undisturbed it remains inherently dangerous and may function if subjected to suitable stimuli. The most common of these stimuli is shock, friction or heat which may cause the fuze to function or unstable explosive materials (Picrate Acid) to explode. However, in the case of incendiary bombs containing White Phosphorus (WP) exposure of the WP to the air will result in its violent ignition and combustion.

### **5.2 Bomb Trajectory & Ground Penetration**

During WWII the Ministry of Home Security undertook a major assessment on bomb penetration depths using 1,328 actual bomb impact events to provide statistical analysis of penetration potential. As a result they determined the expected behaviour of a range of bomb weights through different geological strata around the Capital. Their findings remain the only empirical gained figures to have been gathered to date for England. A number of factors will influence the behaviour of a bomb on impact with the target and its trajectory through the ground. Relevant factors include: Height and speed of release of the bomb, aerodynamic qualities of the bomb, the angle of flight and impact and the nature of impact surface and sub soil. In determining the potential bomb penetration depths into the ground, historic geotechnical information and typical bomb characteristics were used. The maximum bomb penetration depth is estimated at 10.5 metres from the 1941 ground levels.

5.3 Bombs have been known to strike outside a building footprint and travel below the surface coming to rest within the building footprint. As did the recent 250kg HE bomb found within a cellar in Bethnal Green. The expected offset from impact point is estimated to be 3.0-5.0 metres.

## **6 ENVIRONMENTAL IMPACT FROM UXO**

### **6.1 Ground Contamination & Health Risk vectors**

While it is acknowledged that there is a potential risk of ground contamination arising from explosive fillings which may leach from a damaged bomb casing into the surrounding soil. The amount of explosive material within the most common bombs is not considered sufficient to pose a significant environmental risk. Nevertheless, it should be noted that the following components are commonly used in the manufacture of a high explosive bomb and may pose a localised contamination risk to health: metals including; Lead, Zinc, Brass, Copper, Steel, Mercury, Silver Fulminate and Aluminium. Other chemical Compounds including; Trinitrophenol, Trinitrotolulene, Trimethylene Trinitramine, Ammonium, Sodium Nitrate, Nitro-glycerine and White Phosphorus. It is recommended that specialist medical advice be sought to identify specific risks to health posed by these chemical compounds.

## 7 RISK ASSESSMENT

### 7.1 Risk Source

Records were found to indicate a significant level of enemy bombing within the immediate surrounding area of the site footprint during WWII. Records are acknowledged to be incomplete and may include omissions and errors; the possibility that items of UXO may have found their way onto the site and remain there to the present day is considered credible.

### 7.2 Risk Pathway

The risk pathway is considered to be any ground intrusive earth works carried out while undertaking geo-environmental investigations or building work.

### 7.3 Consequence

The consequences of a UXB detonation on site during construction works are considered to be a factor of the size of the blast and the proximity of assets and individuals to the point of detonation. These will include potential to kill or seriously injure personnel destroy or damage high value site assets, nearby public and private property and infrastructure.

### 7.4 Risk Rating

Table 1 Risk Level

| PRELIMINARY UXO RISK RATING                                                                                                                      |                  |                   |                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------|---------------------|
| Hand dug excavations                                                                                                                             | $3 \times 1 = 3$ | $1 \times 5 = 5$  | $3 \times 5 = 15$   |
| Limited mechanical excavations or trenching                                                                                                      | $3 \times 2 = 6$ | $2 \times 5 = 10$ | $6 \times 10 = 60$  |
| Drilling or Sampling                                                                                                                             | $3 \times 3 = 9$ | $3 \times 5 = 15$ | $9 \times 15 = 135$ |
| <div> <div>1= Minimal    5=significant</div> <div> <div>LOW<br/>0-100</div> <div>MEDIUM<br/>100-200</div> <div>HIGH<br/>200+</div> </div> </div> |                  |                   |                     |

## 8 ASSESSMENT FINDINGS

### 8.1 Risk Levels

The assessment has determined the preliminary UXO risk within the site footprint. When viewed from likelihood versus consequence standpoint; it is considered prudent to recommend a suitable degree of UXO mitigation to permit the work to proceed in the safest “acceptable” manner in compliance with current legislation and best practices.

## 9 RECOMMENDATIONS FOR RISK MITIGATION

9.1 It is recommended that a Detailed UXO Desk Top Study is commissioned to more accurately define the risk level and to complete detailed assessment on the mitigation requirements over the project’s lifetime.

9.2 Alternatively, the preliminary risk levels are accepted and the following mitigation measures are carried out as a minimum requirement:

#### All Risk Levels

- Risk Communication & Safety Planning: Stakeholders should be made aware of the UXO risk levels within the project boundary and the possible impact an encounter may have on the project and third parties. Consequently, a UXO Safety Plan should be drawn up and included with the overall project safety planning.
- Safety Training: In keeping with CDM Regulations concerning all sub-surface hazards, UXO Safety Induction Training should be provided to everyone working or visiting the site. The training should be commensurate with the individual’s responsibilities and duties on site. The training should be provided by a competent individual (preferably a trained EOD Engineer) and delivered as a separate module of the Site Safety Induction Course or as a Toolbox Talk.

Additional mitigation requirements for the medium risk activities within post-war unworked ground:

- Drilling & Sampling: These activities should be checked for UXO by an EOD Engineer equipped with specialist magnetometers ahead of the drilling/sampling bits.

## **10 POST MITIGATION RISK**

### **10.1 Overview**

Prudent execution of the recommended risk mitigation strategy will reduce the risk, however it is emphasised that zero risk is not achievable given the possible variables. The study has confirmed the UXO risk level based on the nature of the work to be undertaken and has recommended suitable mitigation. An effective risk mitigation strategy will require detailed scoping to achieve its desired results in providing an acceptable level of risk. For further information concerning any part of this study please contact MACC International Ltd.

### **10.2 Intent & Use**

This document has been produced in the United Kingdom by MACC International Limited and meets the requirements of CIRIA C681 "Unexploded Ordnance (UXO) – A guide for the Construction Industry" It has been provided solely for the purpose of assessment and evaluation. It is not intended to be used by any person for any purpose other than that specified. Any liability arising out of use by a third party of this document for purposes not wholly connected with the above shall be the responsibility of that party, who shall indemnify MACC International Limited against all claims, costs, damages and losses arising out of such use.



SITE MAPPING

 Site Boundary



## Detailed UXO Desk Top Study

M

MACC



C

# **DETAILED UNEXPLODED ORDNANCE RISK ASSESSMENT**

## **Fathoms Reach Hayling Island PO11 0RR**

**Prepared for: Hydrock**

**Project Number: 6690**

**Version: 1.0**

**Dated: 26/10/2020**

## DISTRIBUTION

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## REFERENCES

### Publications

Sources of information used in the compilation of this study included:

German Air Raids on Britain 1914-18. Morris 1925  
Unexploded Ordnance (UXO) – A guide for the Construction Industry. CIRIA C681  
Dangerous Energy. Cocroft 2000  
The Blitz Then and Now Volumes 1 to 3. Ramsey 1987  
Advanced German Weapons WW2. Ford 2000  
Dealing with Munitions in Marine Aggregates. UMA 2008  
United Nations International Mine Action Standards (IMAS). UN 2010  
Military Engineering Volume XII. War Office 1956  
German Bomb Fuzes. USN 1945  
Fields of Deception & Anti Aircraft Command. Dobinson 1988  
Target Reconnaissance Photography. Luftwaffe 1939-44  
Battle Stations Volume 3 DJ Smith 1980  
National & Local Archive Reports, Accounts and Bomb Census Maps (where available)

### Internet Information

Additional information was provided through the following credible internet sites, their assistance is credited where appropriate:

Army EOD Incidents  
RAF EOD Incidents & Air Situation Reports 1939-45  
Luftwaffe Strategy & Tactics  
Luftwaffe Bomber Specifications  
WO Defence Arrangements 1939-45  
News Reports Witness Accounts 1939-45  
Latest News Reports

### Project Information

Site and project information was provided by Hydrock.

## **TERMS AND DEFINITIONS**

### **Anti Aircraft Ammunition (AAA)**

High Explosive shells ranging from 30mm to 155mm used by air defence batteries to attack or deter enemy air attack.

### **Air Dropped Munition**

A bomb or container dropped from an aircraft which is designed to detonate at a pre determined altitude, on impact or using a delay mechanism; after impact.

### **Air Dropped Sub-Munitions (Bomblet)**

Small sub-munitions dispensed from a larger carrier which may be fixed to the aircraft or dropped as a single container munition which was designed to open above the target spreading its contents over a large area. Some designs are extremely dangerous and fitted with anti-handling devices.

### **Area Clearance**

This is the term used for the systematic clearance of explosive ordnance from land, including military property, firing and bombing ranges, airfields and training areas. When the land is a former wartime battle ground, the term used is Battle Area Clearance (BAC)

### **Blast Zone**

This term refers to the area around an explosive detonation where the explosive overpressure (Blast) can cause damage, injury or death.

### **Explosive Ordnance (EO)**

All manufactured or improvised items designed to contain explosive, propellant, pyrotechnic and fissionable material or biological or chemical agents or pre-cursors which when coupled with an initiation or dispersal system are designed to cause damage, injury or death.

### **Explosive Ordnance Disposal (EOD)**

A series of recognised procedures and protocols which are used by specialists in the detection, identification, evaluation, risk assessment, render safe, recovery and disposal of any item of explosive ordnance or improvised explosive device.

### **Fragmentation Zone**

This is the term which refers to the danger area in which a piece of an item of explosive ordnance will travel on detonation. This zone is normally greater than the blast zone.

### **Geophysical Survey**

The use of magnetometers, ground penetrating radar or other geophysical data gathering systems, which is then used for evaluation, risk assessment and to quantify further mitigation requirements.

### **High Explosive (HE)**

High explosives react/detonate at a rate of around 9,000 metres per second, to all intents and purposes, instantaneously.

### **Imperial War Museum (IWM)**

Wartime records source based in Lambeth Road London.

### **Incendiary Bomb (IB)**

Incendiary bombs ranged from 1kg in size to 500kg the larger sizes were designated as Oil Bombs. Fills range from Thermite mixtures, Phosphorus, Kerosene or other pyrotechnic mixtures.

### **Intrusive Search**

This term refers to the process of introducing a specialist magnetometer by pushing or drilling the sensor in to the ground to a pre determined depth, thus allowing construction activities such as: piling, soil testing and deep intrusive ground works to be conducted safely.

### **Land Service Ammunition (LSA)**

LSA is a term that refers to all items containing explosives, pyrotechnic or noxious compounds which are placed, thrown or projected during land battles.

### **Local Records Office (LRO)**

Wartime records source charged with maintaining the records for the Region, County, Borough or City.

### **National Archive (NA)**

Wartime records source housed in Kew Gardens London.

### **Oil Bomb (OB)**

Large airdropped bomb or modified ordnance container containing flammable material and accelerant, these weapons normally range in weight from 250 – 500kg.

### **Parachute Mine (PM)**

Air-dropped mine designed to detonate at a pre set altitude above the ground. Essentially a large blast bomb with an explosive content of 1600 kg commonly fitted with anti-handling or anti-removal fuzes.

### **Unexploded Bomb (UXB)**

Any air dropped bomb that has failed to function as designed.

### **Unexploded Ordnance (UXO)**

Explosive ordnance that has been primed, fused, armed or otherwise prepared for use or used. It may have been fired, dropped, launched or projected yet remains unexploded either through malfunction or design or for any other cause.

### **War Office (WO)**

This was the United Kingdom Government department responsible for defence of the realm, forerunner of the Ministry of Defence (MoD).

### **White Phosphorus (WP)**

Munitions filled with WP<sub>4</sub> are designed for signalling, screening and incendiary purposes. They achieve their effect by dispersing WP, which burns on contact with the air.

### **World War One or Two (WWI or WW2)**

Period of multi-national conflict, specifically: WW1; 1914-1918 or WWII; 1939-1945.

## **1 INTRODUCTION**

### **1.1 Instruction & Scope**

MACC International Ltd was commissioned by Hydrock to conduct a Detailed Unexploded Ordnance (UXO) Risk Assessment for Fathoms Reach, Hayling Island, PO11 0RR (See Annex 'A'). The scope of the assessment is to determine the likelihood of an encounter with UXO within the context of the execution of ground investigations and any subsequent development works.

### **1.2 Methodology & Purpose**

The methodology used in the assessment complies with the United Nations (IMAS) standards for UXO/Mine Level 1 Survey (Desk Top Study), the CIRIA C681 "Unexploded Ordnance (UXO) – A guide for the Construction Industry" and the recognised best practice advocated by the Health and Safety Executive (HSE). The quality and environmental aspects of the assessment comply with UKAS Accredited ISO 9001:2015 and ISO 14001:2015 standards. The purpose of the assessment is that of evaluation and to provide an aid in decision making by our client.

## **2 DETERMINING THE LIKELIHOOD OF ENCOUNTER**

### **2.1 Aim, Research Restrictions & Indemnity**

This risk assessment has drawn upon archive records which are within the public domain; however, these are acknowledged to be incomplete. Consequently, some incidents may have occurred where the records no longer exist or could not be located. The Secretary of State of the United Kingdom and MACC International Ltd does not accept responsibility for the accuracy or completeness of the information contained within the records. Some records regarding the UXO situation on some sites may not yet be within the public domain. Consequently, such information was not available for evaluation by MACC International Ltd. Research of the site history, regarding military usage, bombing raids and bomb impacts has been undertaken to establish the following:

- Frequency and location of enemy bombing raids and damage sustained to the site.
- The potential for UXO to remain on the site.
- Records of UXO removal activities and encounters.

## 2.2 Relevant Publications & Credible Internet Information

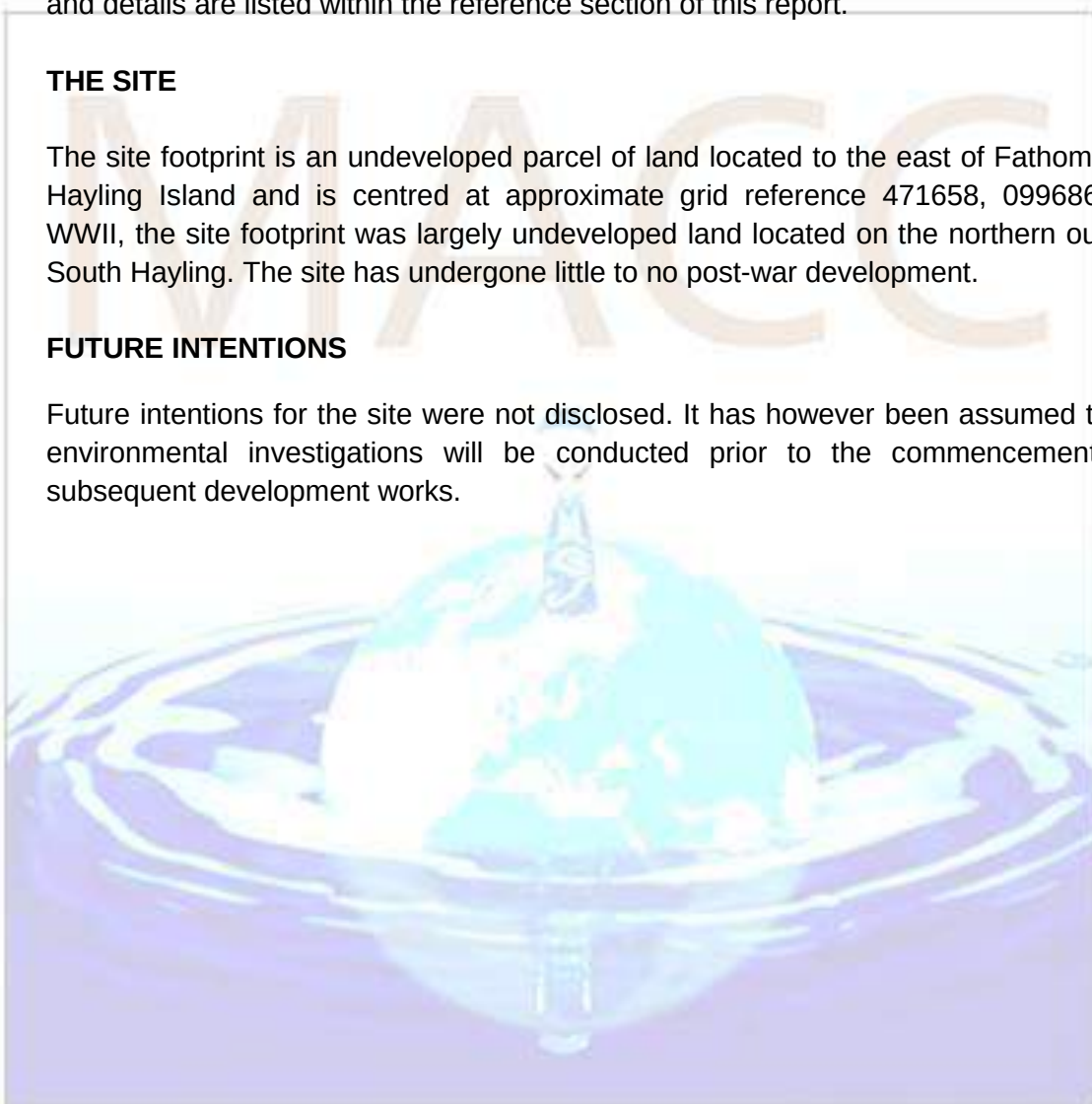
Published sources of information used in the compilation of this assessment are listed within the reference section including those provided by the client. Additional information was provided through credible internet sites; their assistance is credited where appropriate and details are listed within the reference section of this report.

## 3 THE SITE

The site footprint is an undeveloped parcel of land located to the east of Fathoms Reach, Hayling Island and is centred at approximate grid reference 471658, 099686. During WWII, the site footprint was largely undeveloped land located on the northern outskirts of South Hayling. The site has undergone little to no post-war development.

## 4 FUTURE INTENTIONS

Future intentions for the site were not disclosed. It has however been assumed that Geo-environmental investigations will be conducted prior to the commencement of any subsequent development works.



## **5 HISTORICAL INFORMATION**

### **5.1 British Archives**

Prior to 1942 the United Kingdom did not operate a national recording system for EO/UXO incidents or military use of land. The records compiled during 1939-1942 were conducted under local arrangements and were only as detailed and accurate as the availability of time, personnel and the ease of access to information would allow. In April 1942, the Ministry of Home Security instigated a training programme for all personnel maintaining bomb census records, these standardised national records and greatly improved the accuracy of the information. Lack of exact bomb strike positions were most common where bombs fell on open ground well away from structures or buildings.

### **5.2 Manned Air Raids & Unmanned Rocket Attack Reports**

WWI: No records were found to confirm a bomb strike within the site footprint or adjacent land during this period. Consequently, this source of UXO contamination is not considered to be credible.

WWII: The general area suffered a significant level of enemy bombing during WWII, likely due to the multiple bombing decoys established at Hayling Island to attract enemy attention and in turn divert raids from the more densely populated Portsmouth (see Section 5.7 Bombing Decoys).

Records indicate that the West Town area suffered serious damage during this period. Most notably, extensive damage was caused in the general area to the south-west of the site by land mines dropped on 17<sup>th</sup> April 1941. On 6<sup>th</sup>/7<sup>th</sup> December 1942, a parachute mine fell approximately 600m to the north-east of the site in a meadow near the junction of Church Road and Manor Road. HE bomb strikes were also recorded to the east of the site at Elm Lane and to the south at Hollow Lane.

However, no records were found to confirm or otherwise indicate a bomb strike within the site footprint or immediately adjacent land. Consequently, this source of UXO contamination is on balance considered to be unlikely.

### **5.3 Airdropped Sub-Munitions' Reports**

Although enemy cluster/incendiary bombs were recorded to have fallen within the general area during WWII, no records were found to indicate such strikes within the site footprint. Given the low ground penetration potential for such weapons, this source of UXO contamination is on balance considered to be unlikely.

#### 5.4 **Anti-Aircraft Ammunition (AAA) Reports**

Local fixed and mobile Anti-Aircraft batteries were positioned in the area to defend against air attack, the nearest of which was an Anti-Aircraft Searchlight Battery located approximately 450m to the south-east. It is considered reasonable to assume that test firing and combat engagements with enemy aircraft did take place during WWII. Consequently, this source of UXO contamination is considered to be credible.

#### 5.5 **Abandoned Bomb Reports**

No records were found to confirm or otherwise indicate that an unexploded bomb was abandoned within the site footprint.

#### 5.6 **Migration of UXO**

It is considered possible; albeit unlikely, that a bomb was imported onto the site from other bomb sites. Additionally, where land ground levels have been increased or in-filled using Marine Dredged Aggregates there is a high potential for the aggregate to contain items of UXO. Consequently, these must be considered to have the potential to represent an additional source of UXO contamination.

#### 5.7 **Bombing Decoys**

Two bombing decoys were located in the general area during WWII. These were located approximately 1.6km to the north-west of the site and approximately 2.2km to the south-west at Sinah Common. However, no bombing decoys were recorded within the immediate vicinity of the site. Consequently, these are considered to be an unlikely source of additional UXO contamination.

#### 5.8 **Military Use**

There was an extensive military presence on Hayling Island during WWII. Various holiday camps were requisitioned for military use and training activities took place across the island. However, no formal records or anecdotal accounts were found to indicate military use of the site footprint itself. Consequently, this source of UXO contamination is on balance considered to be unlikely, but cannot be ruled out entirely.

#### 5.9 **Downed / Crashed Military Aircraft**

No records were found to indicate that an armed aircraft crashed within the site footprint.

## **6 DETERMINING THE NATURE OF RISK**

### **6.1 General**

While HE warheads are very unlikely to detonate if left undisturbed they remain inherently dangerous and may function if subjected to suitable stimuli. The most common of these stimuli is shock, friction or heat which may cause the fuze to function or unstable explosive materials such as Picric Acid (2-4-6 Trinitrophenol (TNP)) to explode. However, in the case of incendiary bombs containing White Phosphorus (WP<sub>4</sub>) exposure of the WP to the oxygen in the air will result in its violent ignition and combustion which may cause any HE content within the munition to detonate.

### **6.2 German Bombing Tactics**

The tactics employed by the German Air Force during WWII show that they had a wide variety of bombs at their disposal. The most common ranged in weight from 50 kg through to 500 kg. Some models in this range of bombs were designed to be “carrier” bombs. These containers could hold potentially hundreds of smaller sub-munitions (anti personnel or incendiary bomblets). Although dropped in lesser quantities, the German arsenal also included larger bombs and parachute mines up to 1,400 kg in weight. Unmanned attacks were also mounted by the Germans using V1 Rockets and V2 Missiles, each with a warhead around 1,000 kg in weight.

### **6.3 Bomb Trajectory & Ground Penetration**

During WWII, the Ministry of Home Security undertook a major study on bomb penetration depths using 1,328 actual bomb impact events to provide statistical analysis of penetration potential. As a result, they determined the expected behaviour of a range of bomb weights through different geological strata around the Capital. Their findings remain the only empirical gained figures to have been gathered to date for England. A summary of their findings can be found in Table 1 of this study. A number of factors will influence the behaviour of a bomb on impact with the target and its trajectory through the ground. Relevant factors include: Height and speed of release of the bomb, aerodynamic qualities of the bomb, the angle of flight and impact and the nature of impact surface and sub soil.

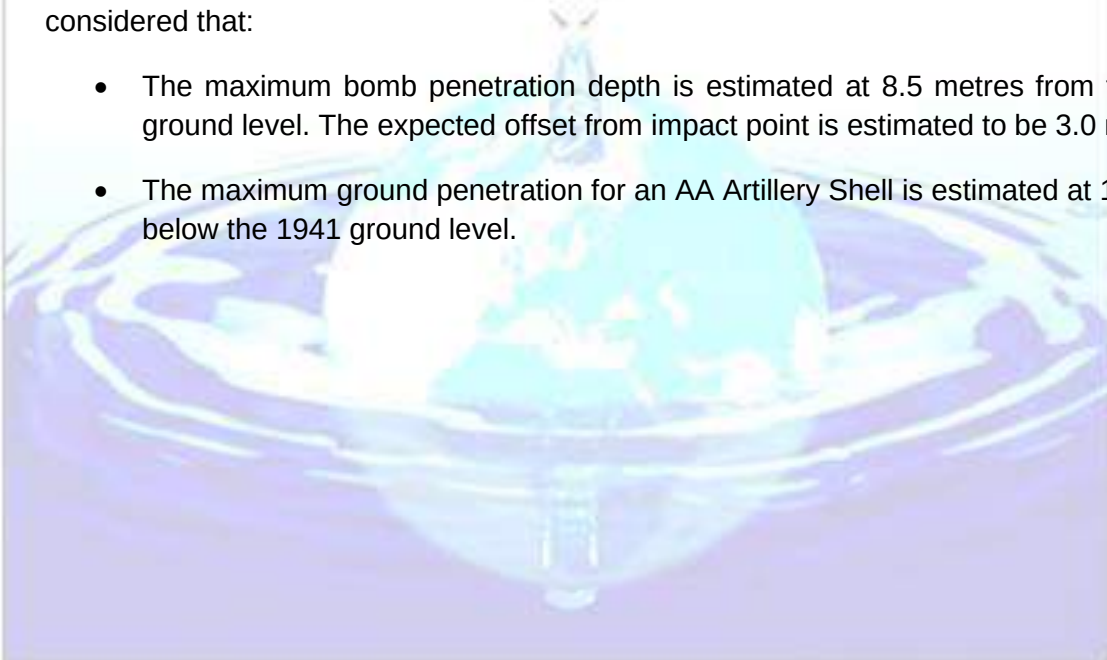
- 6.3.1 In determining the potential bomb penetration depths into the ground, using the historic geotechnical information, other factors considered were: Release height 4,545 metres (15,000 ft). Most common GP Bomb used of 500 kg in weight and an impact Angle Range of 90° (tail vertical) to 0° (tail horizontal).

6.3.2 Table 1. Extract of Ministry of Home Security Bomb Penetration Study

| Sub Soil Type            | Bomb Weights |         |       |         |
|--------------------------|--------------|---------|-------|---------|
|                          | 50kg         | 250kg   | 500kg | 1000kg  |
| Soft Rock or Made Ground | 2.442        | 5.016   | 6.006 | 7.062   |
| Gravel                   | 2.442        | 5.016   | 6.006 | 7.062   |
| Dry Clay                 | 3.7          | 7.6     | 9.1   | 10.7    |
| Average Offset (m)       | 0.8-1.6      | 1.6-3.7 | 3-4.5 | 3.4-5.3 |

6.3.3 Bombs on penetration of the surface do not tend to follow a straight line trajectory, due to a number of factors, shape, angle of entry, weight and speed; they tend to arc or curve; known as a “J” curve. With the horizontal distance from the entry point to the resting point known as the offset. The typical offset is generally taken to be  $\frac{1}{3}^{rd}$  of the penetration depth. However, this distance can vary greatly if the bomb strikes an obstacle just below the surface. With this mechanism of offset, it is therefore a possibility that a bomb could enter the ground outside a building and come to rest within its footprint. Having reviewed the bomb penetration information and having provided a reasonable safety factor it is considered that:

- The maximum bomb penetration depth is estimated at 8.5 metres from the 1941 ground level. The expected offset from impact point is estimated to be 3.0 metres.
- The maximum ground penetration for an AA Artillery Shell is estimated at 1.5 metre below the 1941 ground level.



## 7 ENVIRONMENTAL IMPACT FROM UXO

### 7.1 Ground Contamination & Health Risk vectors

The amount of explosive material within the most common bombs is not considered sufficient to pose a significant widespread environmental risk. Nevertheless, it should be noted that the following components are commonly used in the manufacture of a high explosive bomb and may pose a localised contamination risk to health:

- 
- Lead (Pb)
  - Zinc (Zn)
  - Copper (Cu)
  - Iron (Fe)
  - Mercury (Hg)
  - Silver Fulminate ( $\text{AgCNO}$ )
  - Aluminium (Al)
  - Trinitrophenol ( $\text{C}_6\text{H}_3\text{N}_3\text{O}_7$ )
  - Trinitrotoluene ( $\text{C}_7\text{H}_5\text{N}_3\text{O}_6$ )
  - Trimethylene ( $\text{N}(\text{CH}_3)_3$ )
  - Trinitramine ( $\text{C}_3\text{H}_6\text{N}_6\text{O}_6$ )
  - Ammonium ( $\text{NH}_4$ )
  - Sodium Nitrate ( $\text{NaNO}_3$ )
  - Nitro-glycerine ( $\text{C}_3\text{H}_5\text{N}_3\text{O}_9$ )
  - White Phosphorus ( $\text{WP}_4$ ). This chemical may pose a significant immediate risk of spontaneously combusting when exposed to the oxygen in the air. WP will generate large quantities of toxic white smoke when ignited.

7.2 It is recommended that specialist environmental and medical advice be sought to identify any health or other risks posed by these and other chemical compounds.

## **8 RISK ASSESSMENT**

### **8.1 Risk Source**

Although the general area did suffer a significant level of enemy bombing during WWII, no records were found to confirm a bomb strike within the site footprint. Records are acknowledged to be incomplete and include errors; the possibility that items of UXO may have found their way onto the site and remain to the present day is considered credible.

### **8.2 Risk Pathway**

The risk pathway is considered to be ground intrusive investigations and earth works.

### **8.3 Consequence**

The consequences of a UXB detonation on site during construction works are considered to be a factor of the size of the blast and the proximity of assets and individuals to the point of detonation. These will include potential to kill or seriously injure personnel destroy or damage high value site assets, nearby public and private property and infrastructure.

### **8.4 Risk Rating**

**H** = A figure derived from assessing the history of the site weighing up factors such as recorded bomb damage, threat weapon type, military use and the scope of any post conflict development.

**W** = A figure derived from assessing the type of the process to be undertaken without putting in place any UXO mitigation measures. A low figure is assigned where the process is relatively non aggressive (minimal ground or point shock). A high figure is used where the work is considered aggressive (significant ground or point shock).

**L** = A figure derived by multiplying figures H and W to provide an overall likelihood of an encounter with UXO.

**S** = A figure derived by assessing the scope or extent of the works; a low figure is assigned where the volume of risk material is limited. A high figure is used where for example the volume of risk material is considerable such as “bulk digs” or shafting.

**P** = A Figure derived from assessing the result of an explosion, including primary and secondary risk pathways and receptors. A high figure is attributed for example in a gas works while a low figure is applied to a remote, rural open space.

**C** = A figure derived by multiplying figures S and P to provide an overall consequence of an encounter with UXO.

8.5 Table 2 Risk Level – From all potential UXO contamination sources

| <b>UXO RISK RATING (Post War Worked Ground)</b>                                                                                           |                           |                            |                            |
|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|----------------------------|----------------------------|
| Activity                                                                                                                                  | Likelihood<br>(H x W = L) | Consequence<br>(S x P = C) | Risk Rating<br>(L x C = R) |
| Hand dug excavations                                                                                                                      | 1 x 1 = 1                 | 1 x 5 = 5                  | 1 x 5 = 5                  |
| Limited mechanical excavations or trenching                                                                                               | 1 x 2 = 2                 | 2 x 5 = 10                 | 2 x 10 = 20                |
| Drilling, sampling, bulk excavations or piling                                                                                            | 1 x 3 = 3                 | 3 x 5 = 15                 | 3 x 15 = 45                |
| <b>UXO RISK RATING (Post War Un-Worked Ground)</b>                                                                                        |                           |                            |                            |
| Activity                                                                                                                                  | Likelihood<br>(H x W = L) | Consequence<br>(S x P = C) | Risk Rating<br>(L x C = R) |
| Hand dug excavations                                                                                                                      | 2 x 1 = 2                 | 1 x 5 = 5                  | 2 x 5 = 10                 |
| Limited mechanical excavations or trenching                                                                                               | 2 x 2 = 4                 | 2 x 5 = 10                 | 4 x 10 = 40                |
| Drilling, sampling, bulk excavations or piling                                                                                            | 2 x 3 = 6                 | 3 x 5 = 15                 | 6 x 15 = 90                |
| <div> 1= Minimal    5=significant     <div> <div>LOW<br/>0-100</div> <div>MEDIUM<br/>100-200</div> <div>HIGH<br/>200+</div> </div> </div> |                           |                            |                            |

## 9 STUDY FINDINGS

### 9.1 Risk Levels

The risk assessment has determined the UXO risk within the site boundary. The UXO risk is considered to be lowest in post war worked ground increasing within the un-worked post war ground for some processes. When viewed from likelihood versus consequence standpoint; it is considered prudent to recommend a suitable degree of UXO mitigation to permit the work to proceed in the safest “acceptable” manner in compliance with current legislation and best practices.

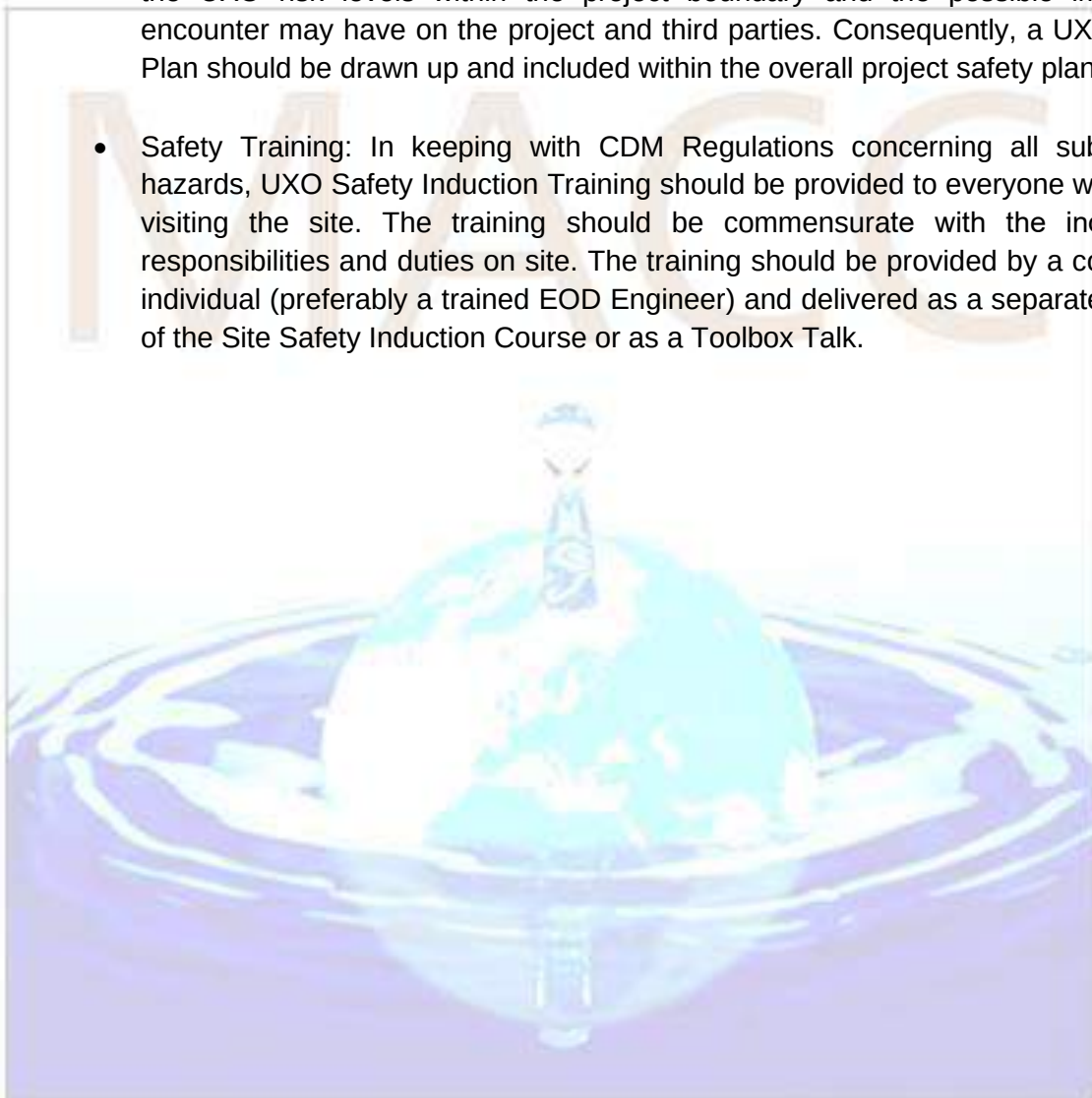
### 9.2 Determining Acceptable Level of Risk

The meaning of the term “acceptable” in the context of this assessment is considered to be in keeping with the Health & Safety Executive directive which identifies the acceptable level as that which is; “As Low as Reasonably Practicable” (ALARP) to achieve.

## 10 RECOMMENDATIONS FOR RISK MITIGATION

### All Risk Levels

- Risk Communication & Safety Planning: Stakeholders should be made aware of the UXO risk levels within the project boundary and the possible impact an encounter may have on the project and third parties. Consequently, a UXO Safety Plan should be drawn up and included within the overall project safety planning.
- Safety Training: In keeping with CDM Regulations concerning all sub-surface hazards, UXO Safety Induction Training should be provided to everyone working or visiting the site. The training should be commensurate with the individual's responsibilities and duties on site. The training should be provided by a competent individual (preferably a trained EOD Engineer) and delivered as a separate module of the Site Safety Induction Course or as a Toolbox Talk.



## **11 POST MITIGATION RISK**

### **11.1 Overview**

Prudent execution of the recommended risk mitigation strategy will reduce the risk however, it is emphasised that zero risk is not achievable given the possible variables. The assessment has confirmed the UXO risk level based on the nature of the work to be undertaken and has recommended suitable mitigation. An effective risk mitigation strategy will require detailed scoping to achieve its desired results in providing an acceptable level of risk. For further information concerning any part of this assessment please contact MACC International Ltd.

### **11.2 Intent & Use**

This document has been produced in the United Kingdom by MACC International Limited and meets the requirements of CIRIA C681 "Unexploded Ordnance (UXO) – A guide for the Construction Industry". It has been provided solely for the purpose of assessment and evaluation. It is not intended to be used by any person for any purpose other than that specified. Any liability arising out of use by a third party of this document for purposes not wholly connected with the above shall be the responsibility of that party, who shall indemnify MACC International Limited against all claims, costs, damages and losses arising out of such use.

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SITE MAPPING

 Site Boundary



## EXPLOSIVE ORDNANCE SAFETY INFORMATION

### 1 UNEXPLODED ORDNANCE

Since WWII the number of incidents in the UK where EO has detonated has been minimal, though a significant number of bombs have been discovered and safely disposed of without serious consequences. More commonly on mainland Europe (France, Germany and Belgium) incidents have occurred where ground workers have been killed or injured as a result of striking buried UXO or mishandling items of UXO found during excavation and piling work.

The threat to any proposed investigation or development on the site may arise from the effects of a partial or full detonation of a bomb or item of ordnance. The major effects are typically; ground shock, blast, heat and fragmentation. For example, the detonation of a 50kg buried bomb could damage brick/concrete structures up to 16m away and unprotected personnel on the surface up to 70m away from the blast. Larger ordnance is obviously more destructive. Table B-1 shows the MOD's recommended safe distance for UXO. However, it should be noted that the danger posed by primary and secondary fragmentation may be significantly greater. Almost 60% of civilian casualties sustained in London during the blitz were the result of flying glass.

**TABLE B-1 SAFETY DISTANCES FOR PERSONNEL**

| UXO (Kg) | Safety Distances (m) |             |            |             |
|----------|----------------------|-------------|------------|-------------|
|          | Surface UXO          |             | Buried UXO |             |
|          | Protected            | Unprotected | Protected  | Unprotected |
| 2        | 20                   | 200         | 10         | 20          |
| 10       | 50                   | 400         | 20         | 50          |
| 50       | 70                   | 900         | 40         | 70          |
| 250      | 185                  | 1100        | 120        | 185         |
| 500      | 200                  | 1250        | 140        | 200         |
| 1000     | 275                  | 1375        | 185        | 275         |
| 3000     | 450                  | 1750        | 300        | 450         |
| 5000     | 575                  | 1850        | 400        | 575         |

Explosives rarely become inert or lose effectiveness with age. Over time some explosive materials can become more sensitive and therefore more prone to detonation. This applies equally to items that have been submersed in water or embedded in silt, clay, peat or similar materials.

## 2 TYPES OF GERMAN AIRDROPPED BOMBS & MINES

### 2.1 HE Bombs



German 250kg Bomb found by MACC below a pre-war cellar floor in Bethnal Green London  
10 August 2015



## 2.2 Incendiary, Anti-Personnel Bombs & Parachute Landmines



1kg incendiary Bomblet (Top as found today)



Flam c500, c250 & c50 Oil Bombs



SD1 Anti-Personnel Bomblets



SD1 Container Bomb



Parachute Mines



### 2.3 British Anti-Aircraft Shells & Rockets

Examples of British Anti-Aircraft shells, rockets and components can be seen below.



Typical shell and rocket fuzes (Above left Proximity Fuzes found by MACC in 2017)



Typical shells (Above left 3.7" Shell found by MACC in 2017)



Typical rockets

### 3 UXO ENCOUNTER SAFETY PROCEDURE

3.1 All site personnel should be instructed on what action to take if they find an unidentified item which they suspect may be unexploded ordnance. The following actions are recommended until expert advice can be sought:

- **Stop Work**
- **Do not Touch**
- **Alert those around you and Evacuate the vicinity**
- **Call the UXO Specialist or Police (Dial 999)**

3.2 Where appropriate safety posters can be used to remind personnel of the safety procedure, an example can be seen below.



3.3 Where an item of UXO is found on site all work should be suspended until the UXO risk has been reassessed and if appropriate, suitable mitigation measures put in place.

## Appendix E

### Exploratory Hole Logs

|                                |                              |                   |                                 |
|--------------------------------|------------------------------|-------------------|---------------------------------|
| Method: Trial Pit              | Date(s): 27/10/2020          | Logged By: YP     | Checked By: ARJ                 |
| Client: Taylor Wimpey UK Ltd.  | Co-ords: 471651.14, 99628.92 | Stability: Stable | Dimensions: 1.70m               |
| Hydrock Project No: 16117-GELS | Ground Level: 7.53m OD       | Plant: JCB 3CX    | 0.60m <input type="text"/> 1:25 |

| Samples / Tests |          |         | Water-Strikes | Stratum Description                                                                                                                                                                                                                    | Depth m bgl | Thickness (m) | Level m OD | Legend                                                                              |
|-----------------|----------|---------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------|------------|-------------------------------------------------------------------------------------|
| Depth (m)       | Type     | Results |               |                                                                                                                                                                                                                                        |             |               |            |                                                                                     |
| 0.10            | ES       |         |               | Grass over soft, brown, slightly gravelly slightly sandy clayey SILT with abundant twigs, roots and rootlets. Gravel is subrounded to subangular, fine to medium of flint and rare brick, concrete and tarmac fragments. (MADE GROUND) | 0.15        | (0.15)        | 7.38       |  |
| 0.50            | ES       |         |               | (Soft) light brown, slightly gravelly slightly sandy clayey SILT with occasional roots and rootlets. Gravel is subrounded to subangular, fine to coarse of flint and occasional brick and concrete fragments. (MADE GROUND)            | 0.45        | (0.30)        | 7.08       |  |
| 1.20<br>1.20    | D<br>HSV | 75kPa   |               | Firm to stiff, orangish light brown mottled light grey slightly gravelly CLAY. Gravel is rounded fine to medium of flint. Occasional inclusions of black fibrous organic material (possible lignite). (RIVER TERRACE DEPOSITS)         |             | (1.55)        |            |  |
|                 |          |         |               | Base of Excavation at 2.00m                                                                                                                                                                                                            | 2.00        |               | 5.53       |                                                                                     |

General Remarks:  
1. No groundwater encountered. 2. Backfilled with gravel and monitoring pipework for infiltration test.

|                 |
|-----------------|
| Checked By: ARJ |
|-----------------|

|             |        |
|-------------|--------|
| Dimensions: | Scale: |
|-------------|--------|

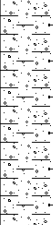
1:25

General Remarks:

1. No groundwater encountered. 2. Backfilled with gravel and monitoring pipework for infiltration test.

Logged in general accordance with BS5930:2011

|                                |                              |                   |                                 |
|--------------------------------|------------------------------|-------------------|---------------------------------|
| Method: Trial Pit              | Date(s): 27/10/2020          | Logged By: YP     | Checked By: ARJ                 |
| Client: Taylor Wimpey UK Ltd.  | Co-ords: 471678.46, 99745.59 | Stability: Stable | Dimensions: 1.70m               |
| Hydrock Project No: 16117-GELS | Ground Level: 6.44m OD       | Plant: JCB 3CX    | 0.60m <input type="text"/> 1:25 |

| Samples / Tests |      |         | Water-Strikes | Stratum Description                                                                                                                                                     | Depth m bgl | Thickness (m) | Level m OD | Legend                                                                               |
|-----------------|------|---------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------|------------|--------------------------------------------------------------------------------------|
| Depth (m)       | Type | Results |               |                                                                                                                                                                         |             |               |            |                                                                                      |
| 0.15            |      |         |               | Grass over soft, mottled brown and orange, slightly gravelly slightly sandy clayey SILT with abundant rootlets. Gravel is subrounded fine to medium of flint. (TOPSOIL) | 0.15        | (0.15)        | 6.29       |   |
| 0.50            | B    |         |               | Firm, orangish light brown slightly light grey mottled CLAY with rare inclusions of black fibrous organic material (old roots). (RIVER TERRACE DEPOSITS)                |             |               |            |                                                                                      |
| 0.80            | HSV  | 77kPa   |               |                                                                                                                                                                         |             | (1.25)        |            |                                                                                      |
|                 |      |         |               |                                                                                                                                                                         | 1           |               |            |                                                                                      |
|                 |      |         |               |                                                                                                                                                                         | 1.40        |               | 5.04       |                                                                                      |
|                 |      |         |               | Firm, light grey mottled yellow slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to medium of flint. (RIVER TERRACE DEPOSITS)                           |             | (0.80)        |            |  |
|                 |      |         |               |                                                                                                                                                                         | 2           |               |            |                                                                                      |
|                 |      |         |               |                                                                                                                                                                         | 2.20        |               | 4.24       |                                                                                      |
|                 |      |         |               | Base of Excavation at 2.20m                                                                                                                                             |             |               |            |                                                                                      |
|                 |      |         |               |                                                                                                                                                                         | 3           |               |            |                                                                                      |
|                 |      |         |               |                                                                                                                                                                         | 4           |               |            |                                                                                      |
|                 |      |         |               |                                                                                                                                                                         | 5           |               |            |                                                                                      |

General Remarks:  
1. No groundwater encountered. 2. Backfilled with gravel and monitoring pipework for infiltration test.

Checked By: ARJ

|             |        |
|-------------|--------|
| Dimensions: | Scale: |
|-------------|--------|

Diagram showing a rectangular area with dimensions 0.60m and 1.70m.

1:25

Logged in general accordance with BS5930:2015

|                 |
|-----------------|
| Checked By: ARJ |
|-----------------|

|             |        |
|-------------|--------|
| Dimensions: | Scale: |
|-------------|--------|

0.30m 0.30m 1:10

|                                                                                                                                        |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|
| General Remarks:                                                                                                                       |  |  |  |  |  |  |  |  |  |
| 1. Dense brambles were removed with excavator to allow access to location. 2. No groundwater encountered. 3. Backfilled with arisings. |  |  |  |  |  |  |  |  |  |
| <div style="text-align: right;">Logged in general accordance with BS5930:2015</div>                                                    |  |  |  |  |  |  |  |  |  |

|                 |
|-----------------|
| Checked By: ARJ |
|-----------------|

|             |        |
|-------------|--------|
| Dimensions: | Scale: |
|-------------|--------|

1.90m

0.60m

1:25

[illegible]



Project: Fathoms Reach, Hayling Island

Trialpit No  
TP04

Page No. 1 of 1

|                                |                              |                   |                    |
|--------------------------------|------------------------------|-------------------|--------------------|
| Method: Trial Pit              | Date(s): 27/10/2020          | Logged By: YP     | Checked By: ARJ    |
| Client: Taylor Wimpey UK Ltd.  | Co-ords: 471634.25, 99727.00 | Stability: Stable | Dimensions: Scale: |
| Hydrock Project No: 16117-GELS | Ground Level: 6.35m OD       | Plant: JCB 3CX    | 0.60m 1.90m 1:25   |

| Samples / Tests |      |         | Water-Strikes | Stratum Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Depth mbgl | Thickness (m) | Level m OD | Legend |
|-----------------|------|---------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------|------------|--------|
| Depth (m)       | Type | Results |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |               |            |        |
| 1.00            | D    |         |               | Soft, dark brown, slightly sandy slightly gravelly SILT with abundant roots and rotlets. (TOPSOIL)<br><br>Firm to stiff, orangish brown, sandy slightly gravelly silty CLAY with occasional twigs and roots. Occasional inclusions of black fibrous organic material (old roots). (RIVER TERRACE DEPOSITS)<br><br>... At 0.80m bgl HSV test not possible due to friability.<br><br>Stiff, light grey mottled orangish yellow sandy slightly gravelly CLAY. Gravel is subrounded fine to medium of flint. Rare incursions of black fibrous organic material (old roots). (RIVER TERRACE DEPOSITS) | 0.15       | (0.15)        | 6.20       |        |
| 1.80            | D    |         |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1.00       | (1.00)        | 5.35       |        |
|                 |      |         |               | Base of Excavation at 2.00m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2.00       |               | 4.35       |        |
|                 |      |         |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3          |               |            |        |
|                 |      |         |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 4          |               |            |        |
|                 |      |         |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5          |               |            |        |

General Remarks:  
1. Dense brambles were removed with excavator to allow access to location. 2. No groundwater encountered. 3. Backfilled with arisings.

|                 |
|-----------------|
| Checked By: ARJ |
|-----------------|

|             |        |
|-------------|--------|
| Dimensions: | Scale: |
|-------------|--------|

1:10

[illegible]

|                 |
|-----------------|
| Checked By: ARJ |
|-----------------|

|             |        |
|-------------|--------|
| Dimensions: | Scale: |
|-------------|--------|

1:10

[illegible]

Drilled By: DJ Drilling

Rig: Terrier

Scale: 1:30

General Remarks:  
1. Relocated 3.00m West from WS01A. 2. Inspection hand dug pit excavated up to 1.20m bgl. 3. Terminated due to refusal at 1.70 m bgl. 4. Install at 1.70m bgl.  
5. No groundwater encountered.

Method: Window Sampler

Date(s): 28/10/2020

Logged By: YP

Drilled By: DJ Drilling

Client: Taylor Wimpey UK Ltd.

Co-ords: 471643.04, 99645.84

Checked By: ARJ

Rig: Terrier

Hydrock Project No: 16117-GELS

Ground Level: 7.14m OD

Scale: 1:30

| Sample Run Info          |       |          | Testing      |            |                                | Water-Strikes | Stratum Description                                                                                                                                                                                                                                                    | Depth m bgl | Thickness (m) | Level m OD | Legend | Instrumentation / Backfill |
|--------------------------|-------|----------|--------------|------------|--------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------|------------|--------|----------------------------|
| Sample Run               | Run Ø | Recovery | Depth (m)    | Type       | Results                        |               |                                                                                                                                                                                                                                                                        |             |               |            |        |                            |
| 1.20 - 2.00              | 100mm | 100%     | 1.20         | SPT        | N=16<br>(3,4,3,4,4,5)          |               | Brown, slightly gravelly slightly sandy SILT with abundant rootlets. Gravel is subrounded to subangular fine to medium of flint and occasional brick and concrete fragments. Occasional inclusions of dark brown fibrous material (old roots). (MADE GROUND) (TOPSOIL) | 0.15        | (0.15)        | 6.99       |        |                            |
|                          |       |          |              |            |                                |               | Light brown, slightly sandy slightly gravelly SILT. Gravel is subrounded to subangular fine to coarse of flint and rare charcoal, brick and concrete fragments. (MADE GROUND)                                                                                          | 0.40        | (0.25)        | 6.74       |        |                            |
|                          |       |          |              |            |                                |               | Firm to stiff, orangish light brown, slightly sandy slightly gravelly CLAY with occasional inclusions of black organic material (old roots). (RIVER TERRACE DEPOSITS)                                                                                                  | 1           | (1.60)        |            |        |                            |
|                          |       |          |              |            |                                |               | ... At 1.40m bgl flint fragment around 60mm long.                                                                                                                                                                                                                      |             |               |            |        |                            |
|                          |       |          |              |            |                                |               | ... From 1.60m bgl becoming light grey mottled.                                                                                                                                                                                                                        |             |               |            |        |                            |
|                          |       |          |              |            |                                |               | ... At 1.85m bgl flint fragment around 60mm long.                                                                                                                                                                                                                      |             |               |            |        |                            |
| 2.00 - 3.00              | 80mm  | 90%      | 1.90<br>2.00 | HSV<br>SPT | 86kPa<br>N=19<br>(4,4,4,5,6,4) |               | Light brown mottled orange, gravelly slightly sandy CLAY. Gravel is subrounded to subangular fine to coarse of flint. (RIVER TERRACE DEPOSITS)                                                                                                                         | 2.00        | (0.30)        | 5.14       |        |                            |
|                          |       |          |              |            |                                |               | ... At 2.00m bgl pebble of flint around 30mm diameter.                                                                                                                                                                                                                 | 2.30        |               | 4.84       |        |                            |
|                          |       |          |              |            |                                |               | Medium dense to dense, light grey, slightly clayey gravelly fine SAND. Gravel is rounded to subangular fine to coarse of flint. (RIVER TERRACE DEPOSITS)                                                                                                               |             | (0.70)        |            |        |                            |
|                          |       |          |              |            |                                |               | ... At 2.45m bgl pebble of flint around 30mm diameter.                                                                                                                                                                                                                 |             |               |            |        |                            |
|                          |       |          | 3.00         | SPT        | 50/265mm<br>(2,4,8,13,17,12)   |               | ... From 2.90m bgl becoming clayey.                                                                                                                                                                                                                                    | 3.00        |               | 4.14       |        |                            |
| End of Borehole at 3.00m |       |          |              |            |                                |               |                                                                                                                                                                                                                                                                        |             |               |            |        |                            |

General Remarks:

1. Inspection hand dug pit excavated up to 1.20m bgl. 2. Terminated due to refusal at 3.00 m bgl. 3. Install at 3.00m bgl.

|                                |                              |                 |                         |
|--------------------------------|------------------------------|-----------------|-------------------------|
| Method: Window Sampler         | Date(s): 28/10/2020          | Logged By: YP   | Drilled By: DJ Drilling |
| Client: Taylor Wimpey UK Ltd.  | Co-ords: 471687.98, 99689.53 | Checked By: ARJ | Rig: Terrier            |
| Hydrock Project No: 16117-GELS | Ground Level: 7.01m OD       |                 | Scale: 1:30             |

| Sample Run Info |       |          | Testing   |      |                              | Water-Strikes | Stratum Description                                                                                                                                                                     | Depth mbgl | Thickness (m) | Level m OD | Legend | Instrumentation / Backfill |
|-----------------|-------|----------|-----------|------|------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------|------------|--------|----------------------------|
| Sample Run      | Run Ø | Recovery | Depth (m) | Type | Results                      |               |                                                                                                                                                                                         |            |               |            |        |                            |
| 1.20 - 2.00     | 100mm | 100%     | 0.10      | ES   |                              |               | Grass over soft (wet), brown, slightly gravelly slightly sandy silty CLAY with abundant roots and rootlets. Gravel is subrounded to subangular fine to medium of flint.<br>(TOPSOIL)    | 0.15       | (0.15)        | 6.86       |        |                            |
|                 |       |          | 0.50      | ES   |                              |               | Firm, orangish brown slightly light grey mottled CLAY with rare rootlets. Occasional inclusions of black/ dark brown, fibrous organic material (old roots).<br>(RIVER TERRACE DEPOSITS) |            | (1.45)        |            |        |                            |
|                 |       |          | 1.20      | SPT  | N=16<br>(3,3,4,4,4,4)        |               |                                                                                                                                                                                         |            |               |            |        |                            |
|                 |       |          | 1.20      | D    |                              |               |                                                                                                                                                                                         |            |               |            |        |                            |
| 2.00 - 3.00     | 80mm  | 85%      | 1.50      | HSV  | 85kPa                        |               | ... From 1.60m bgl becoming stiff.                                                                                                                                                      | 1.60       |               | 5.41       |        |                            |
|                 |       |          | 2.00      | SPT  | N=34<br>(5,5,4,4,8,18)       |               | Stiff, light grey mottled orange, slightly gravelly sandy CLAY. Gravel is subrounded to subangular fine to medium of flint.<br>(RIVER TERRACE DEPOSITS)                                 | 1.80       | (0.20)        | 5.21       |        |                            |
|                 |       |          |           |      |                              |               | Dense, light grey mottled orange, sandy slightly clayey GRAVEL. Gravel is rounded to subangular fine to medium of flint.<br>(RIVER TERRACE DEPOSITS)                                    | 2.00       | (0.95)        |            |        |                            |
|                 |       |          |           |      |                              |               | ... At 1.90m bgl rounded flint cobble around 100mm long.                                                                                                                                |            |               |            |        |                            |
|                 |       |          | 3.00      | SPT  | 50/285mm<br>(3,7,7,11,17,15) |               | Soft to firm (wet), light grey mottled orange CLAY with rare subrounded fine to medium gravel of flint.<br>(RIVER TERRACE DEPOSITS)                                                     | 2.75       | (0.25)        | 4.26       |        |                            |
|                 |       |          |           |      |                              |               | ... At 3.00m bgl becoming stiff.                                                                                                                                                        | 3.00       |               | 4.01       |        |                            |
|                 |       |          |           |      |                              |               | End of Borehole at 3.00m                                                                                                                                                                |            |               |            |        |                            |

General Remarks:  
1. Inspection hand dug pit excavated up to 1.20m bgl. 2. Terminated due to refusal at 3.00 mbgl. 3. Install at 3.00m bgl.

|                                |                              |                 |                         |
|--------------------------------|------------------------------|-----------------|-------------------------|
| Method: Window Sampler         | Date(s): 28/10/2020          | Logged By: YP   | Drilled By: DJ Drilling |
| Client: Taylor Wimpey UK Ltd.  | Co-ords: 471640.69, 99748.17 | Checked By: ARJ | Rig: Terrier            |
| Hydrock Project No: 16117-GELS | Ground Level: 6.31m OD       |                 | Scale: 1:30             |

| Sample Run Info |       |          | Testing   |      |                               | Water-Strikes | Stratum Description                                                                                                                                                                    | Depth<br>m bgl | Thickness<br>(m) | Level<br>m OD | Legend | Instrumentation<br>/ Backfill |
|-----------------|-------|----------|-----------|------|-------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------|---------------|--------|-------------------------------|
| Sample Run      | Run Ø | Recovery | Depth (m) | Type | Results                       |               |                                                                                                                                                                                        |                |                  |               |        |                               |
| 1.20 - 2.00     | 100mm | 100%     | 0.10      | ES   |                               |               | Soft (very wet), dark brown, slightly gravelly clayey SILT with abundant roots and rootlets. Gravel is subrounded to subangular fine to medium of flint.<br>(TOPSOIL)                  | 0.15           | (0.15)           | 6.16          |        |                               |
|                 |       |          | 0.60      | ES   |                               |               | Firm, orangish light brown, slightly gravelly CLAY. Gravel is subrounded to subangular fine to medium of flint.<br>(RIVER TERRACE DEPOSITS)                                            |                |                  |               |        |                               |
|                 |       |          | 1.20      | SPT  | N=9<br>(2,2,2,2,3,2)          |               |                                                                                                                                                                                        |                |                  |               |        |                               |
| 2.00 - 3.00     | 80mm  | 100%     | 1.70      | HSV  | 54kPa                         |               | ... From 1.80m bgl becoming gravelly.                                                                                                                                                  |                |                  |               |        |                               |
|                 |       |          | 2.00      | SPT  | N=25<br>(3,4,6,7,6,6)         |               |                                                                                                                                                                                        |                |                  |               |        |                               |
|                 |       |          | 2.50      | D    |                               |               | Medium dense to dense, orange, slightly gravelly slightly clayey fine SAND. Gravel is subrounded to rounded fine to medium of flint.<br>(RIVER TERRACE DEPOSITS)                       | 2.30           |                  | 4.01          |        |                               |
|                 |       |          | 3.00      | SPT  | 50/260mm<br>(9,10,12,14,16,8) |               | Medium dense to dense, orange mottled light grey, slightly gravelly slightly clayey fine SAND. Gravel is subrounded to subangular fine to coarse of flint.<br>(RIVER TERRACE DEPOSITS) | 2.70           | (0.40)           | 3.61          |        |                               |
|                 |       |          |           |      |                               |               | Dense, orange slightly clayey sandy GRAVEL. Gravel is subrounded to subangular fine to coarse of flint.<br>(RIVER TERRACE DEPOSITS)                                                    | 2.90           | (0.20)           | 3.41          |        |                               |
|                 |       |          |           |      |                               |               | End of Borehole at 3.00m                                                                                                                                                               | 3.00           | (0.10)           | 3.31          |        |                               |

General Remarks:  
 1. Dense brambles were removed with excavator to allow access to location. 2. Relocated 1.50m West from original position due to difficult access for the rig.  
 3. Inspection hand pit excavated up to 1.2m bgl. 4. Install at 3.0m bgl.

Drilled By: DJ Drilling

Rig: Terrier

Scale: 1:30

General Remarks:

1. Inspection hand dug pit excavated up to 1.20m bgl. 2. Terminated due to refusal at 2.50 mbgl. 3. Install at 2.50m bgl.

Logged in general accordance with BS5930:201



|                                                                                                                    |                                                                                     |
|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 1</b>                                                                                             |  |
| <b>Date:</b> 27/10/2020                                                                                            |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A                                                                      |                                                                                     |
| <b>Description:</b><br><br>Site access road via Southleigh Grove and delivery area looking towards housing estate. |                                                                                     |

|                                                                           |                                                                                      |
|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 2</b>                                                    |  |
| <b>Date:</b> 27/10/2020                                                   |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>N/A                             |                                                                                      |
| <b>Description:</b><br><br>Site access road looking towards located site. |                                                                                      |

|                                                                  |                                                                                     |
|------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 3</b>                                           |  |
| <b>Date:</b> 27/10/2020                                          |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A                    |                                                                                     |
| <b>Description:</b><br><br>TP01 excavated and measured to depth. |                                                                                     |

|                                               |                                                                                      |
|-----------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 4</b>                        |  |
| <b>Date:</b> 27/10/2020                       |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>N/A |                                                                                      |
| <b>Description:</b><br><br>TP01 arisings.     |                                                                                      |

|                                                                 |                                                                                     |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 5</b>                                          |  |
| <b>Date:</b> 27/10/2020                                         |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A                   |                                                                                     |
| <b>Description:</b><br><br>TP03 excavated and measured to depth |                                                                                     |

|                                               |                                                                                      |
|-----------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 6</b>                        |  |
| <b>Date:</b> 27/10/2020                       |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>N/A |                                                                                      |
| <b>Description:</b><br><br>TP03 arisings.     |                                                                                      |

|                                                                     |                                                                                     |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 7</b>                                              |  |
| <b>Date:</b> 27/10/2020                                             |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A                       |                                                                                     |
| <b>Description:</b><br><br>Removing brambles for excavation of TP04 |                                                                                     |

|                                                                                                                          |                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 8</b>                                                                                                   |  |
| <b>Date:</b> 27/10/2020                                                                                                  |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>N/A                                                                            |                                                                                      |
| <b>Description:</b><br><br>Stiff, light grey mottled orangish yellow sandy slightly gravelly CLAY at 2.00m bgl from TP04 |                                                                                      |

|                                                          |                                                                                     |
|----------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 9</b>                                   |  |
| <b>Date:</b> 27/10/2020                                  |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A            |                                                                                     |
| <b>Description:</b><br><br>TP04 backfilled with arising. |                                                                                     |

|                                                                                                 |                                                                                      |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 10</b>                                                                         |  |
| <b>Date:</b> 27/10/2020                                                                         |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>Looking North                                         |                                                                                      |
| <b>Description:</b><br><br>Excavator tracks to get access to locations at the North of the site |                                                                                      |

|                                                                  |                                                                                     |
|------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 11</b>                                          |  |
| <b>Date:</b> 27/10/2020                                          |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A                    |                                                                                     |
| <b>Description:</b><br><br>SA02 excavated and measured to depth. |                                                                                     |

|                                               |                                                                                      |
|-----------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 12</b>                       |  |
| <b>Date:</b> 27/10/2020                       |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>N/A |                                                                                      |
| <b>Description:</b><br><br>SA02 arisings.     |                                                                                      |

|                                                                                                                        |                                                                                     |
|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 13</b>                                                                                                |  |
| <b>Date:</b> 27/10/2020                                                                                                |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A.                                                                         |                                                                                     |
| <b>Description:</b><br><br>Stiff, light grey mottled orangish yellow very sandy CLAY recovered at 2.00m bgl from SA02. |                                                                                     |

|                                                                               |                                                                                      |
|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 14</b>                                                       |  |
| <b>Date:</b> 27/10/2020                                                       |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>N/A.                                |                                                                                      |
| <b>Description:</b><br><br>SA02 backfilled with gravel for infiltration test. |                                                                                      |

|                                                   |                                                                                     |
|---------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 15</b>                           |  |
| <b>Date:</b> 27/10/2020                           |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A     |                                                                                     |
| <b>Description:</b><br><br>SA03 excavation works. |                                                                                     |

|                                                                                             |                                                                                      |
|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 16</b>                                                                     |  |
| <b>Date:</b> 27/10/2020                                                                     |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>N/A                                               |                                                                                      |
| <b>Description:</b><br><br>SA03 backfilled with gravel and pipelines for infiltration test. |                                                                                      |

|                                                                       |                                                                                     |
|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 17</b>                                               |  |
| <b>Date:</b> 28/10/2020                                               |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A.                        |                                                                                     |
| <b>Description:</b><br><br>WS01 obstruction encountered at 0.30m bgl. |                                                                                     |

|                                                                        |                                                                                      |
|------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 18</b>                                                |  |
| <b>Date:</b> 28/10/2020                                                |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>N/A                          |                                                                                      |
| <b>Description:</b><br><br>WS01A obstruction encountered at 0.30m bgl. |                                                                                      |

|                                                                                            |                                                                                     |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 19</b>                                                                    |  |
| <b>Date:</b> 28/10/2020                                                                    |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A.                                             |                                                                                     |
| <b>Description:</b><br><br>WS01B excavation hole, made ground encountered up to 0.80m bgl. |                                                                                     |

|                                               |                                                                                      |
|-----------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 20</b>                       |  |
| <b>Date:</b> 28/10/2020                       |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>N/A |                                                                                      |
| <b>Description:</b><br><br>WS01B recovery     |                                                                                      |

|                                                                |                                                                                     |
|----------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 21</b>                                        |  |
| <b>Date:</b> 28/10/2020                                        |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A.                 |                                                                                     |
| <b>Description:</b><br><br>Monitoring well installed at WS01B. |                                                                                     |

|                                                                                                     |                                                                                      |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 22</b>                                                                             |  |
| <b>Date:</b> 28/10/2020                                                                             |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>N/A                                                       |                                                                                      |
| <b>Description:</b><br><br>WS02 arising from Hand pitting. Made ground encountered up to 0.40m bgl. |                                                                                      |

|                                                |                                                                                     |
|------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 23</b>                        |  |
| <b>Date:</b> 28/10/2020                        |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A. |                                                                                     |
| <b>Description:</b><br><br>WS02 recovery.      |                                                                                     |

|                                                               |                                                                                      |
|---------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 24</b>                                       |  |
| <b>Date:</b> 28/10/2020                                       |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>N/A                 |                                                                                      |
| <b>Description:</b><br><br>Monitoring well installed at WS02. |                                                                                      |

|                                                  |                                                                                     |
|--------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 25</b>                          |  |
| <b>Date:</b> 28/10/2020                          |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A.   |                                                                                     |
| <b>Description:</b><br><br>WS03 excavation hole. |                                                                                     |

|                                               |                                                                                      |
|-----------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 26</b>                       |  |
| <b>Date:</b> 28/10/2020                       |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>N/A |                                                                                      |
| <b>Description:</b><br><br>WS03 recovery.     |                                                                                      |

|                                                                    |                                                                                     |
|--------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 27</b>                                            |  |
| <b>Date:</b> 28/10/2020                                            |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A.                     |                                                                                     |
| <b>Description:</b><br><br>Cobble encountered at 1.90m bgl at WS03 |                                                                                     |

|                                                               |                                                                                      |
|---------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 28</b>                                       |  |
| <b>Date:</b> 28/10/2020                                       |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>N/A                 |                                                                                      |
| <b>Description:</b><br><br>Monitoring well installed at WS03. |                                                                                      |

|                                                |                                                                                     |
|------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 29</b>                        |  |
| <b>Date:</b> 28/10/2020                        |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A. |                                                                                     |
| <b>Description:</b><br><br>WS04 recovery.      |                                                                                     |

|                                                                                                       |                                                                                      |
|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 30</b>                                                                               |  |
| <b>Date:</b> 28/10/2020                                                                               |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>N/A                                                         |                                                                                      |
| <b>Description:</b><br><br>Firm, orangish light brown, slightly gravelly CLAY at 1.00m bgl from WS04. |                                                                                      |

|                                                                                                                                       |                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 31</b>                                                                                                               |  |
| <b>Date:</b> 28/10/2020                                                                                                               |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A.                                                                                        |                                                                                     |
| <b>Description:</b><br><br>Monitoring well installed at WS04. (Original position moved 1.5m West due to difficulties for rig access). |                                                                                     |

|                                                        |                                                                                      |
|--------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 32</b>                                |  |
| <b>Date:</b> 28/10/2020                                |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>N/A          |                                                                                      |
| <b>Description:</b><br><br>WS05 hand pitting arisings. |                                                                                      |

|                                               |                                                                                     |
|-----------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 33</b>                       |  |
| <b>Date:</b> 28/10/2020                       |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A |                                                                                     |
| <b>Description:</b><br><br>WS05 recovery.     |                                                                                     |

|                                                                                                            |                                                                                      |
|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 34</b>                                                                                    |  |
| <b>Date:</b> 28/10/2020                                                                                    |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>N/A.                                                             |                                                                                      |
| <b>Description:</b><br><br>Stiff, light grey mottled orangish yellow, slightly gravelly sandy CLAY at WS05 |                                                                                      |

|                                                               |                                                                                     |
|---------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GI Photograph 35</b>                                       |  |
| <b>Date:</b> 28/10/2020                                       |                                                                                     |
| <b>Direction Photograph Taken:</b><br><br>N/A.                |                                                                                     |
| <b>Description:</b><br><br>Monitoring well installed at WS05. |                                                                                     |

|                                                                              |                                                                                      |
|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>GI Photograph 36</b>                                                      |  |
| <b>Date:</b> 28/10/2020                                                      |                                                                                      |
| <b>Direction Photograph Taken:</b><br><br>N/A.                               |                                                                                      |
| <b>Description:</b><br><br>Site access left clean after completion of works. |                                                                                      |

## Appendix F

# Geotechnical Test Results and Geotechnical Plots

## Geotechnical Laboratory Test Results

**Yacklin Panza**  
Hydrock Consultants Ltd  
Suite 8  
White Building  
1-4 Cumberland Place  
Southampton  
Hampshire  
SO15 2NP

i2 Analytical Ltd.  
7 Woodshots Meadow,  
Croxley Green  
Business Park,  
Watford,  
Herts,  
WD18 8YS

**e:** YacklinPanza@hydrock.com

**t:** 01923 225404  
**f:** 01923 237404  
**e:** reception@i2analytical.com

## **Analytical Report Number : 20-38916**

|                             |                               |                                                        |            |
|-----------------------------|-------------------------------|--------------------------------------------------------|------------|
| <b>Project / Site name:</b> | Fathoms Reach, Hayling Island | <b>Samples received on:</b>                            | 28/10/2020 |
| <b>Your job number:</b>     | 16117                         | <b>Samples instructed on/<br/>Analysis started on:</b> | 29/10/2020 |
| <b>Your order number:</b>   | PO02940                       | <b>Analysis completed by:</b>                          | 12/11/2020 |
| <b>Report Issue Number:</b> | 1                             | <b>Report issued on:</b>                               | 12/11/2020 |
| <b>Samples Analysed:</b>    | 5 soil samples                |                                                        |            |

**Signed:** *A. Czerwińska*  
Agnieszka Czerwińska  
Technical Reviewer (Reporting Team)  
**For & on behalf of i2 Analytical Ltd.**

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting  
leachates - 2 weeks from reporting  
waters - 2 weeks from reporting  
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.  
Application of uncertainty of measurement would provide a range within which the true result lies.  
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 20-38916

Project / Site name: Fathoms Reach, Hayling Island

Your Order No: PO02940

| Lab Sample Number                       |       |                    |                      | 1670109       | 1670110       | 1670111       | 1670112       |
|-----------------------------------------|-------|--------------------|----------------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                    |                      | TP01          | TP03          | TP04          | SA03          |
| Sample Number                           |       |                    |                      | TP01-D-1.1    | TP03-D-1.2    | TP04-D-1      | SA03-B-0.5    |
| Depth (m)                               |       |                    |                      | 1.10          | 1.20          | 1.00          | 0.50          |
| Date Sampled                            |       |                    |                      | 27/10/2020    | 27/10/2020    | 27/10/2020    | 28/10/2020    |
| Time Taken                              |       |                    |                      | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation Status |               |               |               |               |
| Stone Content                           | %     | 0.1                | NONE                 | < 0.1         | < 0.1         | < 0.1         | < 0.1         |
| Moisture Content                        | %     | 0.01               | NONE                 | 17            | 16            | 21            | 17            |
| Total mass of sample received           | kg    | 0.001              | NONE                 | 0.4           | 0.4           | 0.4           | 0.4           |

#### General Inorganics

|                                                                         |          |         |        |        |        |        |        |
|-------------------------------------------------------------------------|----------|---------|--------|--------|--------|--------|--------|
| pH - Automated                                                          | pH Units | N/A     | MCERTS | 8.4    | 8.1    | 8.2    | 8.2    |
| Total Sulphate as SO <sub>4</sub>                                       | mg/kg    | 50      | MCERTS | 220    | 240    | 430    | 270    |
| Total Sulphate as SO <sub>4</sub>                                       | %        | 0.005   | MCERTS | 0.022  | 0.024  | 0.043  | 0.027  |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | g/l      | 0.00125 | MCERTS | 0.0074 | 0.014  | 0.039  | 0.022  |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | mg/l     | 1.25    | MCERTS | 7.4    | 14.2   | 39.1   | 21.9   |
| Water Soluble Chloride (2:1)                                            | mg/kg    | 1       | MCERTS | 10     | 12     | 150    | 16     |
| Water Soluble Chloride (2:1) (leachate equivalent)                      | mg/l     | 0.5     | MCERTS | 5      | 5.7    | 73     | 7.8    |
| Total Sulphur                                                           | mg/kg    | 50      | MCERTS | 140    | 140    | 180    | 160    |
| Total Sulphur                                                           | %        | 0.005   | MCERTS | 0.014  | 0.014  | 0.018  | 0.016  |
| Ammonium as NH <sub>4</sub>                                             | mg/kg    | 0.5     | MCERTS | < 0.5  | < 0.5  | < 0.5  | < 0.5  |
| Ammonium as NH <sub>4</sub> (10:1 leachate equivalent)                  | mg/l     | 0.05    | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Water Soluble Nitrate (2:1) as NO <sub>3</sub>                          | mg/kg    | 2       | NONE   | < 2.0  | < 2.0  | < 2.0  | < 2.0  |
| Water Soluble Nitrate (2:1) as NO <sub>3</sub> (leachate equivalent)    | mg/l     | 5       | NONE   | < 5.0  | < 5.0  | < 5.0  | < 5.0  |

#### Heavy Metals / Metalloids

|                                 |       |     |      |     |     |     |     |
|---------------------------------|-------|-----|------|-----|-----|-----|-----|
| Magnesium (water soluble)       | mg/kg | 5   | NONE | 5.5 | 8.2 | 8.7 | 11  |
| Magnesium (leachate equivalent) | mg/l  | 2.5 | NONE | 2.7 | 4.1 | 4.4 | 5.5 |

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 20-38916

Project / Site name: Fathoms Reach, Hayling Island

Your Order No: PO02940

| Lab Sample Number                       |       |                    |                      | 1670113       |
|-----------------------------------------|-------|--------------------|----------------------|---------------|
| Sample Reference                        |       |                    |                      | SA01          |
| Sample Number                           |       |                    |                      | SA01-ES-0.5   |
| Depth (m)                               |       |                    |                      | 0.50          |
| Date Sampled                            |       |                    |                      | 27/10/2020    |
| Time Taken                              |       |                    |                      | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation Status |               |
| Stone Content                           | %     | 0.1                | NONE                 | < 0.1         |
| Moisture Content                        | %     | 0.01               | NONE                 | 9.7           |
| Total mass of sample received           | kg    | 0.001              | NONE                 | 0.5           |

#### General Inorganics

|                                                                         |          |         |        |        |
|-------------------------------------------------------------------------|----------|---------|--------|--------|
| pH - Automated                                                          | pH Units | N/A     | MCERTS | 8.2    |
| Total Sulphate as SO <sub>4</sub>                                       | mg/kg    | 50      | MCERTS | 420    |
| Total Sulphate as SO <sub>4</sub>                                       | %        | 0.005   | MCERTS | 0.042  |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | g/l      | 0.00125 | MCERTS | 0.027  |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | mg/l     | 1.25    | MCERTS | 26.5   |
| Water Soluble Chloride (2:1)                                            | mg/kg    | 1       | MCERTS | 7.4    |
| Water Soluble Chloride (2:1) (leachate equivalent)                      | mg/l     | 0.5     | MCERTS | 3.7    |
| Total Sulphur                                                           | mg/kg    | 50      | MCERTS | 220    |
| Total Sulphur                                                           | %        | 0.005   | MCERTS | 0.022  |
| Ammonium as NH <sub>4</sub>                                             | mg/kg    | 0.5     | MCERTS | < 0.5  |
| Ammonium as NH <sub>4</sub> (10:1 leachate equivalent)                  | mg/l     | 0.05    | MCERTS | < 0.05 |
| Water Soluble Nitrate (2:1) as NO <sub>3</sub>                          | mg/kg    | 2       | NONE   | < 2.0  |
| Water Soluble Nitrate (2:1) as NO <sub>3</sub> (leachate equivalent)    | mg/l     | 5       | NONE   | < 5.0  |

#### Heavy Metals / Metalloids

|                                 |       |     |      |     |
|---------------------------------|-------|-----|------|-----|
| Magnesium (water soluble)       | mg/kg | 5   | NONE | 11  |
| Magnesium (leachate equivalent) | mg/l  | 2.5 | NONE | 5.6 |

U/S = Unsuitable Sample I/S = Insufficient Sample

**Analytical Report Number : 20-38916**

**Project / Site name: Fathoms Reach, Hayling Island**

\* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

| Lab Sample Number | Sample Reference | Sample Number | Depth (m) | Sample Description *                            |
|-------------------|------------------|---------------|-----------|-------------------------------------------------|
| 1670109           | TP01             | TP01-D-1.1    | 1.1       | Brown clay and loam with gravel.                |
| 1670110           | TP03             | TP03-D-1.2    | 1.2       | Brown clay and loam with gravel.                |
| 1670111           | TP04             | TP04-D-1      | 1         | Brown clay and loam with gravel.                |
| 1670112           | SA03             | SA03-B-0.5    | 0.5       | Brown clay and loam with gravel and vegetation. |
| 1670113           | SA01             | SA01-ES-0.5   | 0.5       | Brown clay and loam with gravel.                |

**Analytical Report Number : 20-38916**

**Project / Site name: Fathoms Reach, Hayling Island**

**Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)**

| Analytical Test Name                               | Analytical Method Description                                                                                                                             | Analytical Method Reference                                                                                             | Method number | Wet / Dry Analysis | Accreditation Status |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------|--------------------|----------------------|
| Sulphate, water soluble, in soil (16hr extraction) | Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent). | In house method.                                                                                                        | L038-PL       | D                  | MCERTS               |
| Chloride, water soluble, in soil                   | Determination of Chloride colorimetrically by discrete analyser.                                                                                          | In house method.                                                                                                        | L082-PL       | D                  | MCERTS               |
| Magnesium, water soluble, in soil                  | Determination of water soluble magnesium by extraction with water followed by ICP-OES.                                                                    | In-house method based on TRL 447                                                                                        | L038-PL       | D                  | NONE                 |
| Moisture Content                                   | Moisture content, determined gravimetrically. (30 oC)                                                                                                     | In house method.                                                                                                        | L019-UK/PL    | W                  | NONE                 |
| Nitrate, water soluble, in soil                    | Determination of nitrate by reaction with sodium salicylate and colorimetry.                                                                              | In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction. | L078-PL       | D                  | NONE                 |
| pH in soil (automated)                             | Determination of pH in soil by addition of water followed by automated electrometric measurement.                                                         | In house method.                                                                                                        | L099-PL       | D                  | MCERTS               |
| Total sulphate (as SO <sub>4</sub> in soil)        | Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.                                                                   | In house method.                                                                                                        | L038-PL       | D                  | MCERTS               |
| Stones content of soil                             | Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.                               | In-house method based on British Standard Methods and MCERTS requirements.                                              | L019-UK/PL    | D                  | NONE                 |
| Total Sulphur in soil                              | Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.                                      | In house method.                                                                                                        | L038-PL       | D                  | MCERTS               |
| Ammonium as NH <sub>4</sub> in soil                | Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.                        | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton                  | L082-PL       | W                  | MCERTS               |
| Total Sulphate in soil as %                        | Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.                                                                   | In house method.                                                                                                        | L038-PL       | D                  | MCERTS               |
| Total Sulphur in soil as %                         | Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.                                      | In house method.                                                                                                        | L038-PL       | D                  | MCERTS               |
| Water Soluble Nitrate (leachate equivalent)        | Determination of nitrate by reaction with sodium salicylate and colorimetry.                                                                              | In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction. | L078-PL       | D                  | NONE                 |
| Sulphate, water soluble, in soil                   | Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent). | In house method.                                                                                                        | L038-PL       | D                  | MCERTS               |

**For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.**

**For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.**

**Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.**



**STRUCTURAL SOILS LTD**  
**INSITU TESTING REPORT**



1774

Report No. 749730R.01(00)

Date 29-October-2020 Contract Fathoms Reach, Hayling Island

Client Hydrock Consultants Ltd  
Address 3rd Floor  
Merchants House North  
Wapping Road  
Bristol  
BS1 4RW

For the Attention of Jane Baird

|                   |                 |                  |         |
|-------------------|-----------------|------------------|---------|
| Order received    | 20-October-2020 | Client Reference | None    |
| Testing Started   | 28-October-2020 | Client Order No. | PO02784 |
| Testing Completed | 28-October-2020 | Instruction Type | Written |

Tests marked 'Not UKAS Accredited' in this report are not included in the UKAS Accreditation Schedule for our Laboratory.

UKAS Accredited Tests

Not UKAS Accredited Tests

12no. TRL DCPs carried out at locations specified by the client.

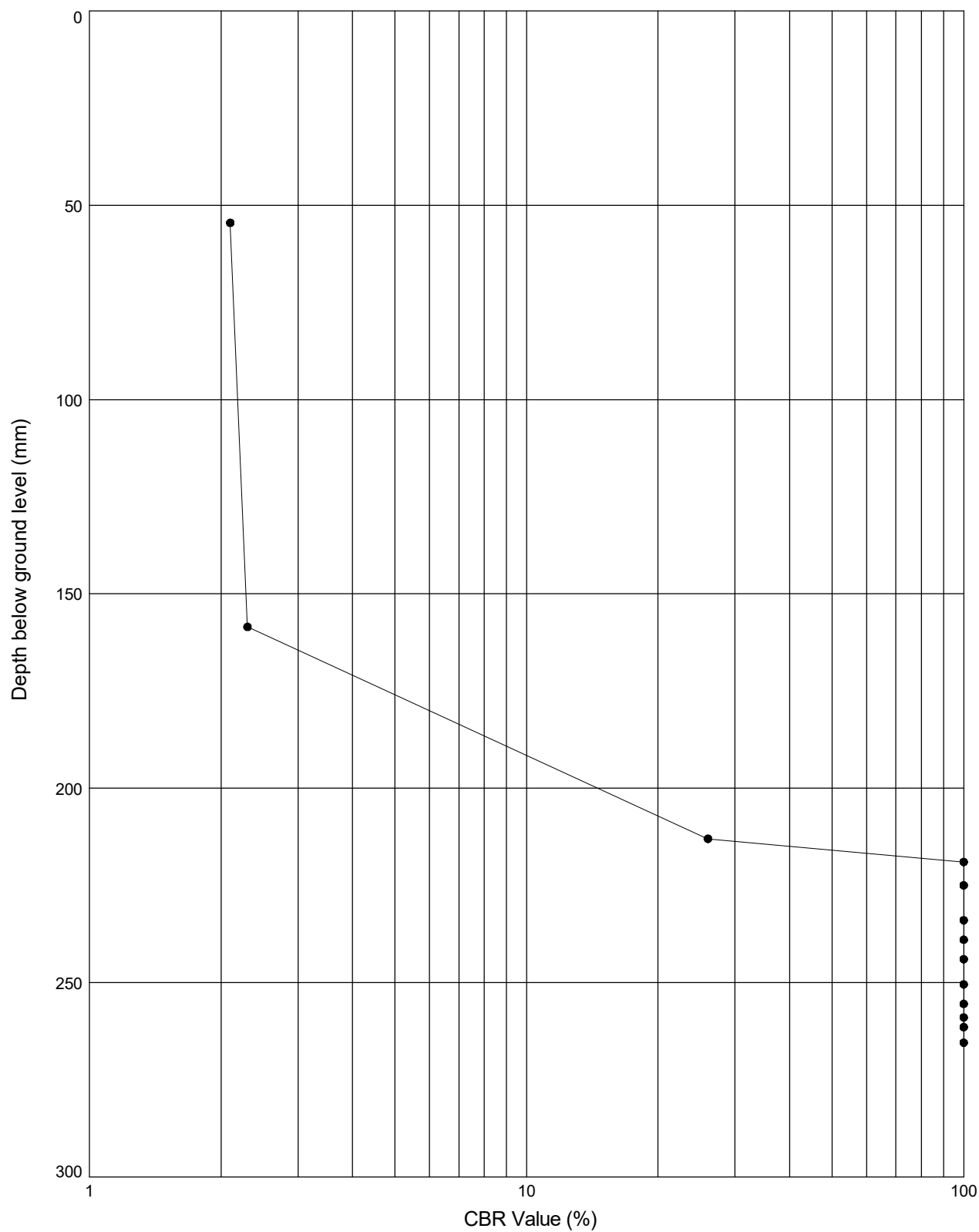
The results represent the ground conditions at the specified locations and depths at the time of testing.

Please Note: Remaining samples will be retained for a period of one month from today and will then be disposed of.  
Test were undertaken on samples 'as received' unless otherwise stated.  
Opinions and interpretations expressed in this report are outside the scope of accreditation for this laboratory.

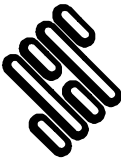
Structural Soils Ltd 1a Princess Street Bedminster Bristol BS3 4AG Tel.0117 9471000. e-mail dimitris.xirouchakis@soils.co.uk

DCP TEST RESULTS - DEPTH vs CBR VALUE

Position Ref : **DCP 1 (WS01)**      Test Date : **28.10.20**      Test Number : **1**



Notes: CBR values calculated after TRRL Road Note 8 method. Values over 100% are plotted on the 100% line.  
Refusal

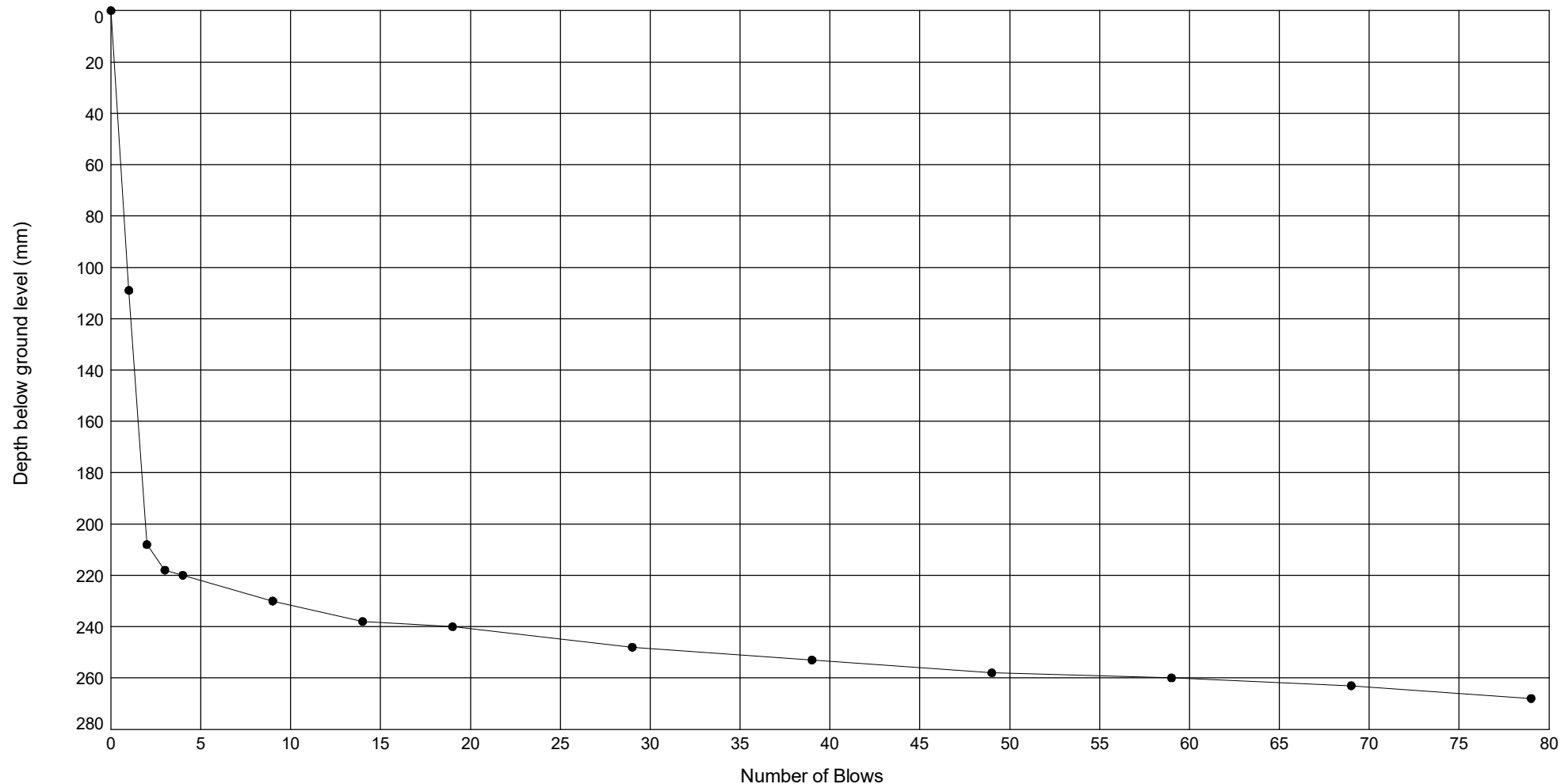
|                                                                                                                                                                               |                                                                                     |          |                                                                                       |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------|----------|
|  <div>STRUCTURAL SOILS<br/>1a Princess Street<br/>Bedminster<br/>Bristol<br/>BS3 4AG</div> | Compiled By                                                                         | Date     | Checked By                                                                            | Date     |
|                                                                                                                                                                               |  | 29/10/20 |  | 29/10/20 |
|                                                                                                                                                                               | Contract<br>Fathoms Reach, Hayling Island                                           |          | Contract Ref:<br>749730                                                               |          |

# DCP TEST RESULTS - DEPTH vs NUMBER OF BLOWS

Position Ref : **DCP 1 (WS01)**

Test Date : **28.10.20**

Test Number : **1**



Notes: **Refusal**



**STRUCTURAL SOILS**  
1a Princess Street  
Bedminster  
Bristol  
BS3 4AG

Compiled By

*[Signature]*

Date

**29/10/20**

Checked By

*[Signature]*

Date

**29/10/20**

Contract Ref:

**749730**

Contract

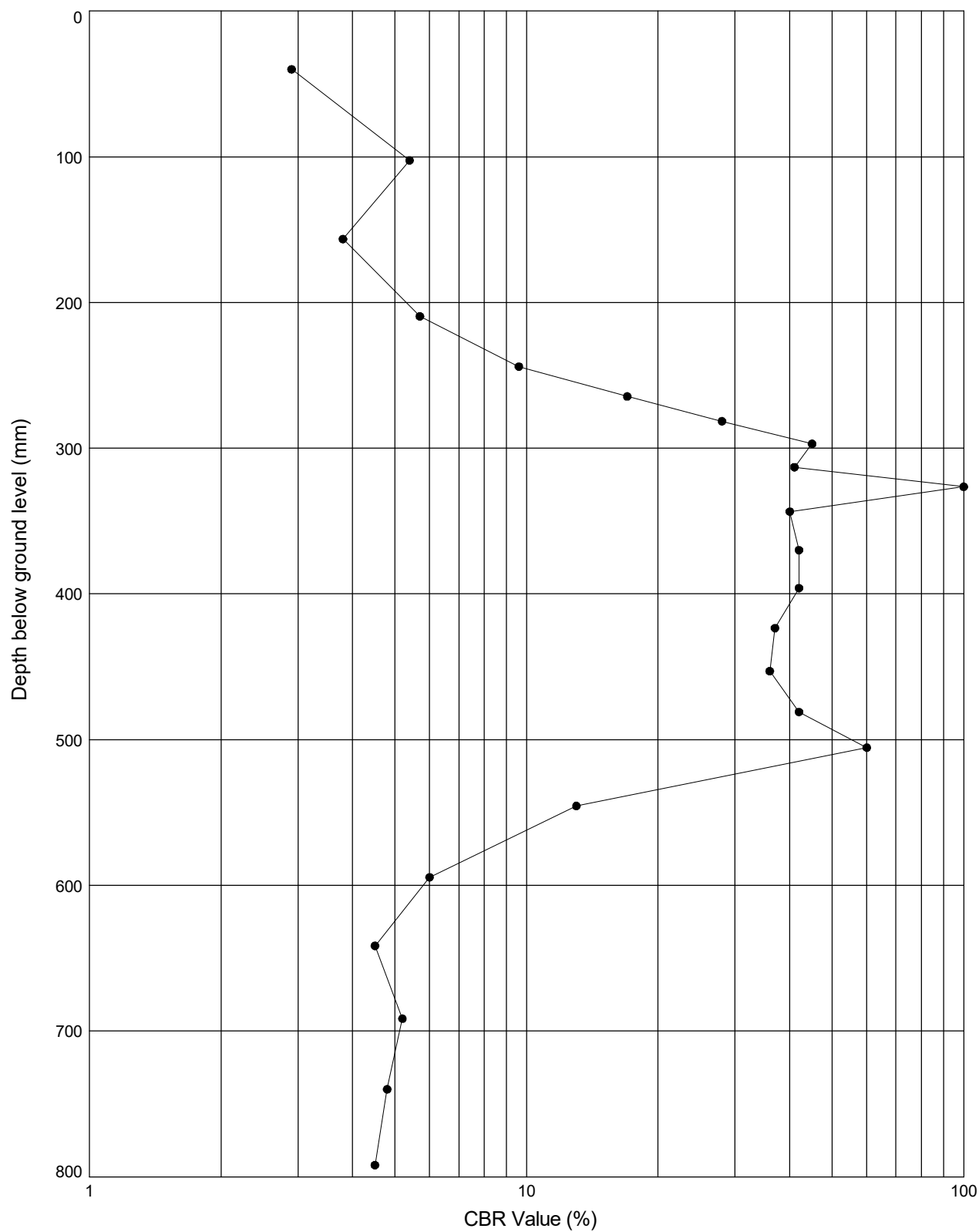
**Fathoms Reach, Hayling Island**

DCP TEST RESULTS - DEPTH vs CBR VALUE

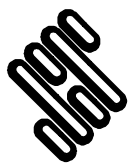
Position Ref : DCP 2 (SA01)

Test Date : 28.10.20

Test Number : 1



Notes: CBR values calculated after TRRL Road Note 8 method. Values over 100% are plotted on the 100% line.



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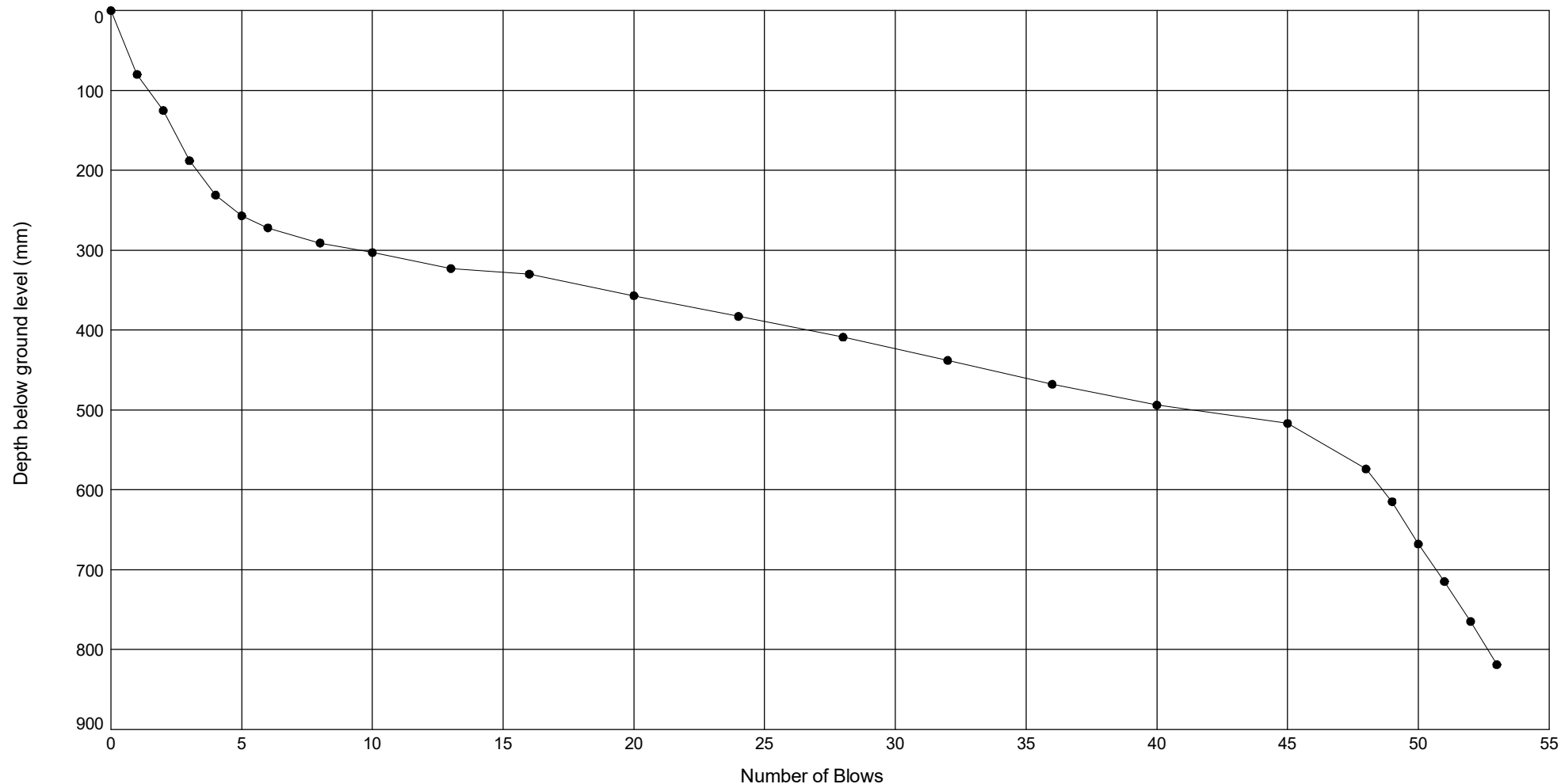
|                               |          |               |          |
|-------------------------------|----------|---------------|----------|
| Compiled By                   | Date     | Checked By    | Date     |
|                               | 29/10/20 |               | 29/10/20 |
| Contract                      |          | Contract Ref: |          |
| Fathoms Reach, Hayling Island |          | 749730        |          |

# DCP TEST RESULTS - DEPTH vs NUMBER OF BLOWS

Position Ref : **DCP 2 (SA01)**

Test Date : **28.10.20**

Test Number : **1**



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Compiled By

*[Signature]*

Date

**29/10/20**

Checked By

*[Signature]*

Date

**29/10/20**

Contract Ref:

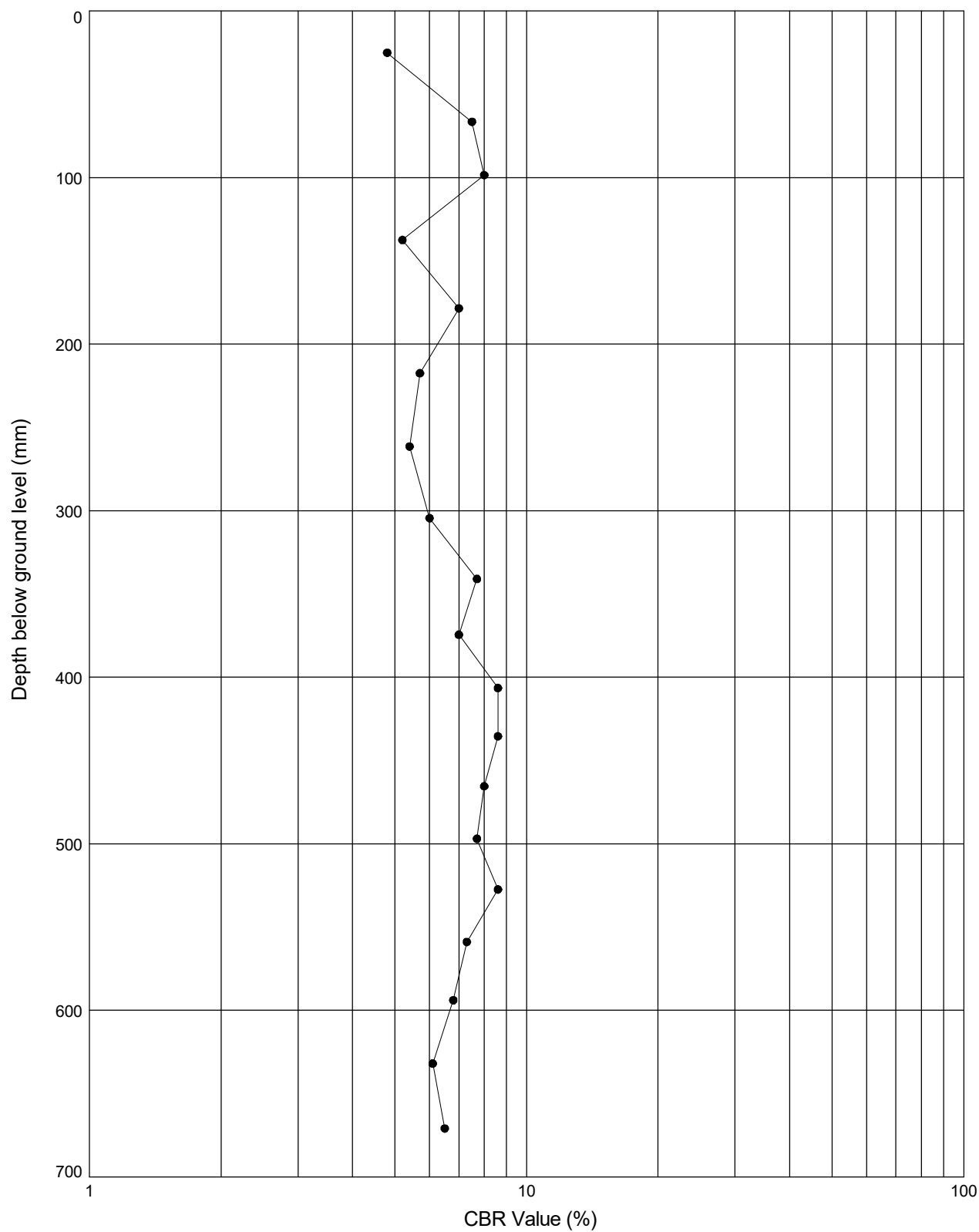
**749730**

Contract

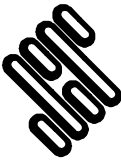
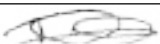
**Fathoms Reach, Hayling Island**

DCP TEST RESULTS - DEPTH vs CBR VALUE

Position Ref : **DCP 3 (WS02)**      Test Date : **28.10.20**      Test Number : **1**



Notes: CBR values calculated after TRRL Road Note 8 method. Values over 100% are plotted on the 100% line.

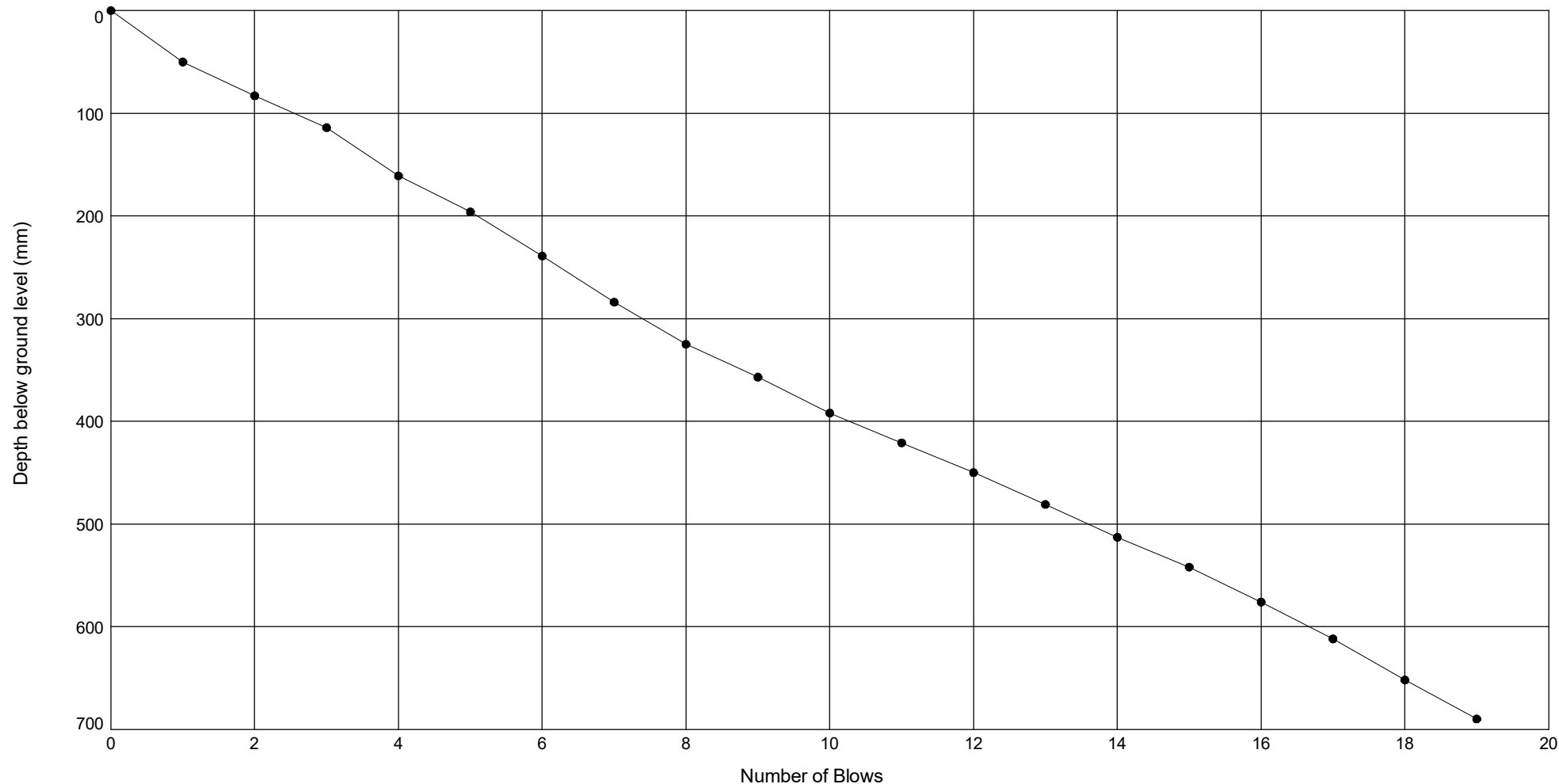
|                                                                                                                                                                               |                                                                                     |          |                                                                                       |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------|----------|
|  <div>STRUCTURAL SOILS<br/>1a Princess Street<br/>Bedminster<br/>Bristol<br/>BS3 4AG</div> | Compiled By                                                                         | Date     | Checked By                                                                            | Date     |
|                                                                                                                                                                               |  | 29/10/20 |  | 29/10/20 |
|                                                                                                                                                                               | Contract<br>Fathoms Reach, Hayling Island                                           |          | Contract Ref:<br>749730                                                               |          |

# DCP TEST RESULTS - DEPTH vs NUMBER OF BLOWS

Position Ref : **DCP 3 (WS02)**

Test Date : **28.10.20**

Test Number : **1**



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*[Signature]*

Date

**29/10/20**

Contract Ref:

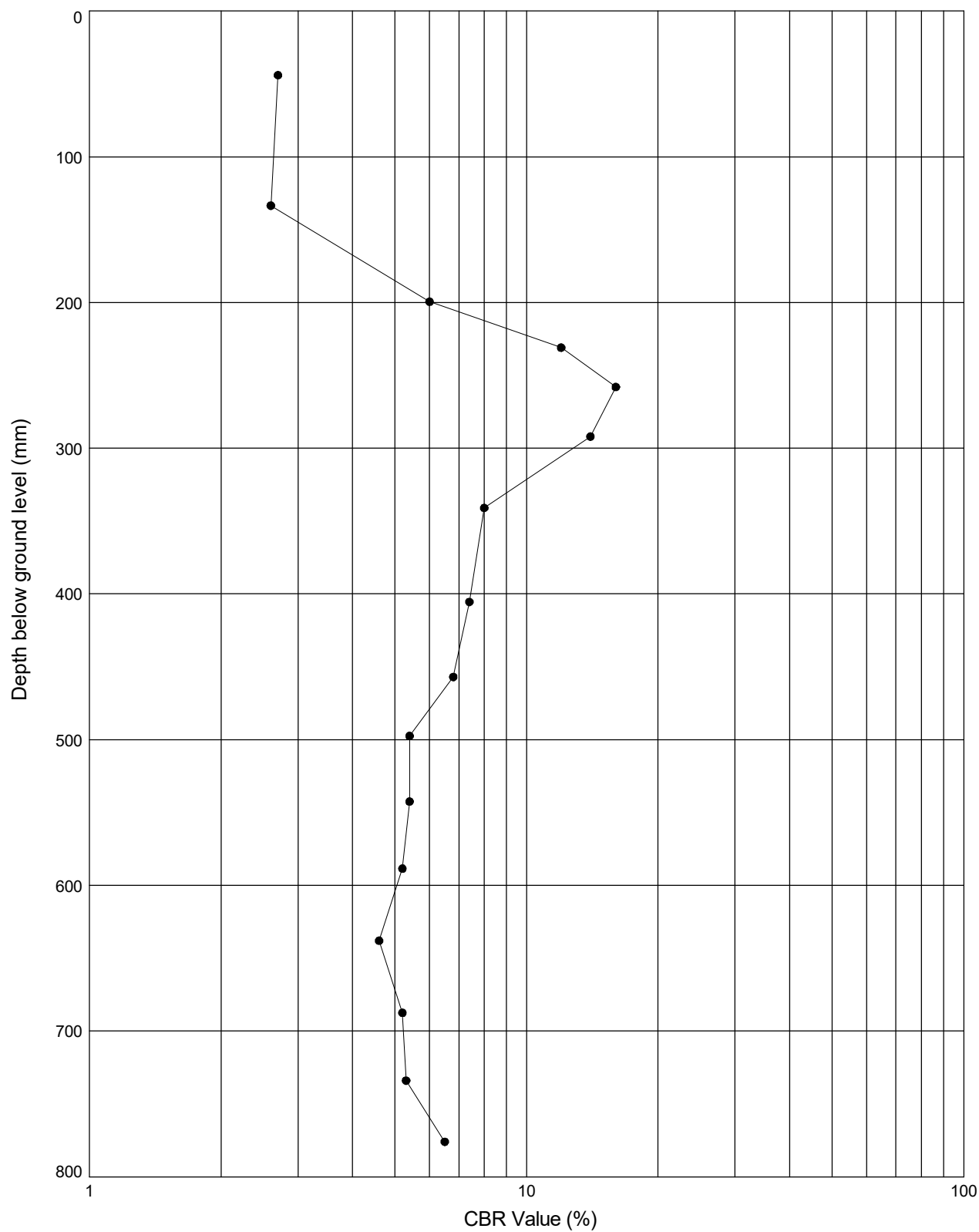
**749730**

Contract

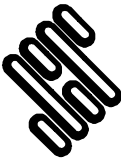
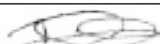
**Fathoms Reach, Hayling Island**

DCP TEST RESULTS - DEPTH vs CBR VALUE

Position Ref : DCP 4 (TP01)      Test Date : 28.10.20      Test Number : 1



Notes: CBR values calculated after TRRL Road Note 8 method. Values over 100% are plotted on the 100% line.

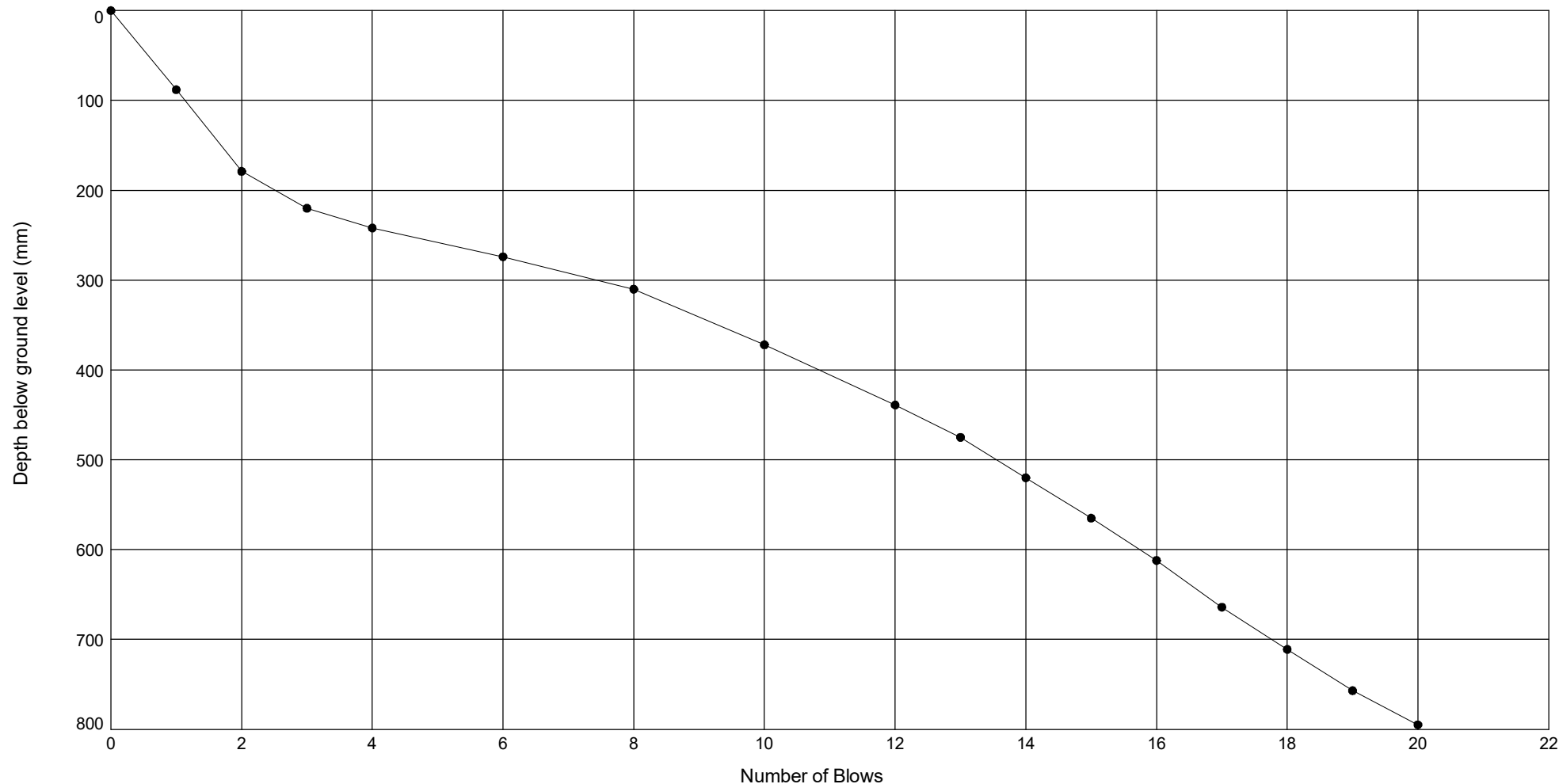
|                                                                                                                                                                               |                                                                                     |          |                                                                                       |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------|----------|
|  <div>STRUCTURAL SOILS<br/>1a Princess Street<br/>Bedminster<br/>Bristol<br/>BS3 4AG</div> | Compiled By                                                                         | Date     | Checked By                                                                            | Date     |
|                                                                                                                                                                               |  | 29/10/20 |  | 29/10/20 |
|                                                                                                                                                                               | Contract<br>Fathoms Reach, Hayling Island                                           |          | Contract Ref:<br>749730                                                               |          |

# DCP TEST RESULTS - DEPTH vs NUMBER OF BLOWS

Position Ref : **DCP 4 (TP01)**

Test Date : **28.10.20**

Test Number : **1**



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Date

**29/10/20**

Checked By

*[Signature]*

Date

**29/10/20**

Contract Ref:

**749730**

Contract

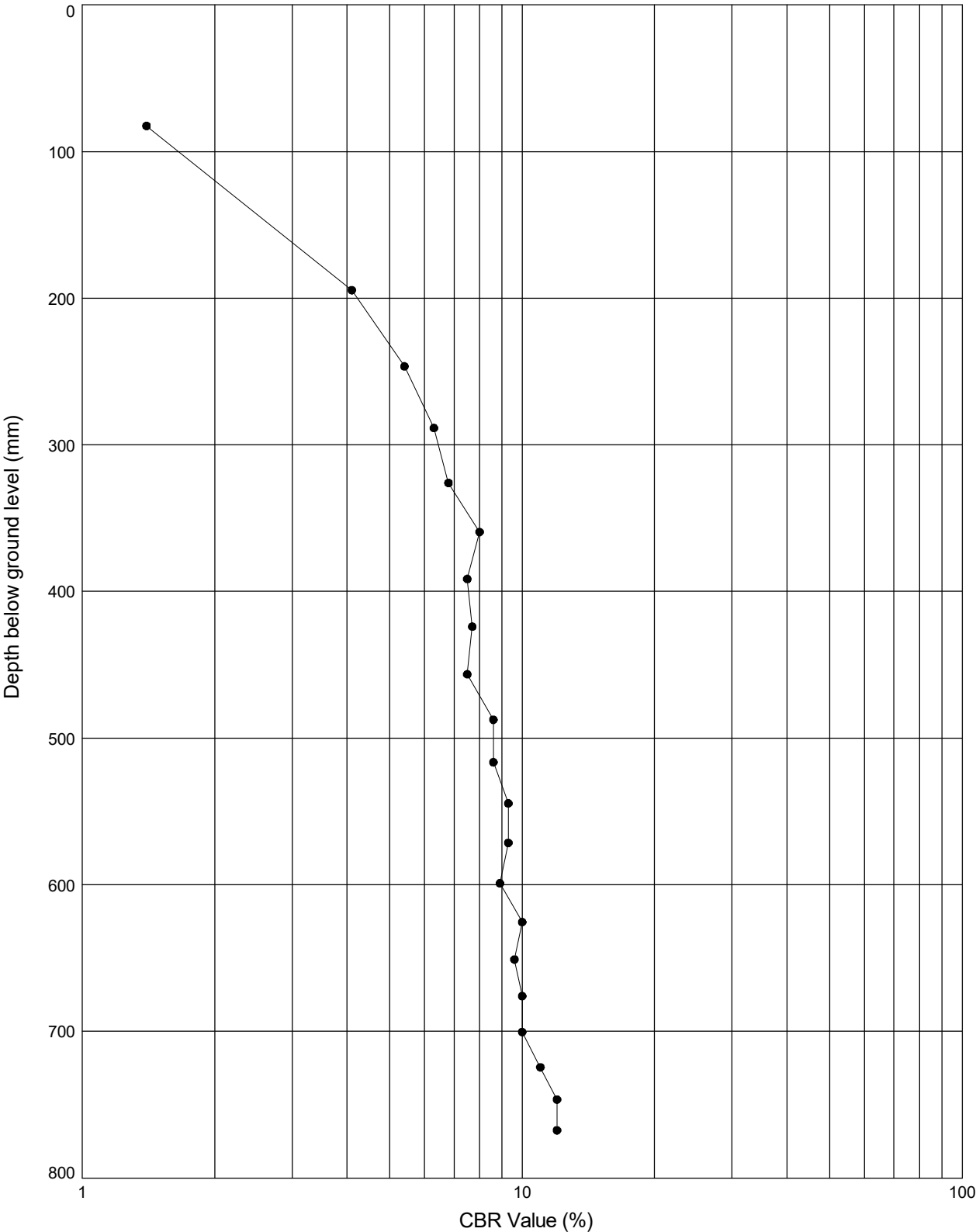
**Fathoms Reach, Hayling Island**

# DCP TEST RESULTS - DEPTH vs CBR VALUE

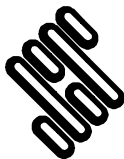
Position Ref : **DCP 5 (TP02)**

Test Date : **28.10.20**

Test Number : **1**



Notes: CBR values calculated after TRRL Road Note 8 method. Values over 100% are plotted on the 100% line.



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|                               |          |               |          |
|-------------------------------|----------|---------------|----------|
| Compiled By                   | Date     | Checked By    | Date     |
|                               | 29/10/20 |               | 29/10/20 |
| Contract                      |          | Contract Ref: |          |
| Fathoms Reach, Hayling Island |          | 749730        |          |

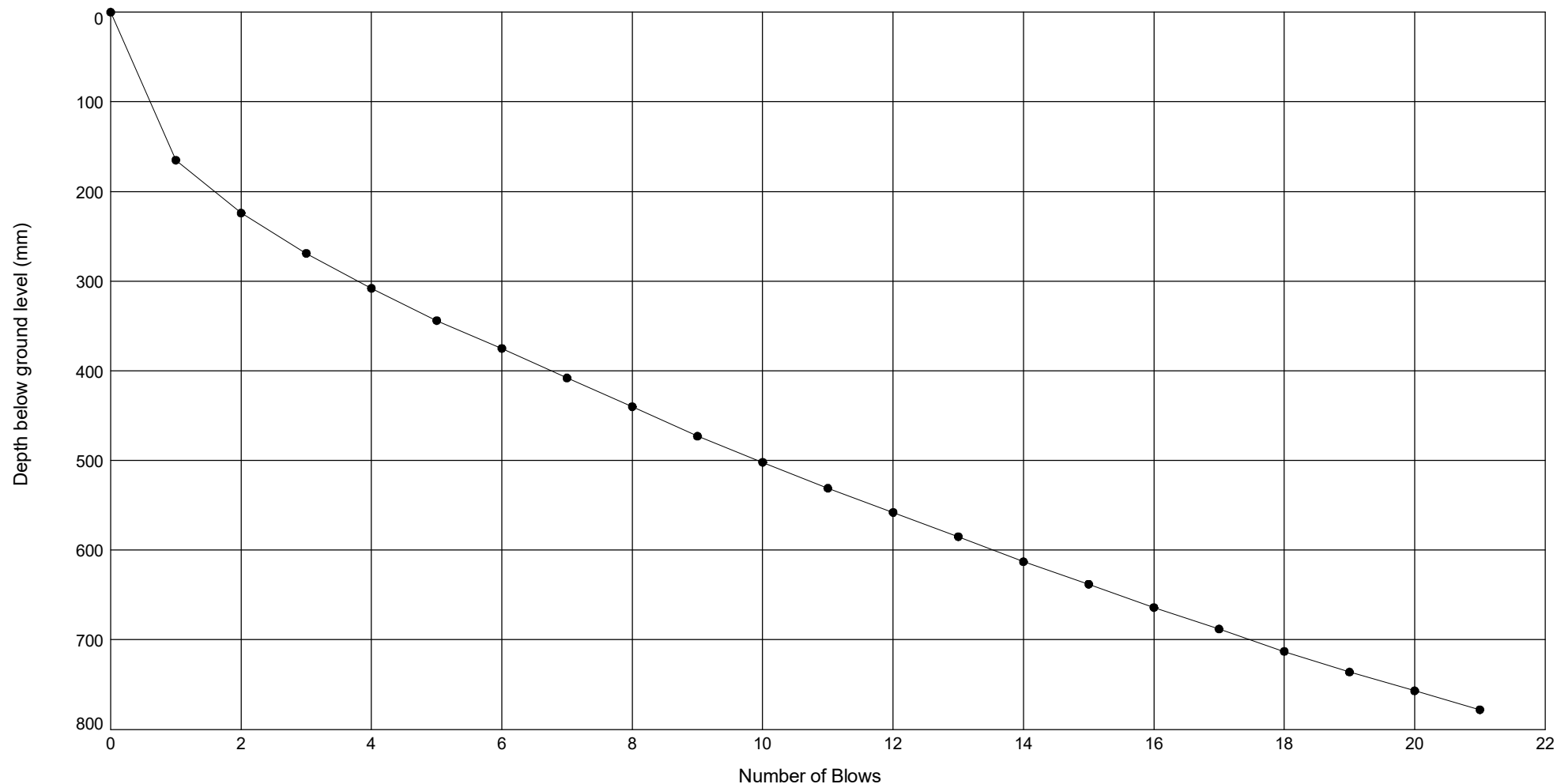
GINT\_LIBRARY\_V10\_01.GLB LibVersion: v8\_07\_001 PptVersion: v8\_07 | Graph 1 - DCP - 1 - BLOWS VS DEPTH - A4L | 749730-GINT.GPJ - v10\_01 | 29/10/20 - 12:34 | DR |

# DCP TEST RESULTS - DEPTH vs NUMBER OF BLOWS

Position Ref : **DCP 5 (TP02)**

Test Date : **28.10.20**

Test Number : **1**



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*[Signature]*

Date

**29/10/20**

Checked By

*[Signature]*

Date

**29/10/20**

Contract Ref:

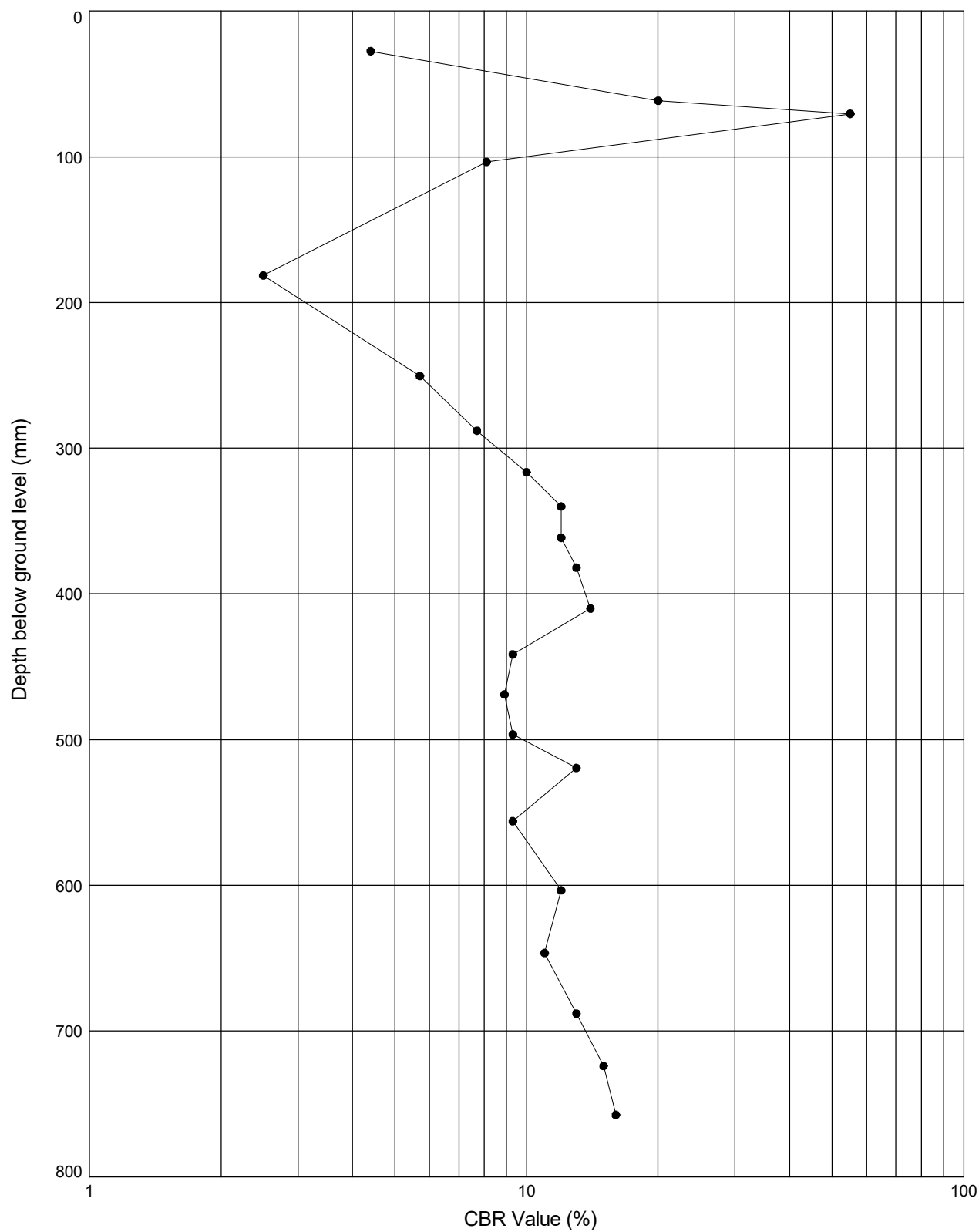
**749730**

Contract

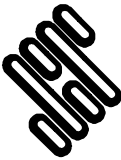
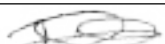
**Fathoms Reach, Hayling Island**

DCP TEST RESULTS - DEPTH vs CBR VALUE

Position Ref : **DCP 6 (WS03)**      Test Date : **28.10.20**      Test Number : **1**



Notes: CBR values calculated after TRRL Road Note 8 method. Values over 100% are plotted on the 100% line.

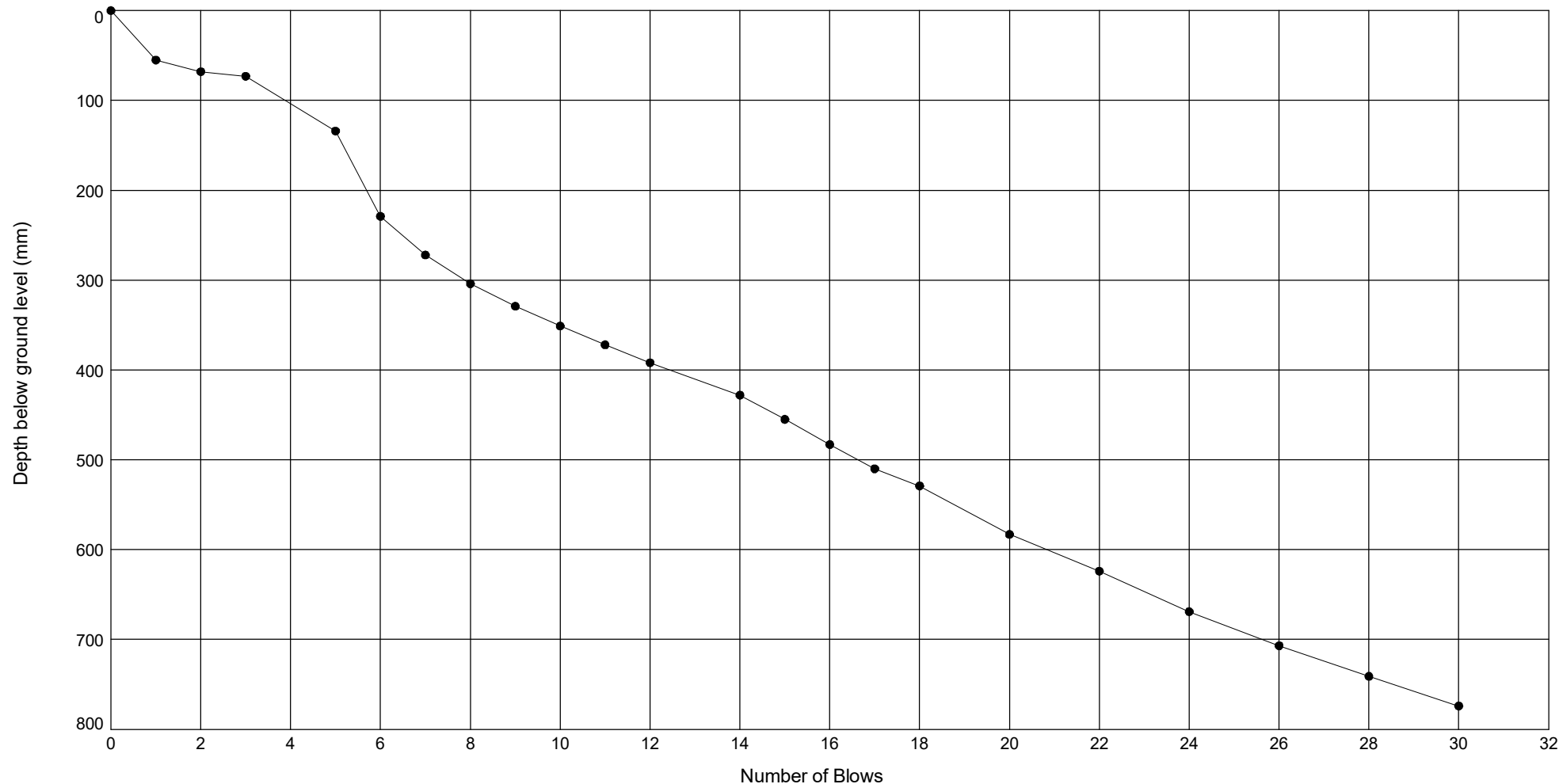
|                                                                                                                                                                               |                                                                                     |          |                                                                                       |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------|----------|
|  <div>STRUCTURAL SOILS<br/>1a Princess Street<br/>Bedminster<br/>Bristol<br/>BS3 4AG</div> | Compiled By                                                                         | Date     | Checked By                                                                            | Date     |
|                                                                                                                                                                               |  | 29/10/20 |  | 29/10/20 |
|                                                                                                                                                                               | Contract<br>Fathoms Reach, Hayling Island                                           |          | Contract Ref:<br>749730                                                               |          |

# DCP TEST RESULTS - DEPTH vs NUMBER OF BLOWS

Position Ref : **DCP 6 (WS03)**

Test Date : **28.10.20**

Test Number : **1**



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Date

**29/10/20**

Checked By

*[Signature]*

Date

**29/10/20**

Contract Ref:

**749730**

Contract

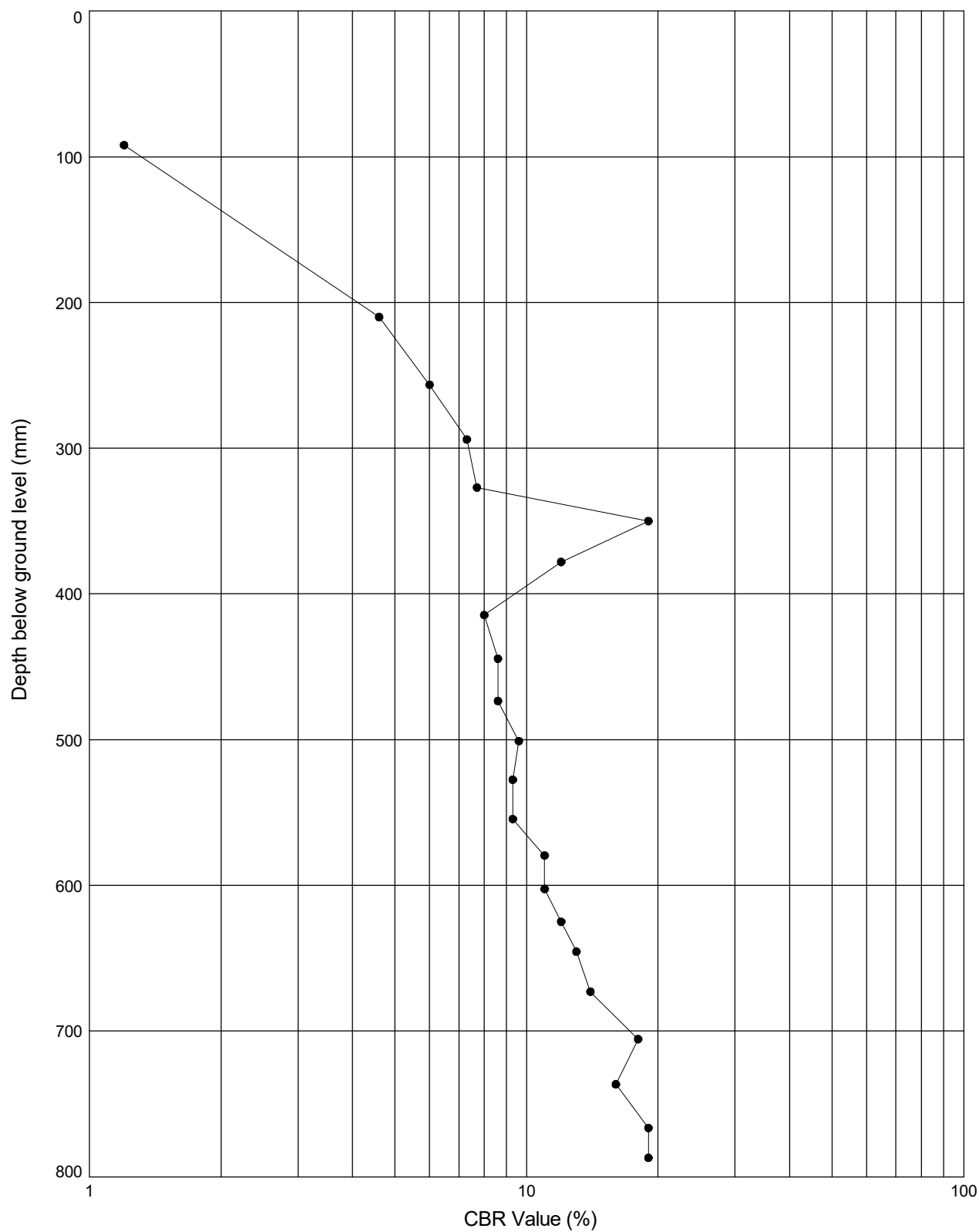
**Fathoms Reach, Hayling Island**

DCP TEST RESULTS - DEPTH vs CBR VALUE

Position Ref : DCP 7 (SA02)

Test Date : 28.10.20

Test Number : 1



Notes: CBR values calculated after TRRL Road Note 8 method. Values over 100% are plotted on the 100% line.



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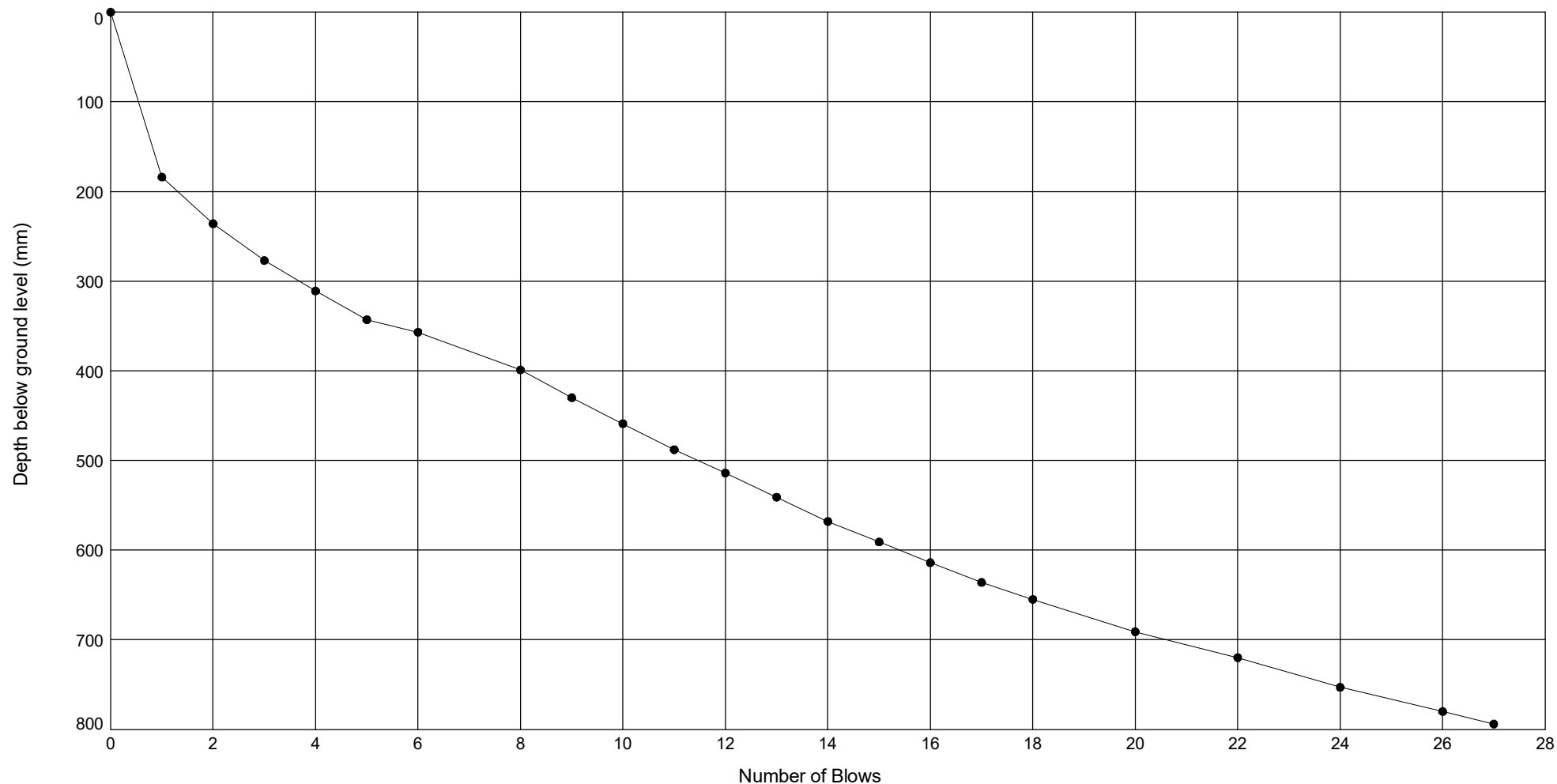
|                               |          |               |          |
|-------------------------------|----------|---------------|----------|
| Compiled By                   | Date     | Checked By    | Date     |
|                               | 29/10/20 |               | 29/10/20 |
| Contract                      |          | Contract Ref: |          |
| Fathoms Reach, Hayling Island |          | 749730        |          |

# DCP TEST RESULTS - DEPTH vs NUMBER OF BLOWS

Position Ref : **DCP 7 (SA02)**

Test Date : **28.10.20**

Test Number : **1**



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Checked By

*[Signature]*

Date

**29/10/20**

Contract Ref:

**749730**

Contract

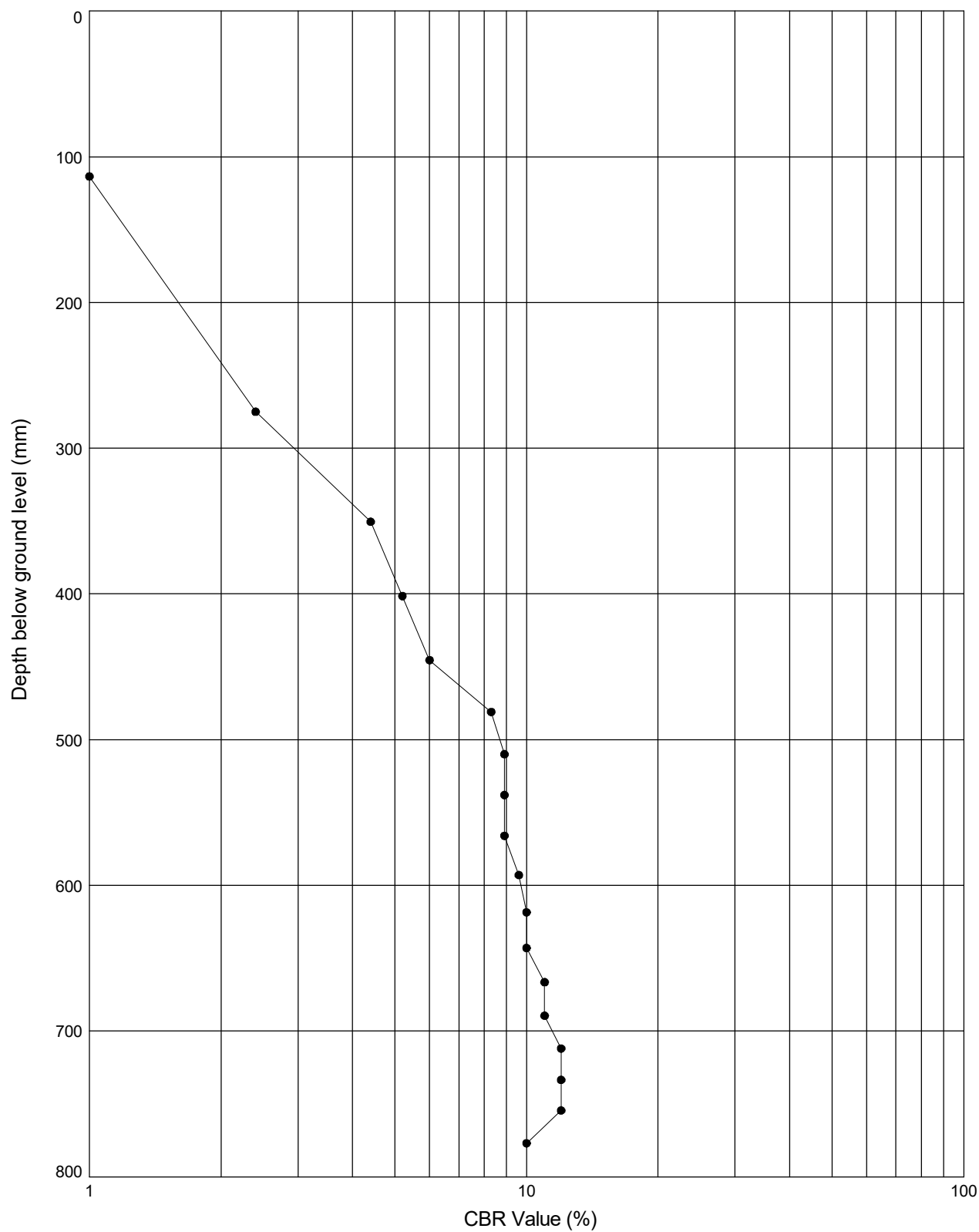
**Fathoms Reach, Hayling Island**

# DCP TEST RESULTS - DEPTH vs CBR VALUE

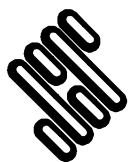
Position Ref : **DCP 8 (TP04)**

Test Date : **28.10.20**

Test Number : **1**



Notes: CBR values calculated after TRRL Road Note 8 method. Values over 100% are plotted on the 100% line.



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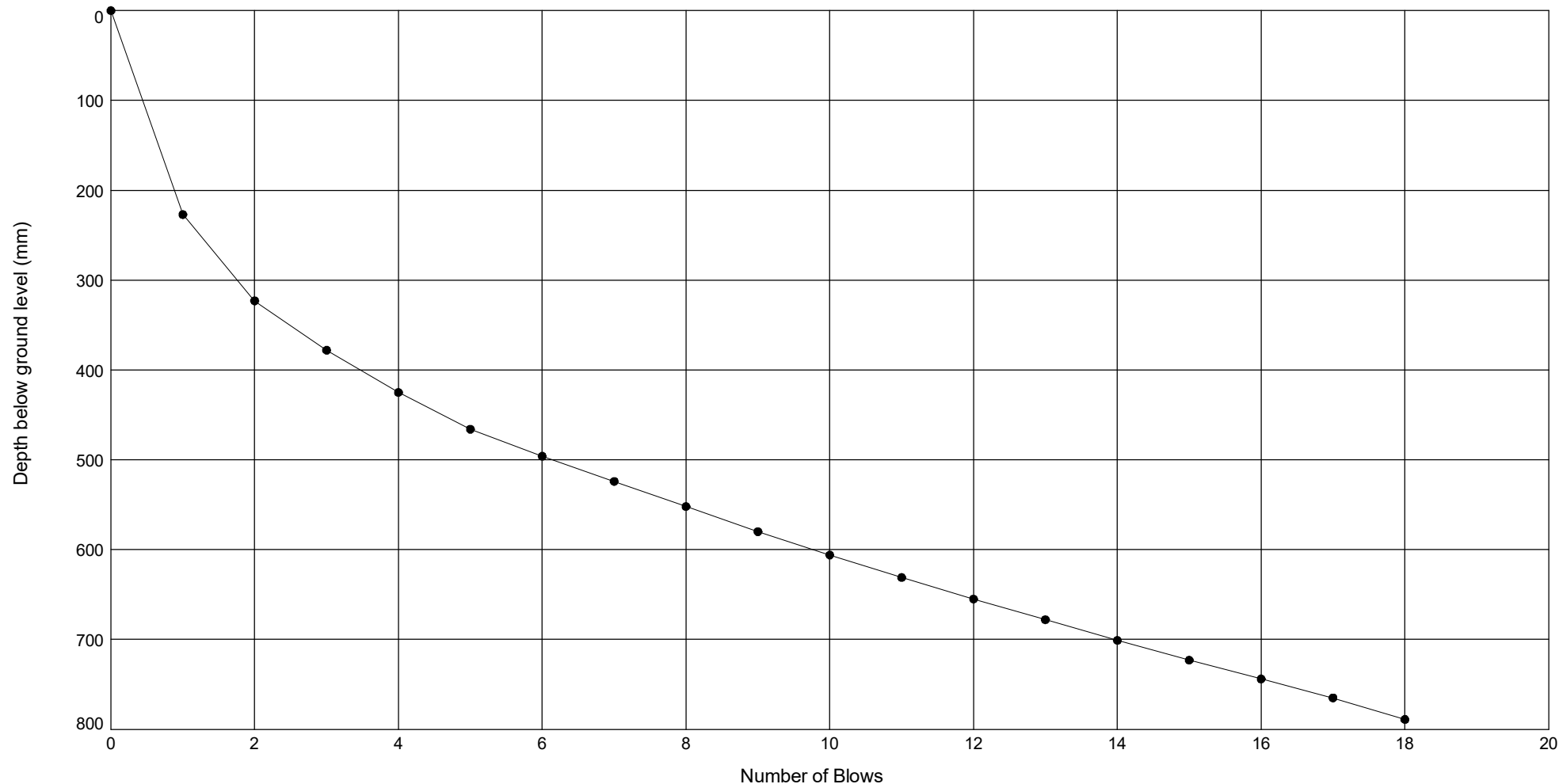
|                               |          |               |          |
|-------------------------------|----------|---------------|----------|
| Compiled By                   | Date     | Checked By    | Date     |
|                               | 29/10/20 |               | 29/10/20 |
| Contract                      |          | Contract Ref: |          |
| Fathoms Reach, Hayling Island |          | 749730        |          |

# DCP TEST RESULTS - DEPTH vs NUMBER OF BLOWS

Position Ref : **DCP 8 (TP04)**

Test Date : **28.10.20**

Test Number : **1**



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Compiled By

*[Signature]*

Date

**29/10/20**

Checked By

*[Signature]*

Date

**29/10/20**

Contract Ref:

**749730**

Contract

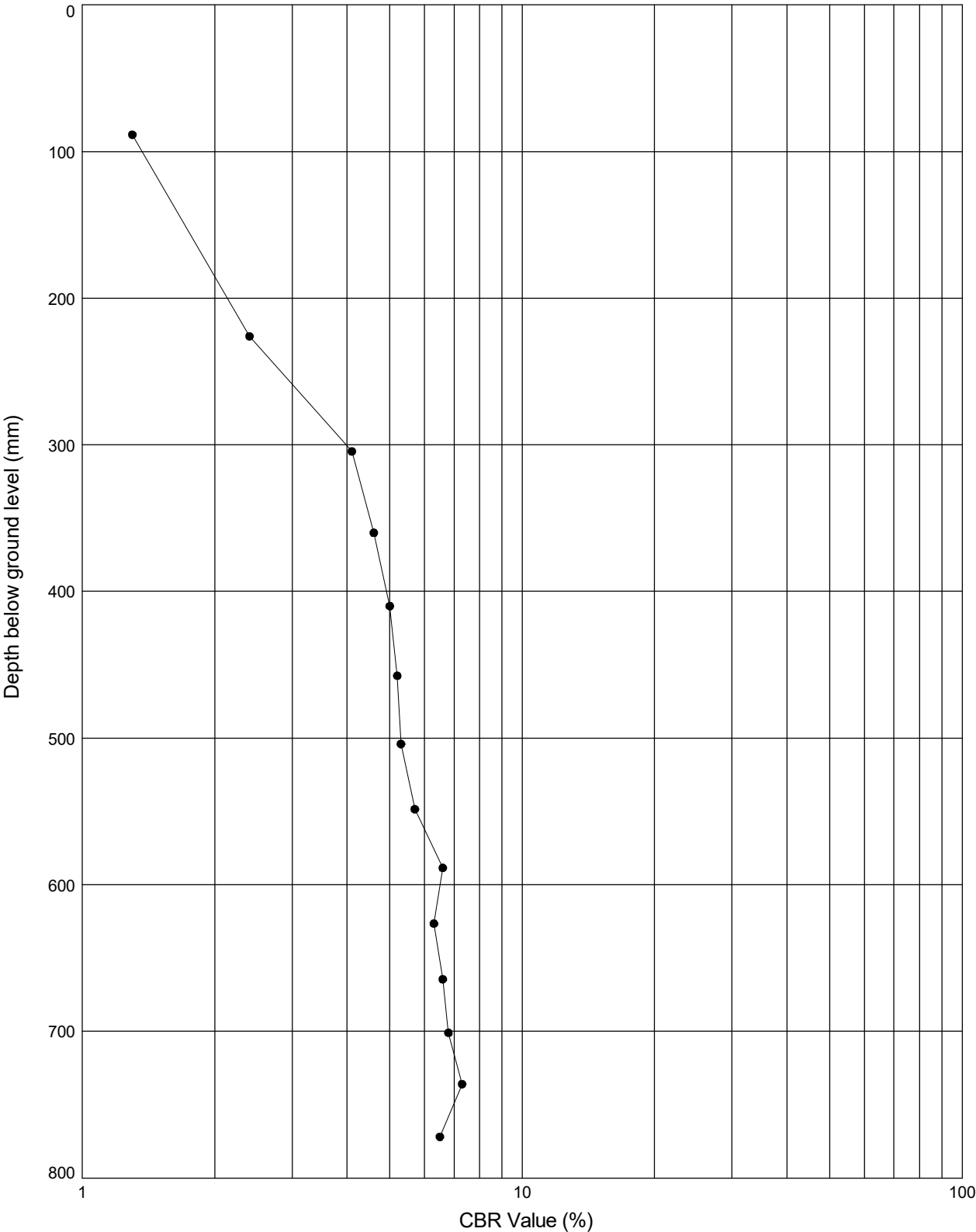
**Fathoms Reach, Hayling Island**

DCP TEST RESULTS - DEPTH vs CBR VALUE

Position Ref : DCP 9 (SA03)

Test Date : 28.10.20

Test Number : 1



Notes: CBR values calculated after TRRL Road Note 8 method. Values over 100% are plotted on the 100% line.



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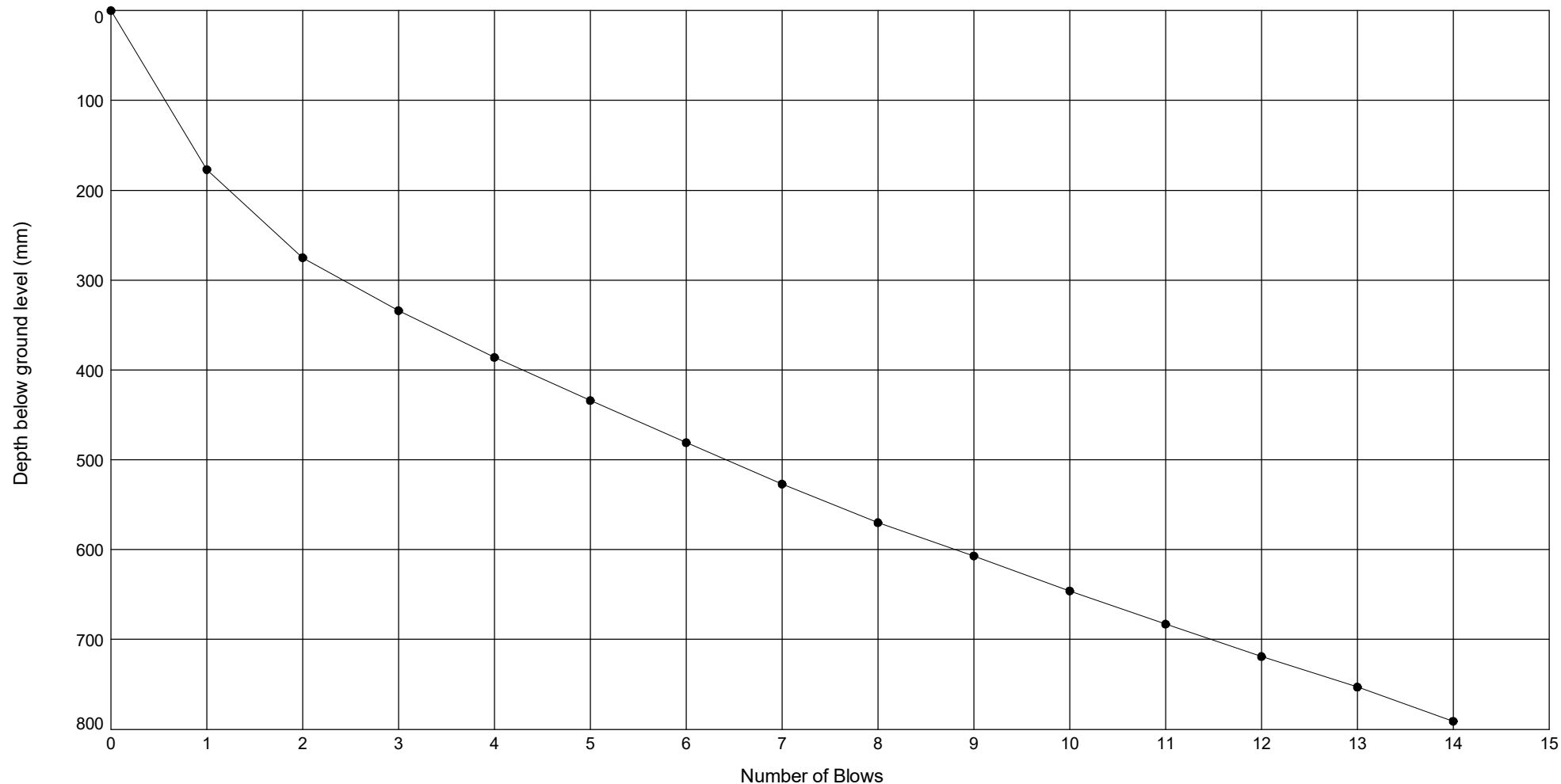
|                               |          |               |          |
|-------------------------------|----------|---------------|----------|
| Compiled By                   | Date     | Checked By    | Date     |
|                               | 29/10/20 |               | 29/10/20 |
| Contract                      |          | Contract Ref: |          |
| Fathoms Reach, Hayling Island |          | 749730        |          |

# DCP TEST RESULTS - DEPTH vs NUMBER OF BLOWS

Position Ref : **DCP 9 (SA03)**

Test Date : **28.10.20**

Test Number : **1**



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Date

**29/10/20**

Checked By

*[Signature]*

Date

**29/10/20**

Contract Ref:

**749730**

Contract

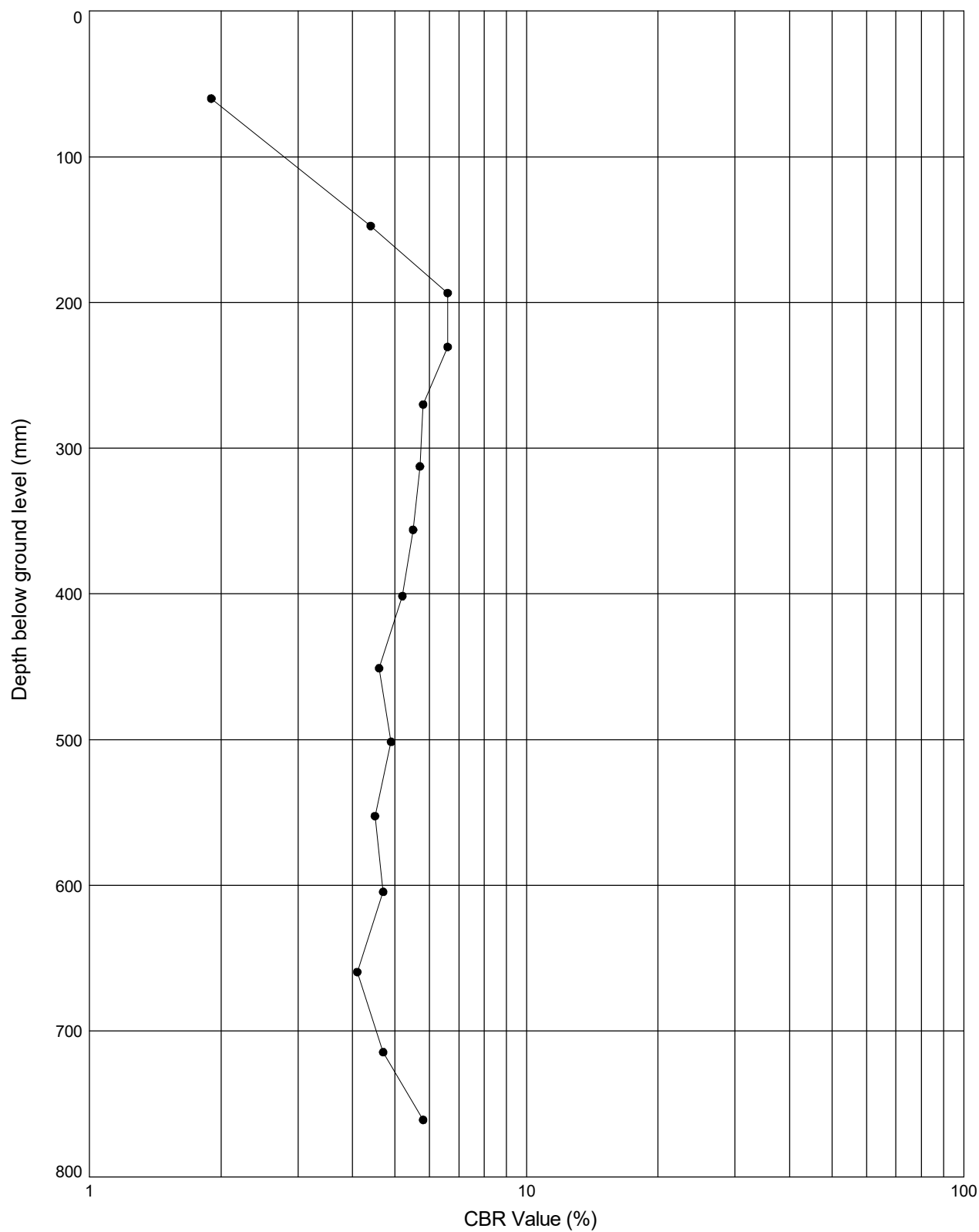
**Fathoms Reach, Hayling Island**

DCP TEST RESULTS - DEPTH vs CBR VALUE

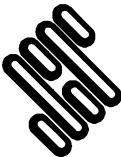
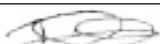
Position Ref : **DCP 10 (WS04)**

Test Date : **28.10.20**

Test Number : **1**



Notes: CBR values calculated after TRRL Road Note 8 method. Values over 100% are plotted on the 100% line.

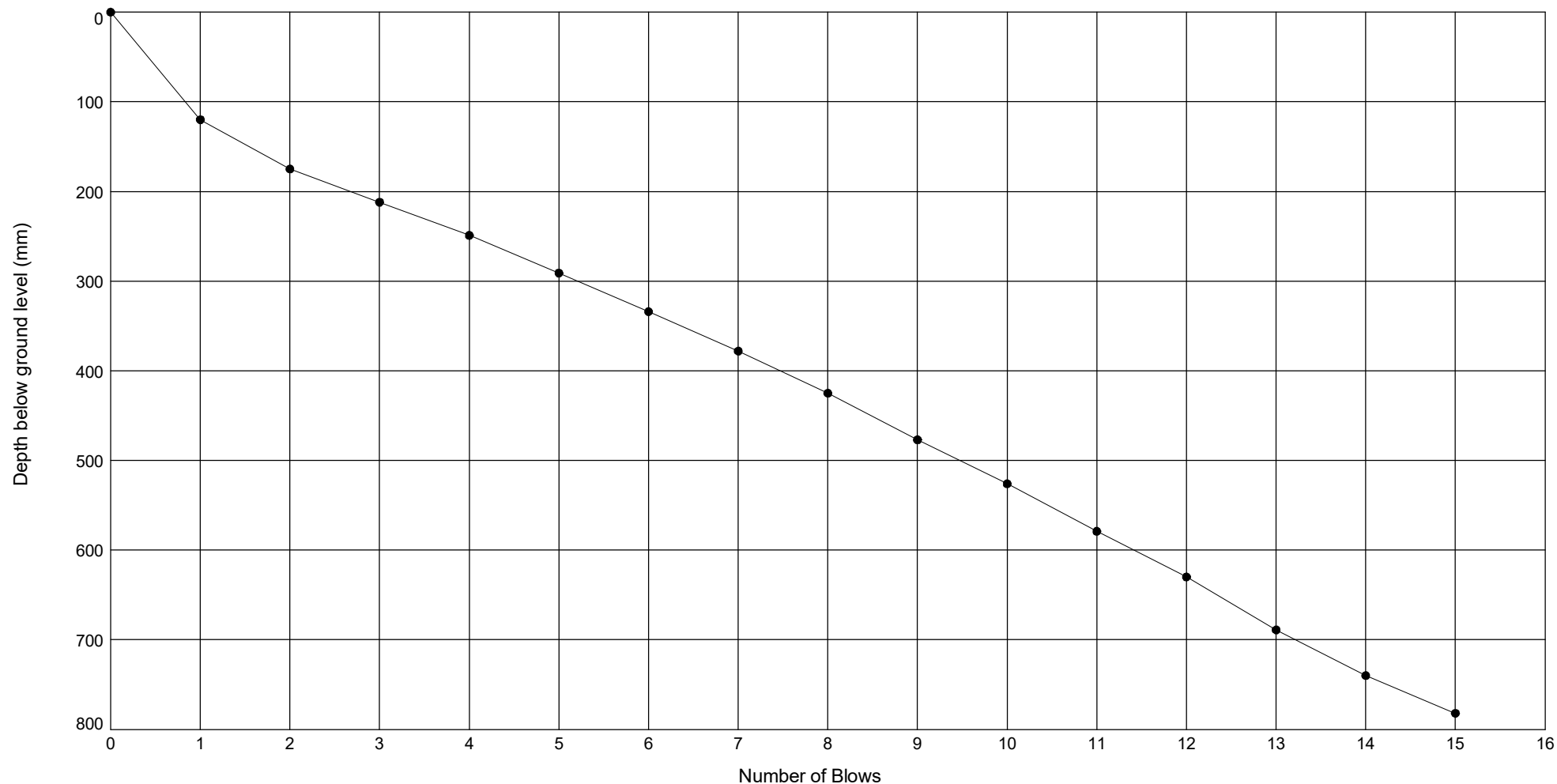
|                                                                                                                                                                               |                                                                                     |          |                                                                                       |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------|----------|
|  <div>STRUCTURAL SOILS<br/>1a Princess Street<br/>Bedminster<br/>Bristol<br/>BS3 4AG</div> | Compiled By                                                                         | Date     | Checked By                                                                            | Date     |
|                                                                                                                                                                               |  | 29/10/20 |  | 29/10/20 |
|                                                                                                                                                                               | Contract<br><b>Fathoms Reach, Hayling Island</b>                                    |          | Contract Ref:<br><b>749730</b>                                                        |          |

# DCP TEST RESULTS - DEPTH vs NUMBER OF BLOWS

Position Ref : **DCP 10 (WS04)**

Test Date : **28.10.20**

Test Number : **1**



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*[Signature]*

Date

**29/10/20**

Checked By

*[Signature]*

Date

**29/10/20**

Contract Ref:

**749730**

Contract

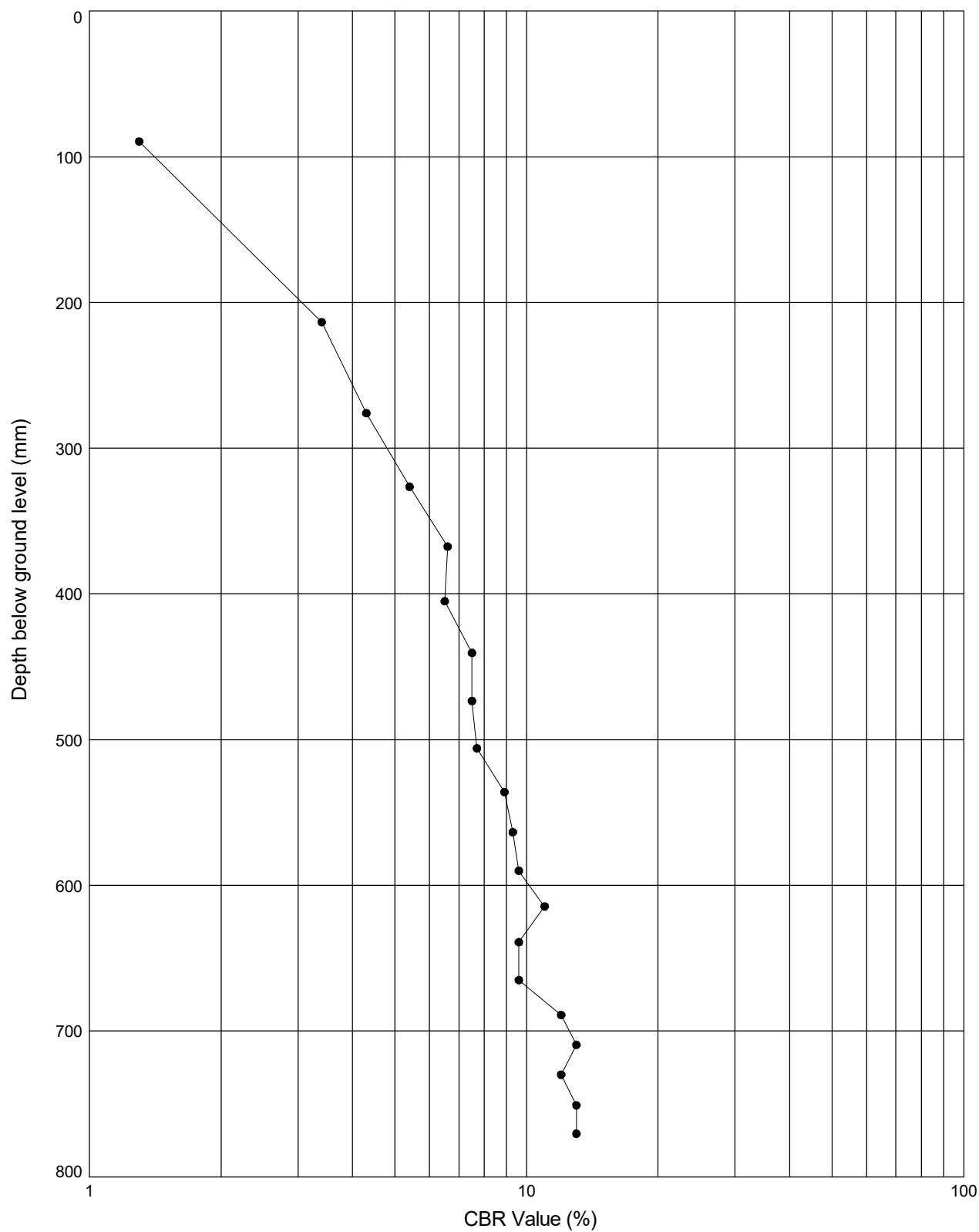
**Fathoms Reach, Hayling Island**

DCP TEST RESULTS - DEPTH vs CBR VALUE

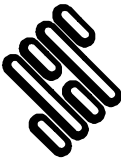
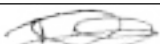
Position Ref : DCP 11 (WS05)

Test Date : 28.10.20

Test Number : 1



Notes: CBR values calculated after TRRL Road Note 8 method. Values over 100% are plotted on the 100% line.

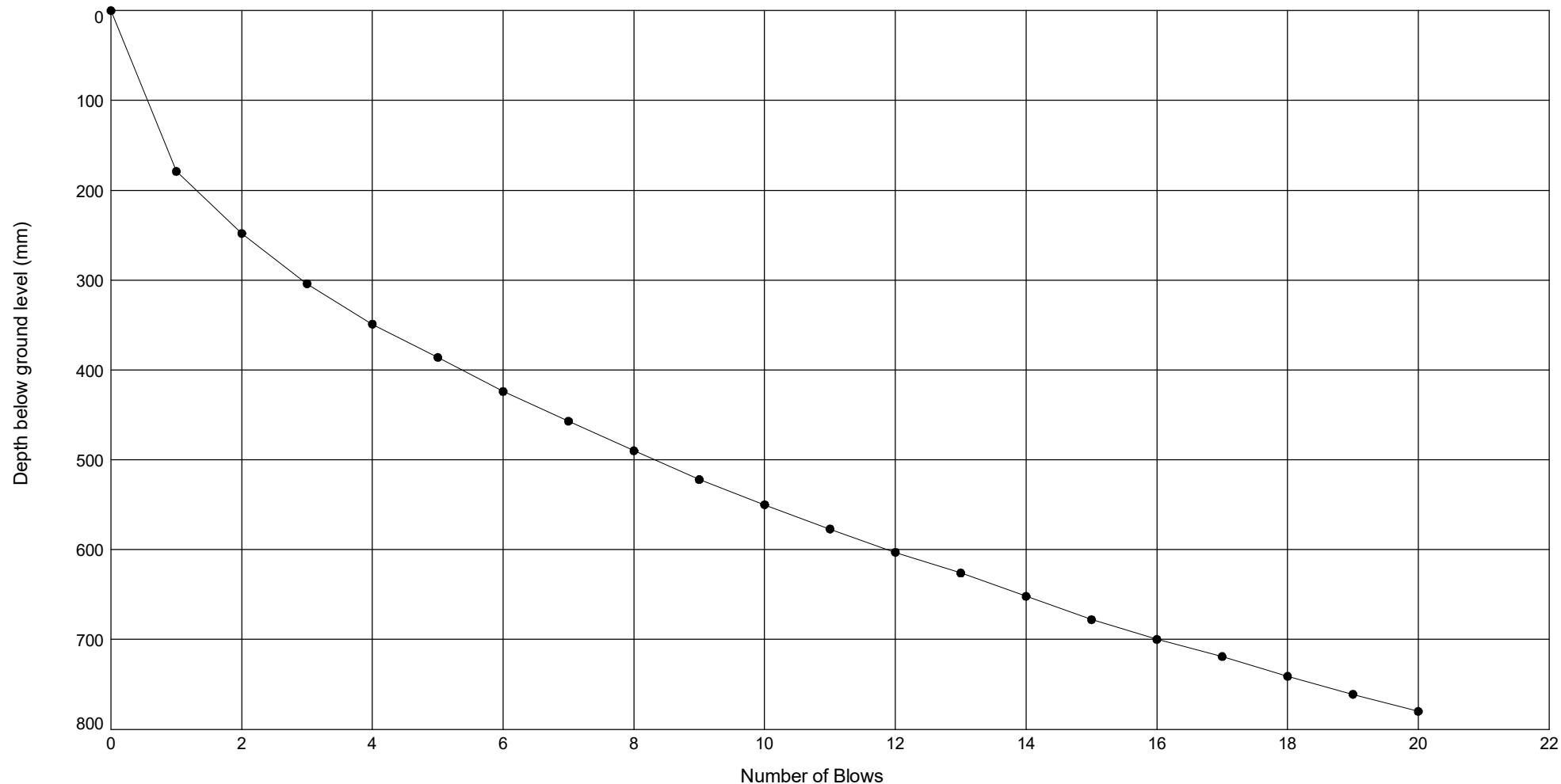
|                                                                                                                                                                               |                                                                                     |          |                                                                                       |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------|----------|
|  <div>STRUCTURAL SOILS<br/>1a Princess Street<br/>Bedminster<br/>Bristol<br/>BS3 4AG</div> | Compiled By                                                                         | Date     | Checked By                                                                            | Date     |
|                                                                                                                                                                               |  | 29/10/20 |  | 29/10/20 |
|                                                                                                                                                                               | Contract<br>Fathoms Reach, Hayling Island                                           |          | Contract Ref:<br>749730                                                               |          |

# DCP TEST RESULTS - DEPTH vs NUMBER OF BLOWS

Position Ref : **DCP 11 (WS05)**

Test Date : **28.10.20**

Test Number : **1**



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*[Signature]*

Date

**29/10/20**

Checked By

*[Signature]*

Date

**29/10/20**

Contract Ref:

**749730**

Contract

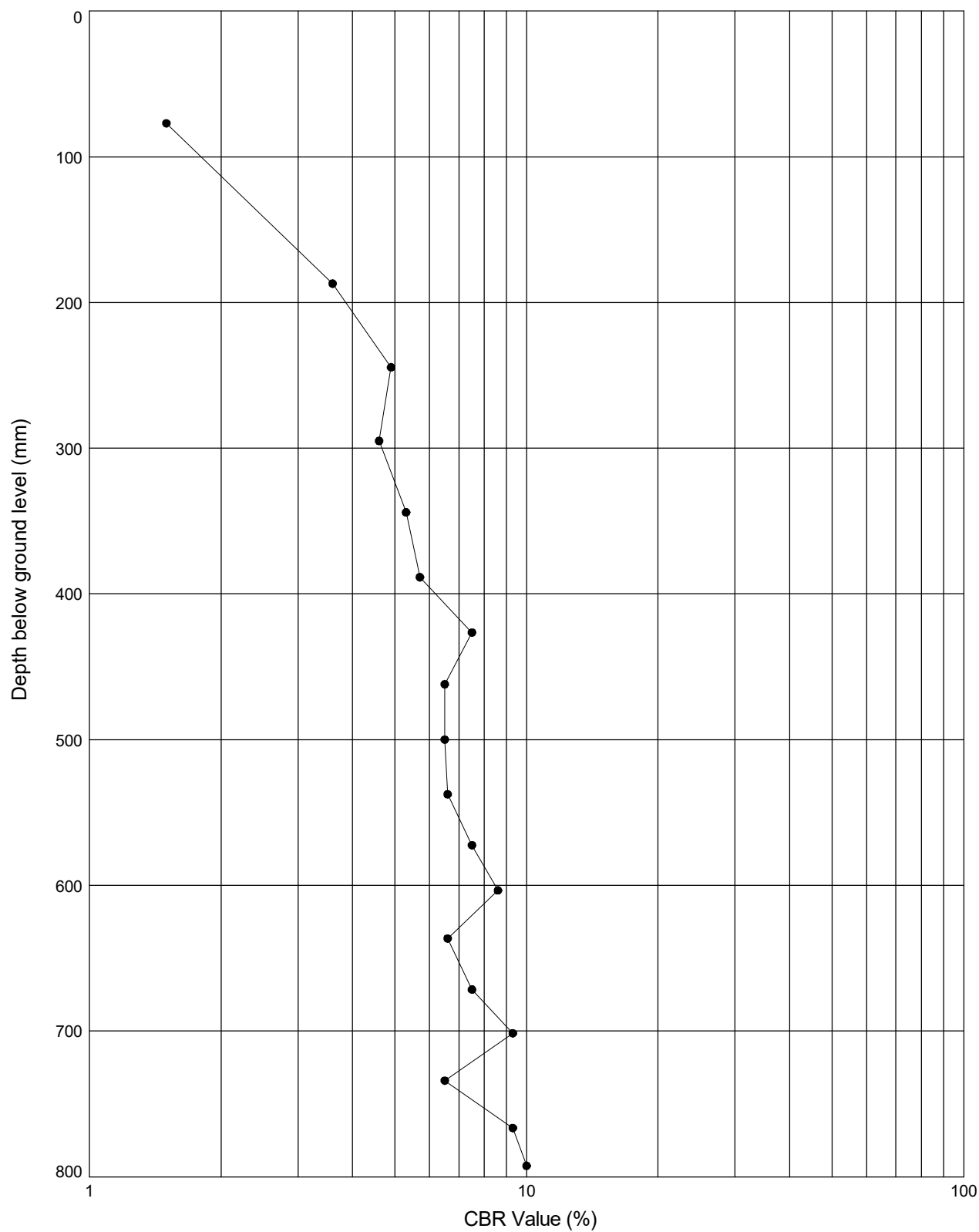
**Fathoms Reach, Hayling Island**

DCP TEST RESULTS - DEPTH vs CBR VALUE

Position Ref : DCP 12 (TP03)

Test Date : 28.10.20

Test Number : 1



Notes: CBR values calculated after TRRL Road Note 8 method. Values over 100% are plotted on the 100% line.

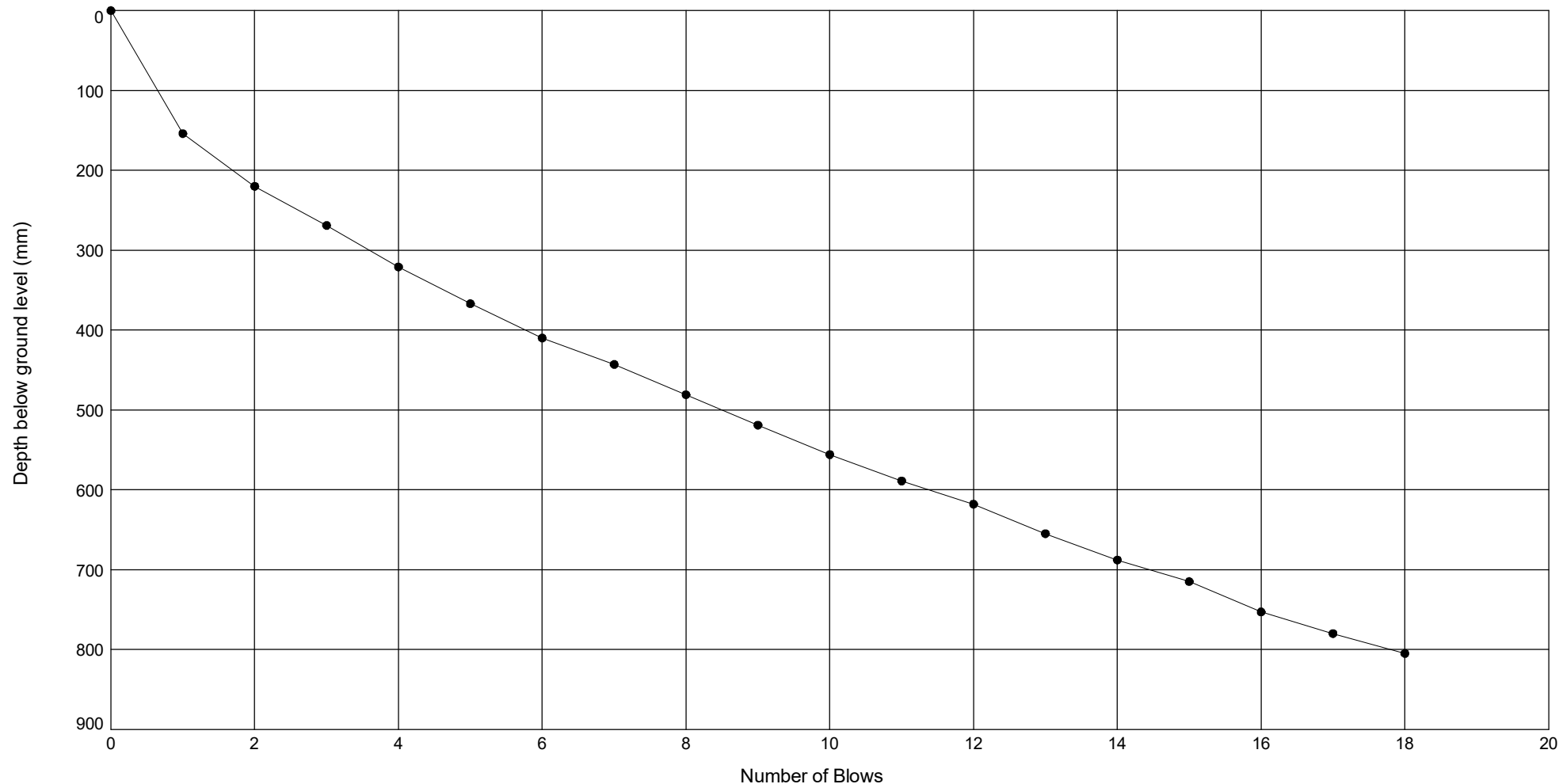
|                                                                                     |                                                                            |                                                                                     |          |                                                                                       |          |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------|----------|
|  | STRUCTURAL SOILS<br>1a Princess Street<br>Bedminster<br>Bristol<br>BS3 4AG | Compiled By                                                                         | Date     | Checked By                                                                            | Date     |
|                                                                                     |                                                                            |  | 29/10/20 |  | 29/10/20 |
|                                                                                     |                                                                            | Contract                                                                            |          | Contract Ref:                                                                         |          |
|                                                                                     |                                                                            | Fathoms Reach, Hayling Island                                                       |          | 749730                                                                                |          |

# DCP TEST RESULTS - DEPTH vs NUMBER OF BLOWS

Position Ref : **DCP 12 (TP03)**

Test Date : **28.10.20**

Test Number : **1**



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Date

**29/10/20**

Checked By

*[Signature]*

Date

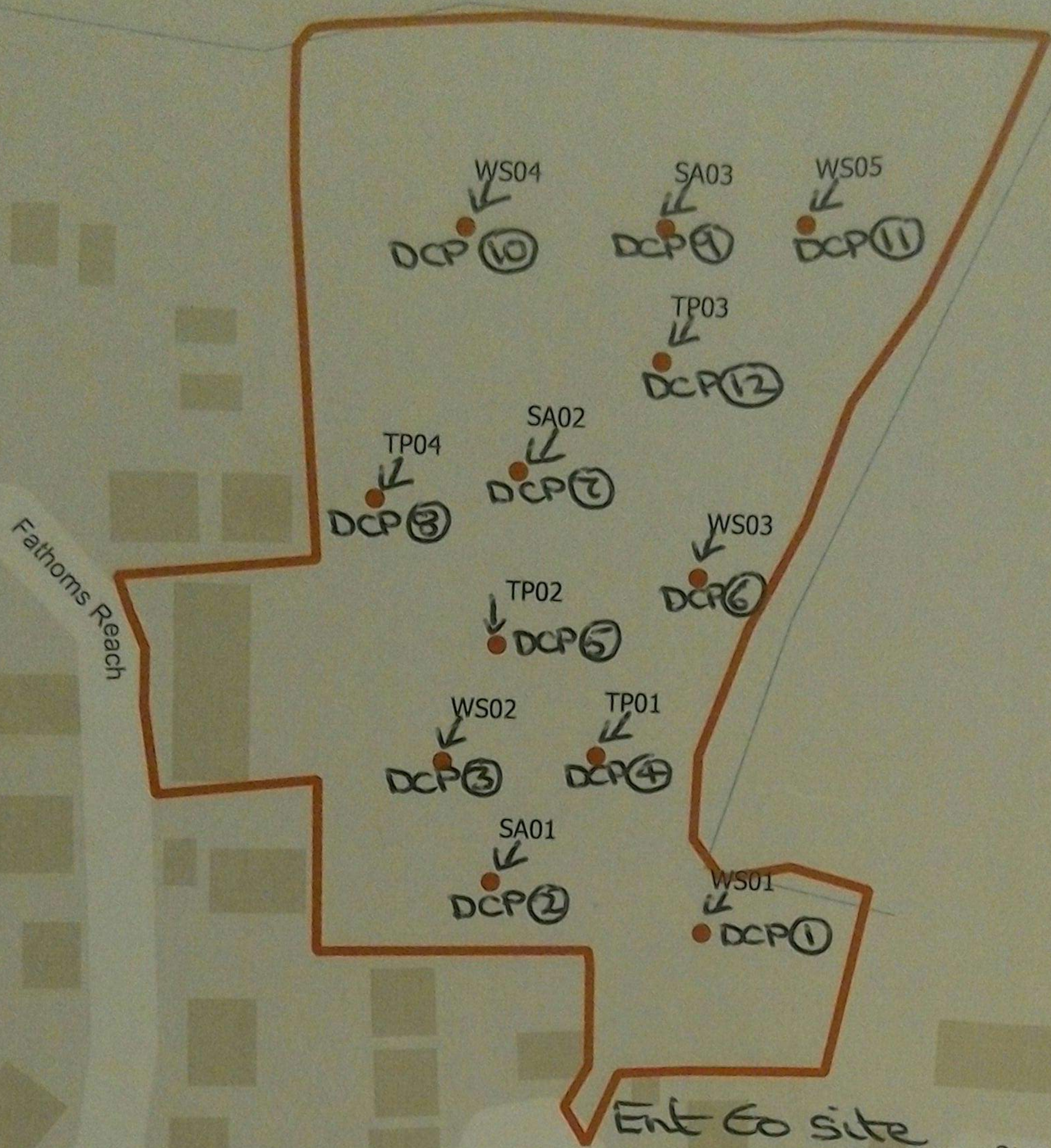
**29/10/20**

Contract Ref:

**749730**

Contract

**Fathoms Reach, Hayling Island**



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 tional Statistics data © Crown copyright and database right

REVISIONS

Hayling Island  
 749730 28/10/20  
 DCP tests x 12 at  
 WS, TP, SA locations

|     |                |                  |                   |                    |
|-----|----------------|------------------|-------------------|--------------------|
| P01 | ORIGINAL ISSUE |                  |                   |                    |
|     | DRAWN BY<br>YP | CHECKED BY<br>AJ | APPROVED BY<br>AJ | DATE<br>26/10/2020 |

CLIENT  
 Taylor

Hy



# TEST CERTIFICATE

## Liquid and Plastic Limits

i2 Analytical Ltd  
Unit 8 Harrowden Road  
Brackmills Industrial Estate  
Northampton NN4 7EB



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Hydrock Consultants Ltd  
Client Address: Suite 8, White Building,  
1-4 Cumberland Place, Southampton,  
Hampshire, SO15 2NP

Contact: Yacklin Panza  
Site Address: Fathoms Reach, Hayling Island

Client Reference: 16117  
Job Number: 20-38907  
Date Sampled: 27/10/2020  
Date Received: 28/10/2020  
Date Tested: 09/11/2020  
Sampled By: Client - YP

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

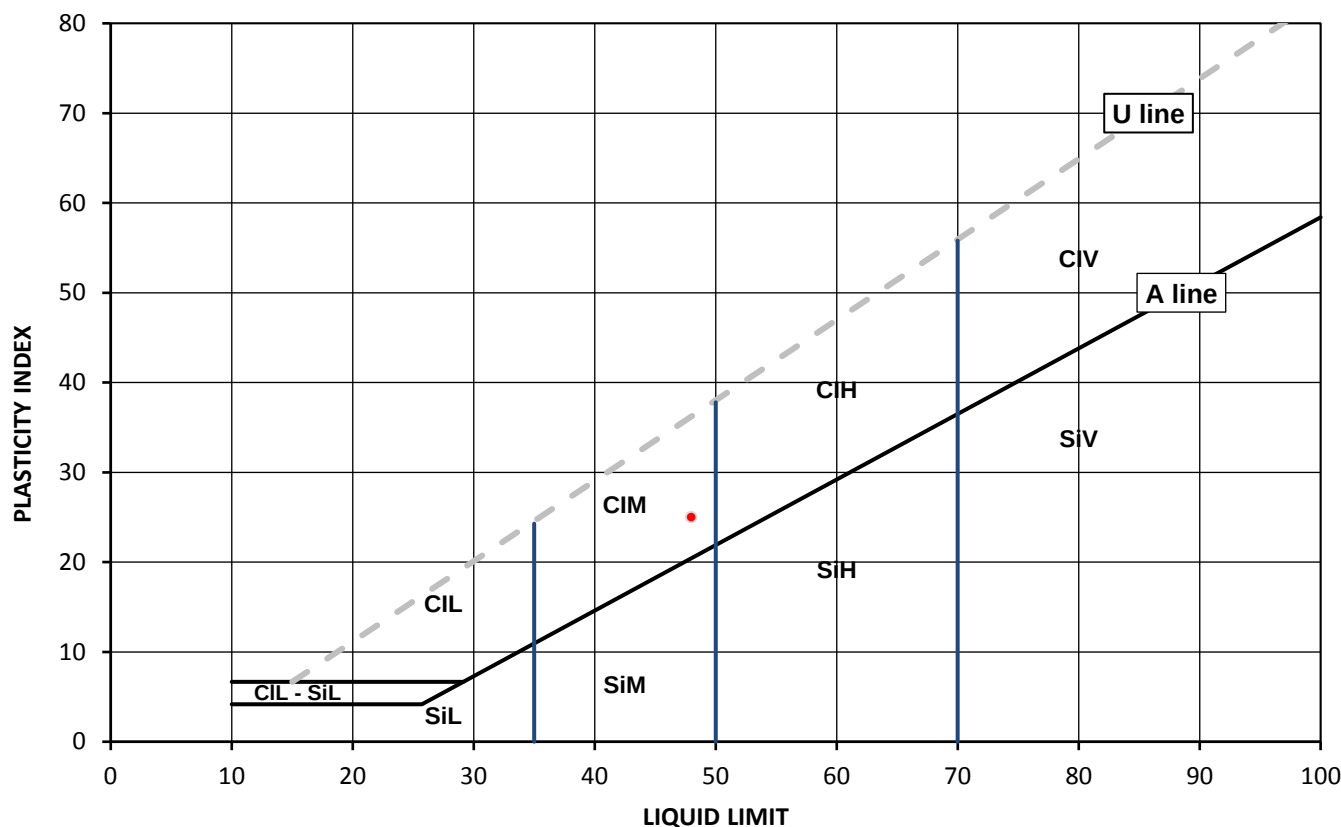
### Test Results:

Laboratory Reference: 1670080  
Hole No.: TP01  
Sample Reference: TP01-D-1.1  
Soil Description: Brown slightly gravelly slightly sandy CLAY

Depth Top [m]: 1.10  
Depth Base [m]: Not Given  
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

| As Received Moisture Content [ W ] % | Liquid Limit [ WL ] % | Plastic Limit [ Wp ] % | Plasticity Index [ Ip ] % | % Passing 425µm BS Test Sieve |
|--------------------------------------|-----------------------|------------------------|---------------------------|-------------------------------|
| 26                                   | 48                    | 23                     | 25                        | 99                            |



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

|    | Plasticity | Liquid Limit                                              |
|----|------------|-----------------------------------------------------------|
| Cl | Clay       | L Low below 35                                            |
| Si | Silt       | M Medium 35 to 50                                         |
|    |            | H High 50 to 70                                           |
|    |            | V Very high exceeding 70                                  |
|    | O Organic  | append to classification for organic material ( eg CIHO ) |

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Monika Janoszek  
PL Deputy Head of Geotechnical Section  
for and on behalf of i2 Analytical Ltd

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Page 1 of 1

Date Reported: 12/11/2020

GF 236.10



# TEST CERTIFICATE

## Liquid and Plastic Limits

i2 Analytical Ltd  
Unit 8 Harrowden Road  
Brackmills Industrial Estate  
Northampton NN4 7EB



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Hydrock Consultants Ltd  
Client Address: Suite 8, White Building,  
1-4 Cumberland Place, Southampton,  
Hampshire, SO15 2NP

Contact: Yacklin Panza  
Site Address: Fathoms Reach, Hayling Island

Client Reference: 16117  
Job Number: 20-38907  
Date Sampled: 27/10/2020  
Date Received: 28/10/2020  
Date Tested: 09/11/2020  
Sampled By: Client - YP

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

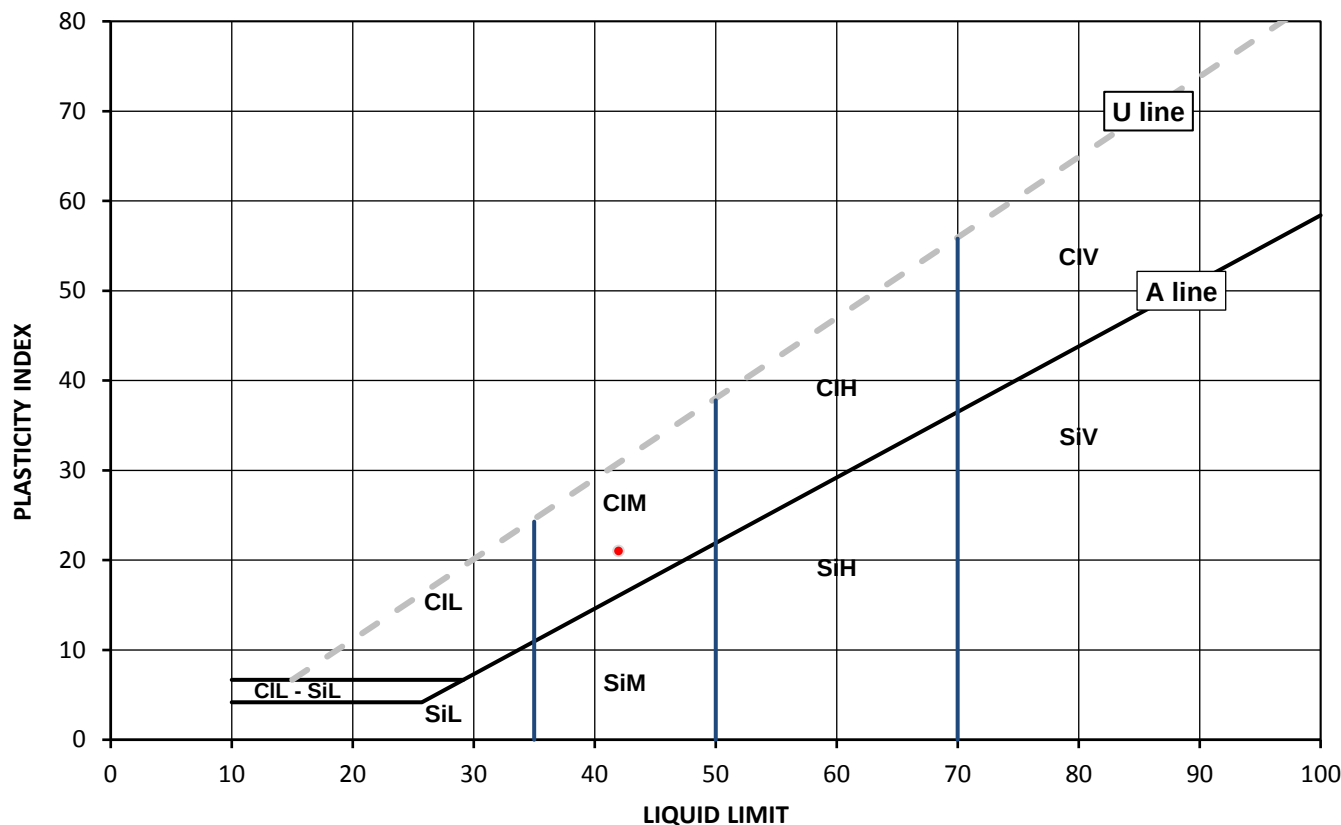
### Test Results:

Laboratory Reference: 1670081  
Hole No.: TP01  
Sample Reference: TP101-D-1.9  
Soil Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 1.90  
Depth Base [m]: Not Given  
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

| As Received Moisture Content [ W ] % | Liquid Limit [ WL ] % | Plastic Limit [ Wp ] % | Plasticity Index [ Ip ] % | % Passing 425µm BS Test Sieve |
|--------------------------------------|-----------------------|------------------------|---------------------------|-------------------------------|
| 20                                   | 42                    | 21                     | 21                        | 67                            |



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

|    | Plasticity  | Liquid Limit                                              |
|----|-------------|-----------------------------------------------------------|
| Cl | Clay        | below 35                                                  |
| Si | Silt        | 35 to 50                                                  |
|    | L Low       | 50 to 70                                                  |
|    | M Medium    | exceeding 70                                              |
|    | H High      | append to classification for organic material ( eg CIHO ) |
|    | V Very high |                                                           |
|    | O Organic   |                                                           |

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Monika Janoszek  
PL Deputy Head of Geotechnical Section  
for and on behalf of i2 Analytical Ltd

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## Liquid and Plastic Limits

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Northampton NN4 7EB



4041

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Sampled By: Client - YP

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

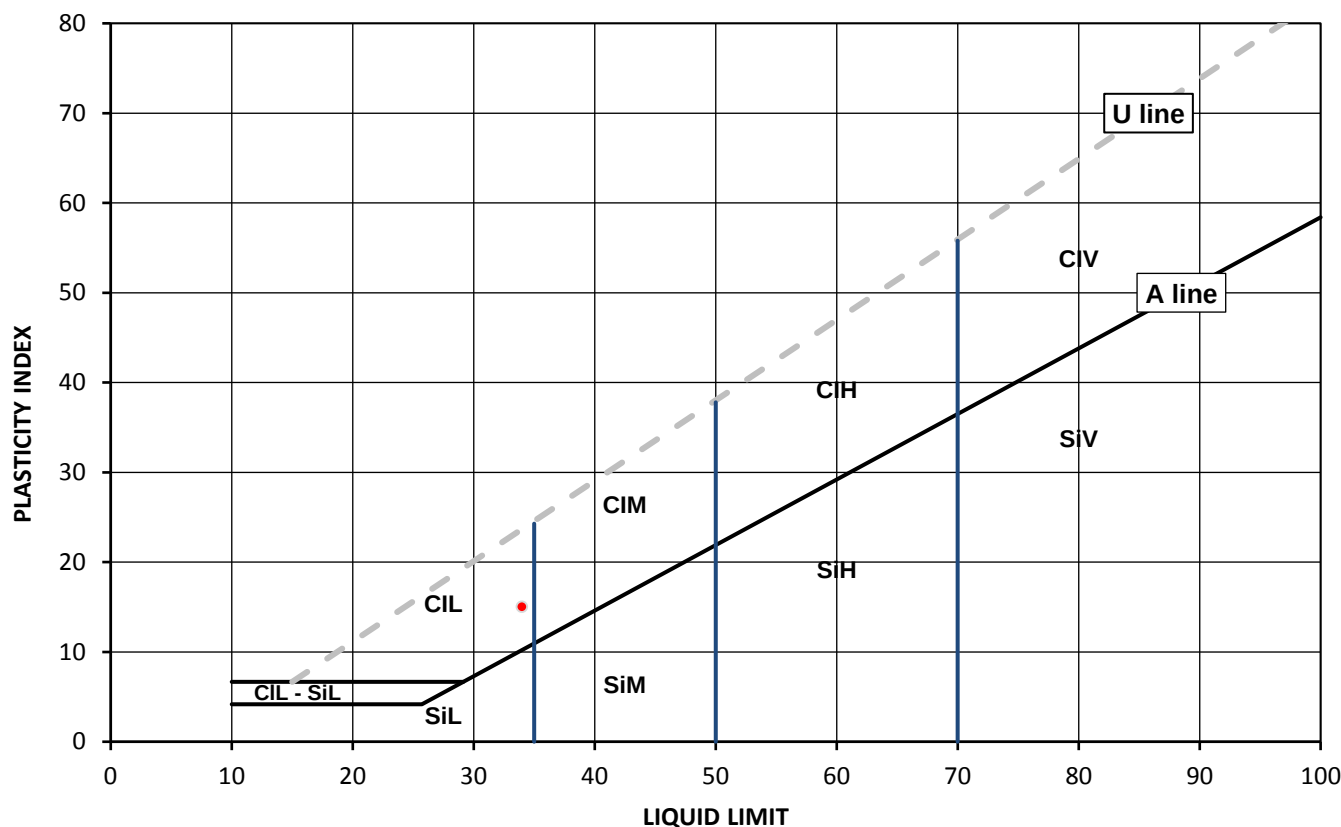
### Test Results:

Laboratory Reference: 1670082  
Hole No.: SA01  
Sample Reference: SA01-D-1.2  
Soil Description: Brown slightly gravelly very sandy CLAY

Depth Top [m]: 1.20  
Depth Base [m]: Not Given  
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

| As Received Moisture Content [ W ] % | Liquid Limit [ WL ] % | Plastic Limit [ Wp ] % | Plasticity Index [ Ip ] % | % Passing 425µm BS Test Sieve |
|--------------------------------------|-----------------------|------------------------|---------------------------|-------------------------------|
| 24                                   | 34                    | 19                     | 15                        | 98                            |



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

|    | Plasticity  | Liquid Limit                                              |
|----|-------------|-----------------------------------------------------------|
| Cl | Clay        | below 35                                                  |
| Si | Silt        | 35 to 50                                                  |
|    | L Low       | 50 to 70                                                  |
|    | M Medium    | exceeding 70                                              |
|    | H High      | append to classification for organic material ( eg CIHO ) |
|    | V Very high |                                                           |
|    | O Organic   |                                                           |

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

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# TEST CERTIFICATE

## Liquid and Plastic Limits

i2 Analytical Ltd  
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4041

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Date Tested: 09/11/2020  
Sampled By: Client - YP

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

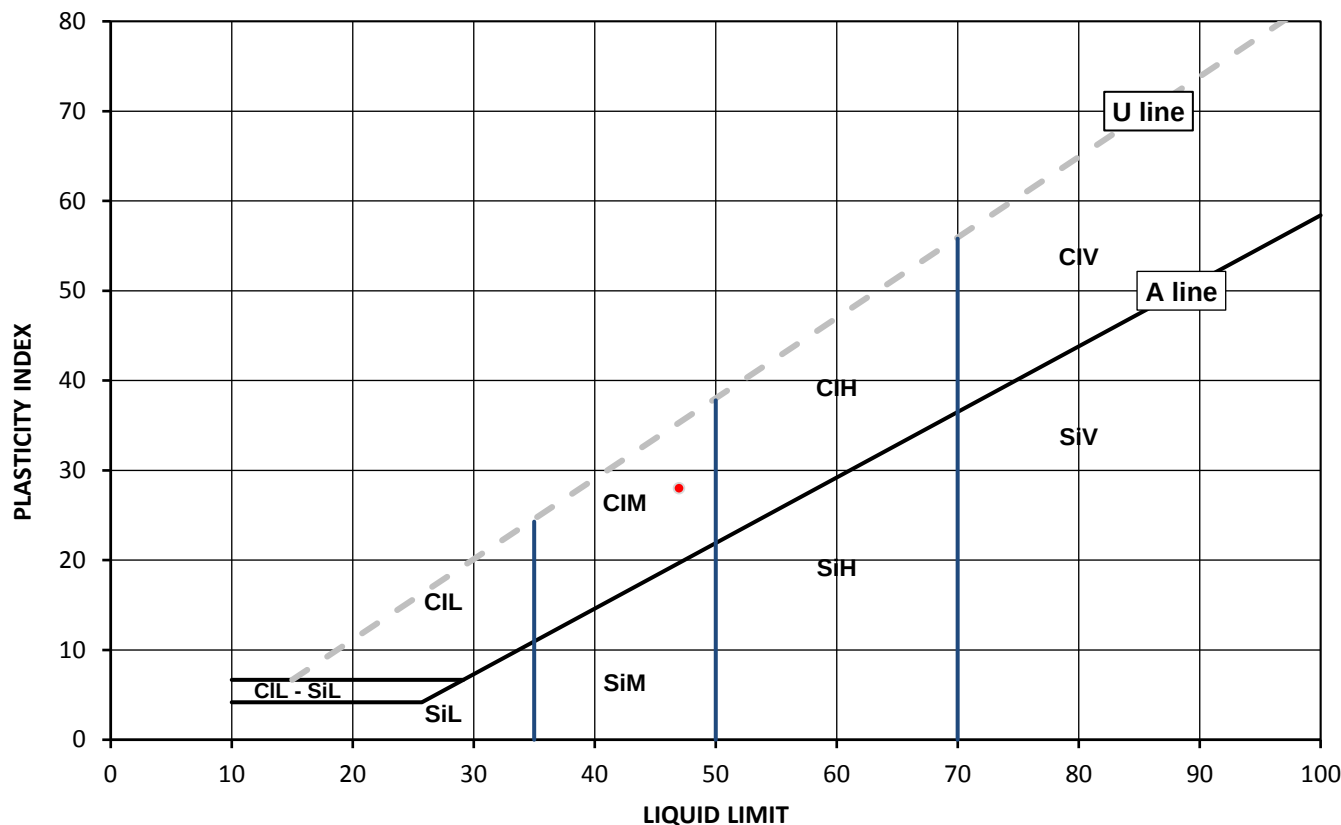
### Test Results:

Laboratory Reference: 1670083  
Hole No.: SA02  
Sample Reference: SA02-D-2  
Soil Description: Brown to orangish brown slightly gravelly slightly sandy CLAY

Depth Top [m]: 2.00  
Depth Base [m]: Not Given  
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

| As Received Moisture Content [ W ] % | Liquid Limit [ WL ] % | Plastic Limit [ Wp ] % | Plasticity Index [ Ip ] % | % Passing 425µm BS Test Sieve |
|--------------------------------------|-----------------------|------------------------|---------------------------|-------------------------------|
| 21                                   | 47                    | 19                     | 28                        | 97                            |



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

|    |      |             |                                                           |
|----|------|-------------|-----------------------------------------------------------|
| Cl | Clay | Plasticity  | Liquid Limit                                              |
| Si | Silt | L Low       | below 35                                                  |
|    |      | M Medium    | 35 to 50                                                  |
|    |      | H High      | 50 to 70                                                  |
|    |      | V Very high | exceeding 70                                              |
|    |      | O Organic   | append to classification for organic material ( eg CIHO ) |

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

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Date Reported: 12/11/2020

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# TEST CERTIFICATE

## Liquid and Plastic Limits

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4041

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Client Reference: 16117  
Job Number: 20-38907  
Date Sampled: 27/10/2020  
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Date Tested: 09/11/2020  
Sampled By: Client - YP

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

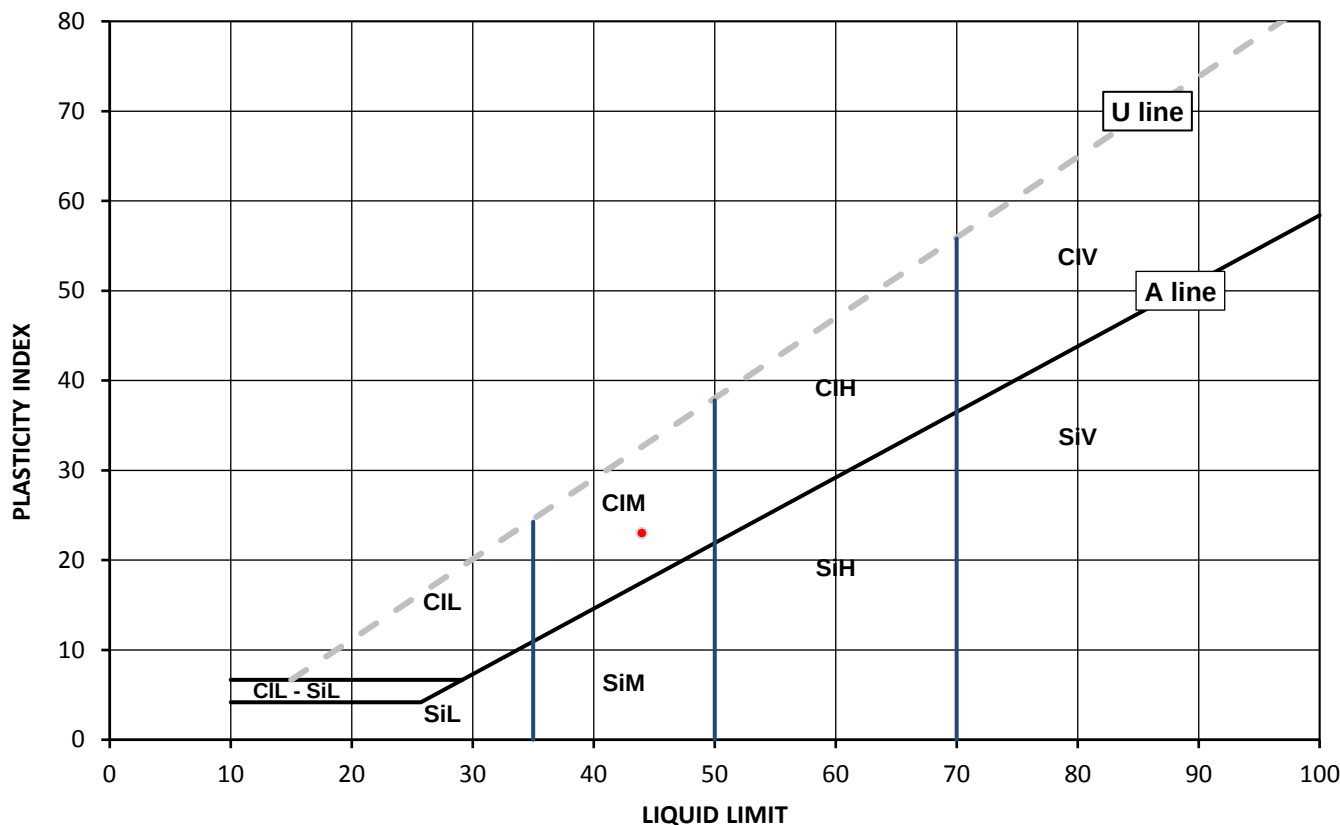
### Test Results:

Laboratory Reference: 1670084  
Hole No.: TP03  
Sample Reference: TP03-D-1.2  
Soil Description: Brown sandy CLAY

Depth Top [m]: 1.20  
Depth Base [m]: Not Given  
Sample Type: D

Sample Preparation: Tested in natural condition

| As Received Moisture Content [ W ] % | Liquid Limit [ WL ] % | Plastic Limit [ Wp ] % | Plasticity Index [ Ip ] % | % Passing 425µm BS Test Sieve |
|--------------------------------------|-----------------------|------------------------|---------------------------|-------------------------------|
| 24                                   | 44                    | 21                     | 23                        | 100                           |



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

|    | Plasticity | Liquid Limit                                              |
|----|------------|-----------------------------------------------------------|
| Cl | Clay       | below 35                                                  |
| Si | Silt       | 35 to 50                                                  |
|    |            | 50 to 70                                                  |
|    |            | exceeding 70                                              |
|    |            | append to classification for organic material ( eg CIHO ) |

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Monika Janoszek  
PL Deputy Head of Geotechnical Section  
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Date Reported: 12/11/2020

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# TEST CERTIFICATE

## Liquid and Plastic Limits

i2 Analytical Ltd  
Unit 8 Harrowden Road  
Brackmills Industrial Estate  
Northampton NN4 7EB



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Hydrock Consultants Ltd  
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Contact: Yacklin Panza  
Site Address: Fathoms Reach, Hayling Island

Client Reference: 16117  
Job Number: 20-38907  
Date Sampled: 27/10/2020  
Date Received: 28/10/2020  
Date Tested: 09/11/2020  
Sampled By: Client - YP

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

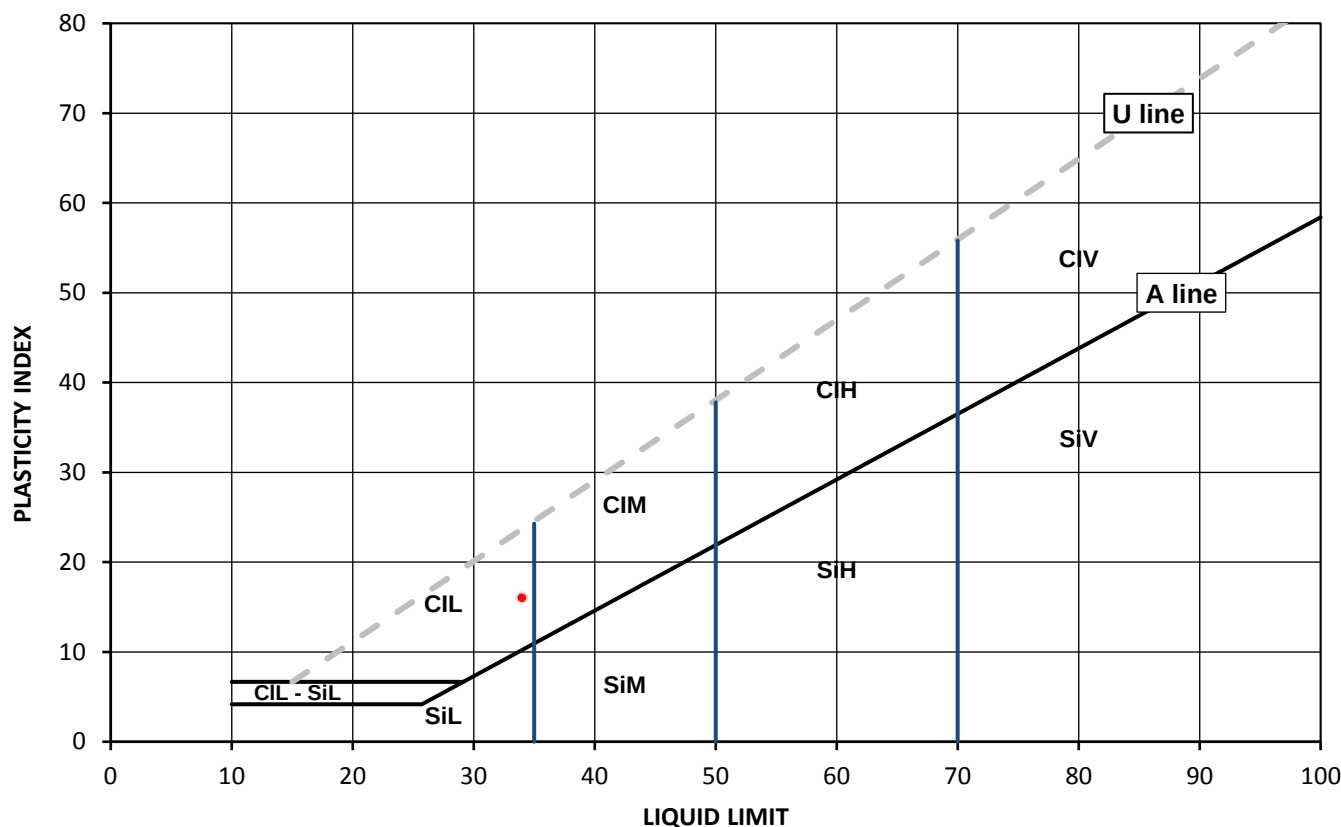
### Test Results:

Laboratory Reference: 1670085  
Hole No.: TP03  
Sample Reference: TP03-D-2  
Soil Description: Grey to brown slightly gravelly very sandy CLAY

Depth Top [m]: 2.00  
Depth Base [m]: Not Given  
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

| As Received Moisture Content [ W ] % | Liquid Limit [ WL ] % | Plastic Limit [ Wp ] % | Plasticity Index [ Ip ] % | % Passing 425µm BS Test Sieve |
|--------------------------------------|-----------------------|------------------------|---------------------------|-------------------------------|
| 18                                   | 34                    | 18                     | 16                        | 74                            |



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

|    | Plasticity      | Liquid Limit                                              |
|----|-----------------|-----------------------------------------------------------|
| Cl | Clay            | L Low below 35                                            |
| Si | Silt            | M Medium 35 to 50                                         |
|    | H High 50 to 70 | V Very high exceeding 70                                  |
|    | O Organic       | append to classification for organic material ( eg CIHO ) |

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

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PL Deputy Head of Geotechnical Section  
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Client Reference: 16117  
Job Number: 20-38907  
Date Sampled: 27/10/2020  
Date Received: 28/10/2020  
Date Tested: 09/11/2020  
Sampled By: Client - YP

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

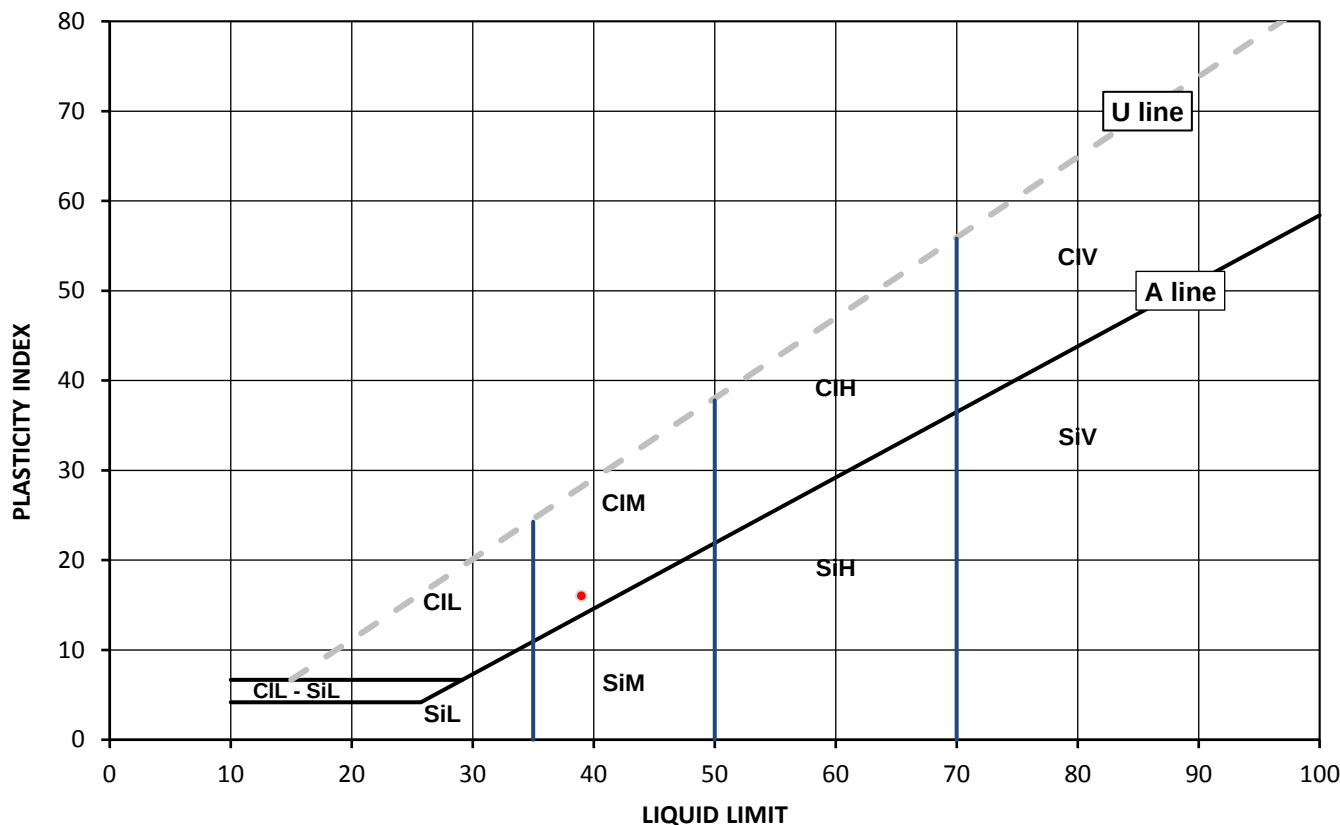
### Test Results:

Laboratory Reference: 1670086  
Hole No.: TP04  
Sample Reference: TP04-D-1  
Soil Description: Brown sandy CLAY

Depth Top [m]: 1.00  
Depth Base [m]: Not Given  
Sample Type: D

Sample Preparation: Tested in natural condition

| As Received Moisture Content [ W ] % | Liquid Limit [ WL ] % | Plastic Limit [ Wp ] % | Plasticity Index [ Ip ] % | % Passing 425µm BS Test Sieve |
|--------------------------------------|-----------------------|------------------------|---------------------------|-------------------------------|
| 31                                   | 39                    | 23                     | 16                        | 100                           |



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

|    | Plasticity  | Liquid Limit                                              |
|----|-------------|-----------------------------------------------------------|
| Cl | Clay        | below 35                                                  |
| Si | Silt        | 35 to 50                                                  |
|    | L Low       | 50 to 70                                                  |
|    | M Medium    | exceeding 70                                              |
|    | H High      | append to classification for organic material ( eg CIHO ) |
|    | V Very high |                                                           |
|    | O Organic   |                                                           |

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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# TEST CERTIFICATE

## Liquid and Plastic Limits

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Unit 8 Harrowden Road  
Brackmills Industrial Estate  
Northampton NN4 7EB



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Hydrock Consultants Ltd  
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Site Address: Fathoms Reach, Hayling Island

Client Reference: 16117  
Job Number: 20-38907  
Date Sampled: 27/10/2020  
Date Received: 28/10/2020  
Date Tested: 09/11/2020  
Sampled By: Client - YP

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

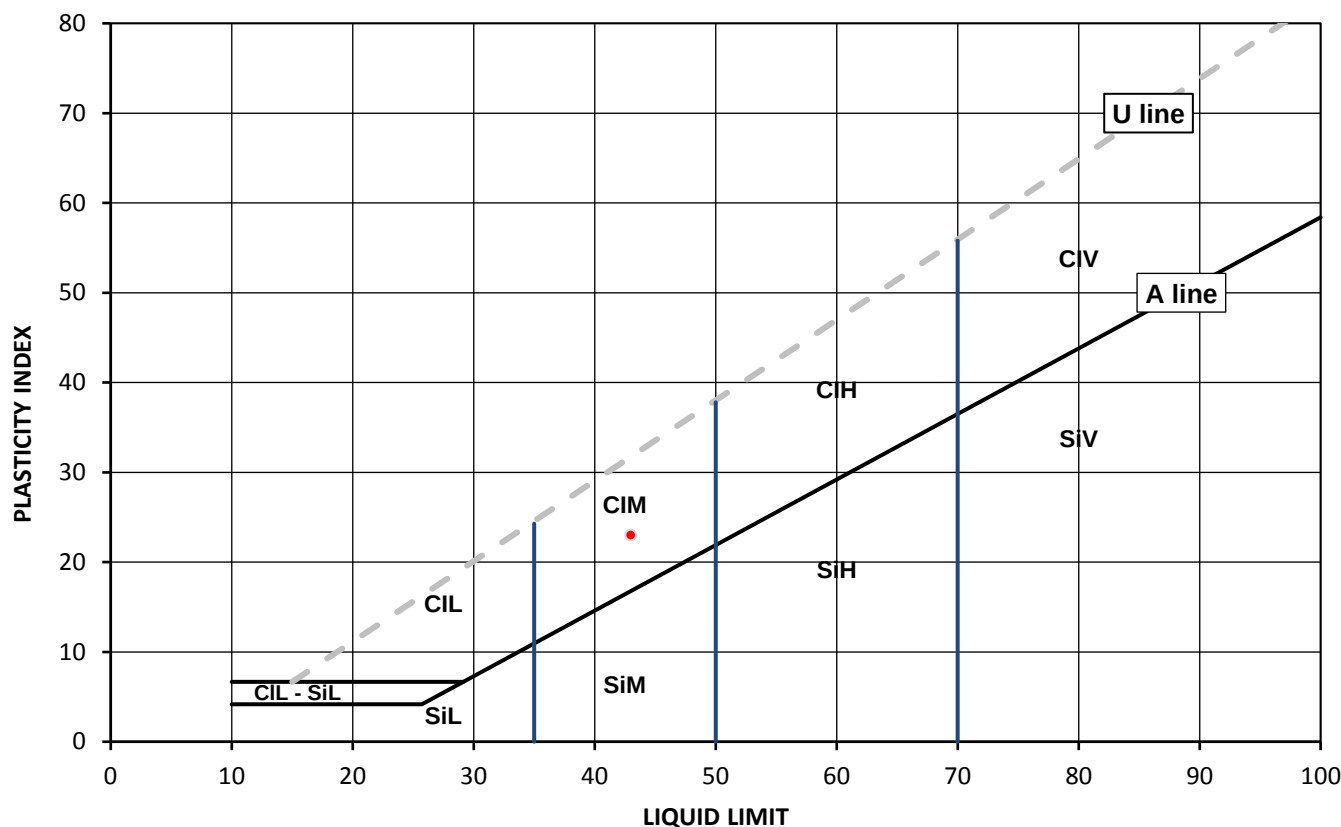
### Test Results:

Laboratory Reference: 1670087  
Hole No.: TP04  
Sample Reference: TP04-D-1.8  
Soil Description: Brown to grey slightly gravelly sandy CLAY

Depth Top [m]: 1.80  
Depth Base [m]: Not Given  
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

| As Received Moisture Content [ W ] % | Liquid Limit [ WL ] % | Plastic Limit [ Wp ] % | Plasticity Index [ Ip ] % | % Passing 425µm BS Test Sieve |
|--------------------------------------|-----------------------|------------------------|---------------------------|-------------------------------|
| 19                                   | 43                    | 20                     | 23                        | 98                            |



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

|    | Plasticity  | Liquid Limit                                              |
|----|-------------|-----------------------------------------------------------|
| Cl | Clay        | below 35                                                  |
| Si | Silt        | 35 to 50                                                  |
|    | L Low       | 50 to 70                                                  |
|    | M Medium    | exceeding 70                                              |
|    | H High      | append to classification for organic material ( eg CIHO ) |
|    | V Very high |                                                           |
|    | O Organic   |                                                           |

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Hydrock Consultants Ltd  
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Hampshire, SO15 2NP

Contact: Yacklin Panza  
Site Address: Fathoms Reach, Hayling Island

Client Reference: 16117  
Job Number: 20-38907  
Date Sampled: 27/10/2020  
Date Received: 28/10/2020  
Date Tested: 06/11/2020  
Sampled By: Client - YP

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

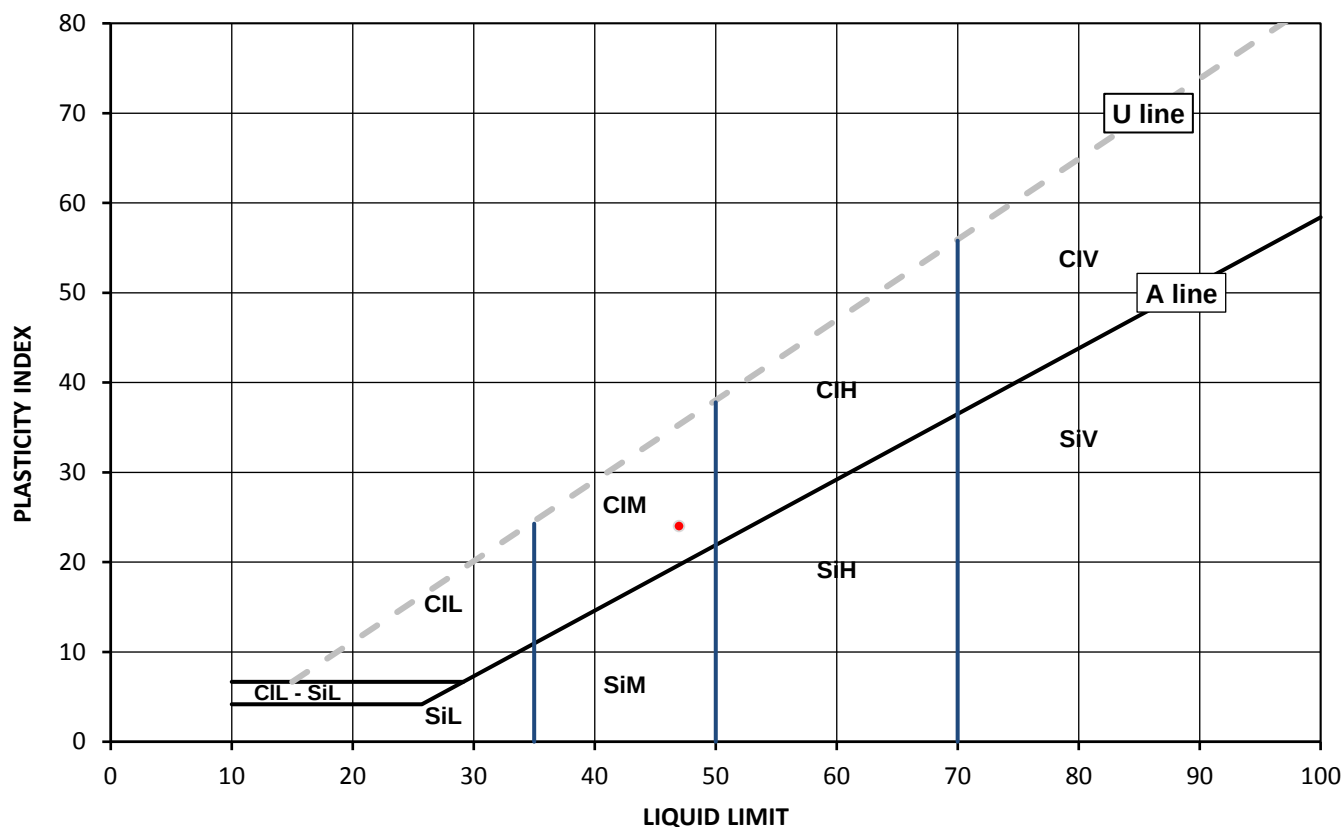
### Test Results:

Laboratory Reference: 1670089  
Hole No.: SA03  
Sample Reference: SA03-B-0.5  
Soil Description: Brown sandy CLAY

Depth Top [m]: 0.50  
Depth Base [m]: Not Given  
Sample Type: B

Sample Preparation: Tested in natural condition

| As Received Moisture Content [ W ] % | Liquid Limit [ WL ] % | Plastic Limit [ Wp ] % | Plasticity Index [ Ip ] % | % Passing 425µm BS Test Sieve |
|--------------------------------------|-----------------------|------------------------|---------------------------|-------------------------------|
| 23                                   | 47                    | 23                     | 24                        | 100                           |



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

|    | Plasticity  | Liquid Limit                                              |
|----|-------------|-----------------------------------------------------------|
| Cl | Clay        | below 35                                                  |
| Si | Silt        | 35 to 50                                                  |
|    | L Low       | 50 to 70                                                  |
|    | M Medium    | exceeding 70                                              |
|    | H High      | append to classification for organic material ( eg CIHO ) |
|    | V Very high |                                                           |
|    | O Organic   |                                                           |

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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4041

Client: Hydrock Consultants Ltd  
 Client Address: Suite 8, White Building,  
 1-4 Cumberland Place, Southampton,  
 Hampshire, SO15 2NP  
 Contact: Yacklin Panza  
 Site Address: Fathoms Reach, Hayling Island

## SUMMARY REPORT

### Summary of Classification Test Results

Tested in Accordance with:

Moisture Content by BS 1377-2: 1990: Clause 3.2; Water Content by BS EN 17892-1: 2014; Atterberg by BS 1377-2: 1990: Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5; PD by BS 1377-2: 1990: Clause 8.2

i2 Analytical Ltd  
 Unit 8 Harrowden Road  
 Brackmills Industrial Estate  
 Northampton NN4 7EB



Client Reference: 16117  
 Job Number: 20-38907  
 Date Sampled: 27/10/2020  
 Date Received: 28/10/2020  
 Date Tested: 06/11 - 09/11/2020  
 Sampled By: Client - YP

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

### Test results

| Laboratory Reference | Hole No. | Sample      |           |            |      | Description                                                   | Remarks           | Moisture Content<br>[ W ] | Water Content<br>[ W ] | Atterberg       |    |    |    | Density |     |    | Total Porosity# |  |  |
|----------------------|----------|-------------|-----------|------------|------|---------------------------------------------------------------|-------------------|---------------------------|------------------------|-----------------|----|----|----|---------|-----|----|-----------------|--|--|
|                      |          | Reference   | Depth Top | Depth Base | Type |                                                               |                   |                           |                        | % Passing 425um | WL | Wp | Ip | bulk    | dry | PD |                 |  |  |
|                      |          |             | m         | m          |      |                                                               |                   |                           |                        |                 |    |    |    |         |     |    |                 |  |  |
| 1670082              | SA01     | SA01-D-1.2  | 1.20      | Not Given  | D    | Brown slightly gravelly very sandy CLAY                       | Atterberg 4 Point | 24                        |                        | 98              | 34 | 19 | 15 |         |     |    |                 |  |  |
| 1670083              | SA02     | SA02-D-2    | 2.00      | Not Given  | D    | Brown to orangish brown slightly gravelly slightly sandy CLAY | Atterberg 4 Point | 21                        |                        | 97              | 47 | 19 | 28 |         |     |    |                 |  |  |
| 1670089              | SA03     | SA03-B-0.5  | 0.50      | Not Given  | B    | Brown sandy CLAY                                              | Atterberg 4 Point | 23                        |                        | 100             | 47 | 23 | 24 |         |     |    |                 |  |  |
| 1670080              | TP01     | TP01-D-1.1  | 1.10      | Not Given  | D    | Brown slightly gravelly slightly sandy CLAY                   | Atterberg 4 Point | 26                        |                        | 99              | 48 | 23 | 25 |         |     |    |                 |  |  |
| 1670081              | TP01     | TP101-D-1.9 | 1.90      | Not Given  | D    | Brown slightly gravelly sandy CLAY                            | Atterberg 4 Point | 20                        |                        | 67              | 42 | 21 | 21 |         |     |    |                 |  |  |
| 1670084              | TP03     | TP03-D-1.2  | 1.20      | Not Given  | D    | Brown sandy CLAY                                              | Atterberg 4 Point | 24                        |                        | 100             | 44 | 21 | 23 |         |     |    |                 |  |  |
| 1670085              | TP03     | TP03-D-2    | 2.00      | Not Given  | D    | Grey to brown slightly gravelly very sandy CLAY               | Atterberg 4 Point | 18                        |                        | 74              | 34 | 18 | 16 |         |     |    |                 |  |  |
| 1670086              | TP04     | TP04-D-1    | 1.00      | Not Given  | D    | Brown sandy CLAY                                              | Atterberg 4 Point | 31                        |                        | 100             | 39 | 23 | 16 |         |     |    |                 |  |  |
| 1670087              | TP04     | TP04-D-1.8  | 1.80      | Not Given  | D    | Brown to grey slightly gravelly sandy CLAY                    | Atterberg 4 Point | 19                        |                        | 98              | 43 | 20 | 23 |         |     |    |                 |  |  |
|                      |          |             |           |            |      |                                                               |                   |                           |                        |                 |    |    |    |         |     |    |                 |  |  |

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Monika Janoszek  
 PL Deputy Head of Geotechnical Section  
 for and on behalf of i2 Analytical Ltd

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# TEST CERTIFICATE

## Particle Size Distribution

i2 Analytical Ltd  
Unit 8 Harrowden Road  
Brackmills Industrial Estate  
Northampton NN4 7EB



Tested in Accordance with: BS 1377-2: 1990

Client: Hydrock Consultants Ltd  
Client Address: Suite 8, White Building,  
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Contact: Yacklin Panza  
Site Address: Fathoms Reach, Hayling Island

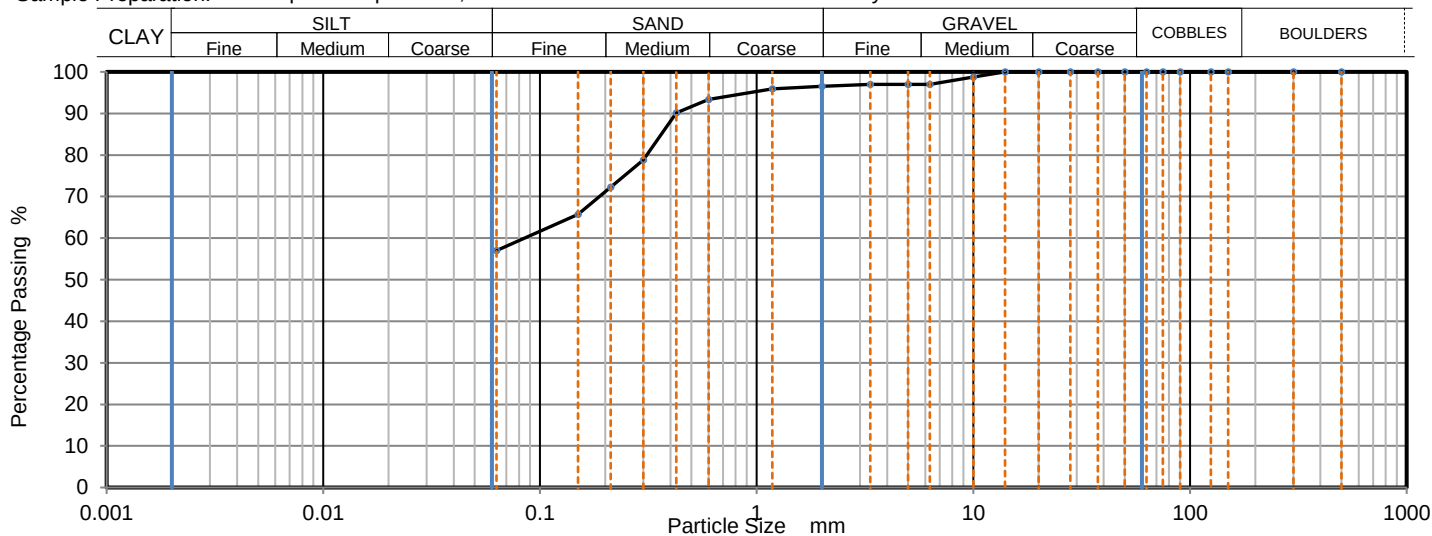
Client Reference: 16117  
Job Number: 20-38907  
Date Sampled: 27/10/2020  
Date Received: 28/10/2020  
Date Tested: 09/11/2020  
Sampled By: Client - YP

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

### Test Results:

Laboratory Reference: 1670088  
Hole No.: WS04  
Sample Reference: WS04-D-2.5  
Sample Description: Brown to orangish brown slightly gravelly very sandy CLAY  
Sample Preparation: Sample was quartered, oven dried at 106.7 °C and broken down by hand.

Depth Top [m]: 2.50  
Depth Base [m]: Not Given  
Sample Type: D



| Sieving          |           | Sedimentation    |           |
|------------------|-----------|------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 500              | 100       |                  |           |
| 300              | 100       |                  |           |
| 150              | 100       |                  |           |
| 125              | 100       |                  |           |
| 90               | 100       |                  |           |
| 75               | 100       |                  |           |
| 63               | 100       |                  |           |
| 50               | 100       |                  |           |
| 37.5             | 100       |                  |           |
| 28               | 100       |                  |           |
| 20               | 100       |                  |           |
| 14               | 100       |                  |           |
| 10               | 99        |                  |           |
| 6.3              | 97        |                  |           |
| 5                | 97        |                  |           |
| 3.35             | 97        |                  |           |
| 2                | 97        |                  |           |
| 1.18             | 96        |                  |           |
| 0.6              | 93        |                  |           |
| 0.425            | 90        |                  |           |
| 0.3              | 79        |                  |           |
| 0.212            | 72        |                  |           |
| 0.15             | 66        |                  |           |
| 0.063            | 58        |                  |           |

| Sample Proportions | % dry mass |
|--------------------|------------|
| Very coarse        | 0.00       |
| Gravel             | 3.50       |
| Sand               | 38.90      |
| Fines <0.063mm     | 57.60      |

| Grading Analysis       |       |
|------------------------|-------|
| D100                   | mm    |
| D60                    | mm    |
| D30                    | mm    |
| D10                    | mm    |
| Uniformity Coefficient | > 1.3 |
| Curvature Coefficient  |       |

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

### Remarks:

### Signed:

Monika Janoszek  
PL Deputy Head of Geotechnical Section  
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

## Geotechnical Plots



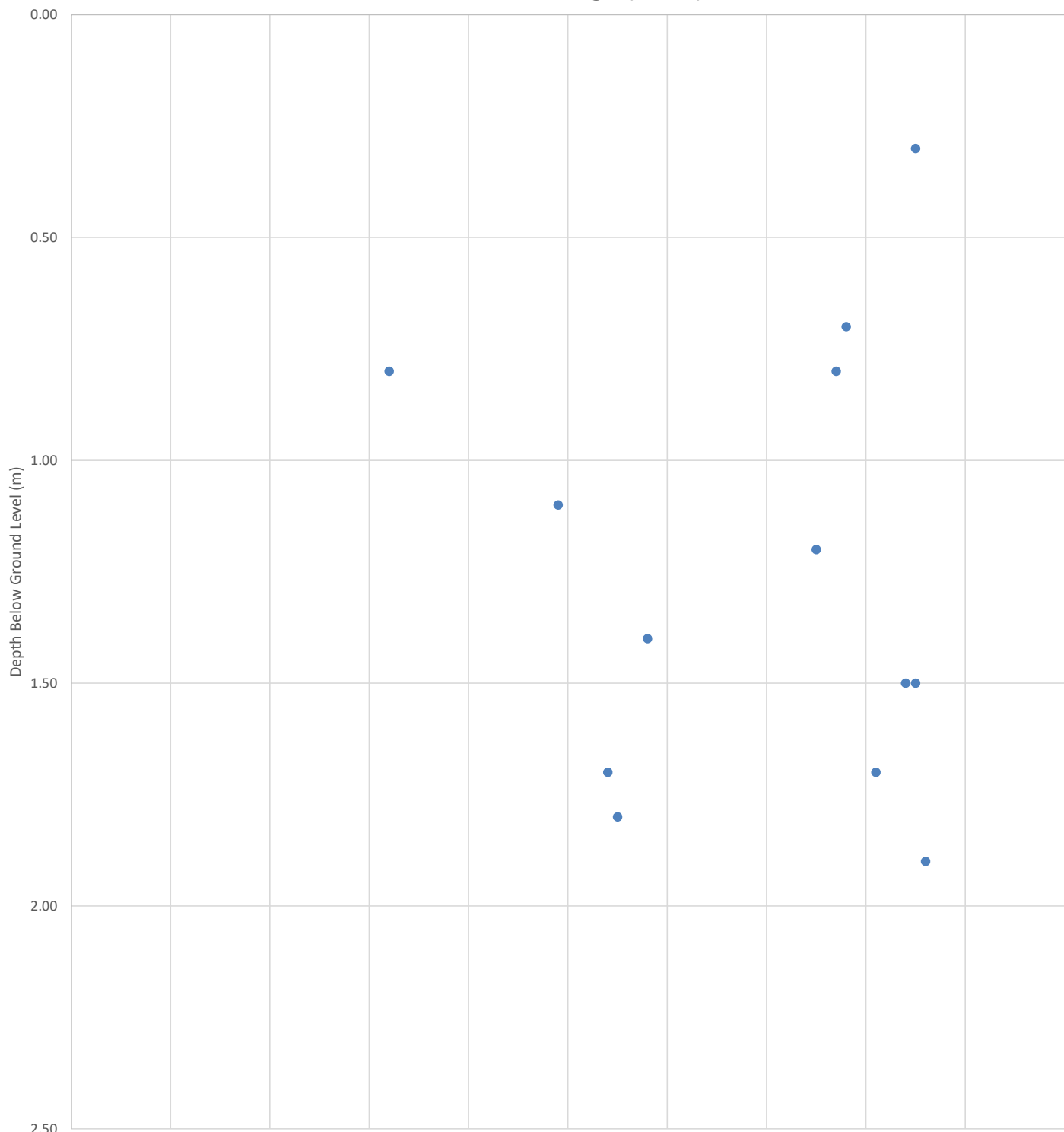
# UNDRAINED SHEAR STRENGTH vs DEPTH

Site:  
Fathoms Reach, Hayling Island

Client:  
Taylor Wimpey UK Ltd.

|                 |            |
|-----------------|------------|
| Contract No.    | 16117-GELS |
| Hand Shear Vane |            |

Undrained Shear Strength ( $\text{kN/m}^2$ )

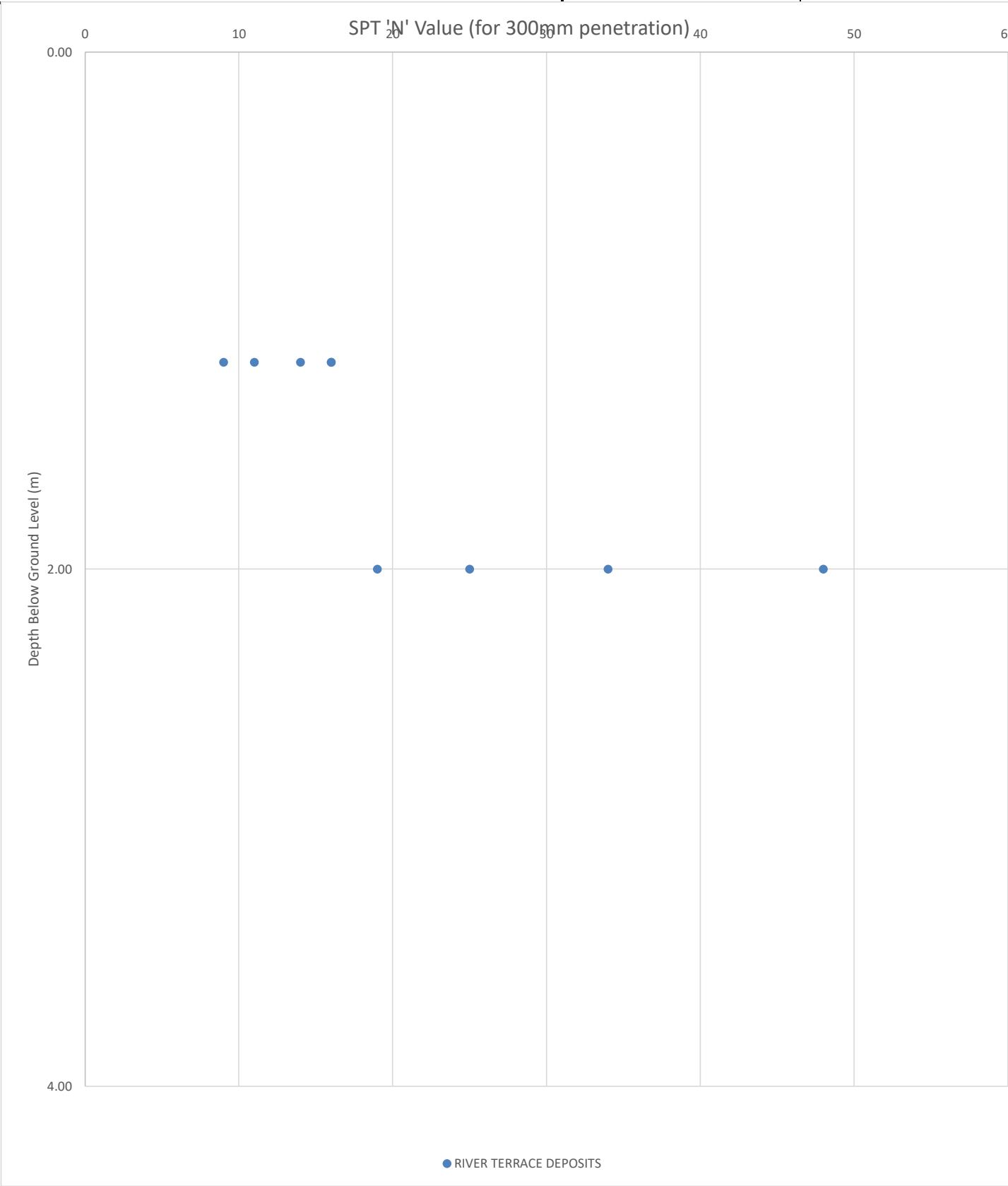


● RIVER TERRACE DEPOSITS



SPT 'N' VALUES vs DEPTH

|                                        |                                  |              |            |
|----------------------------------------|----------------------------------|--------------|------------|
| Site:<br>Fathoms Reach, Hayling Island | Client:<br>Taylor Wimpey UK Ltd. | Contract No. | 16117-GELS |
|                                        |                                  | All Data     |            |



# 1 DAY INFILTRATION ASSESSMENT - AIDE MEMOIR

**Site:** Land at Fathoms Reach, Hayling Island

**Client:** Taylor Wimpey UK Ltd.

**Test Location** SA01

**Date of start**

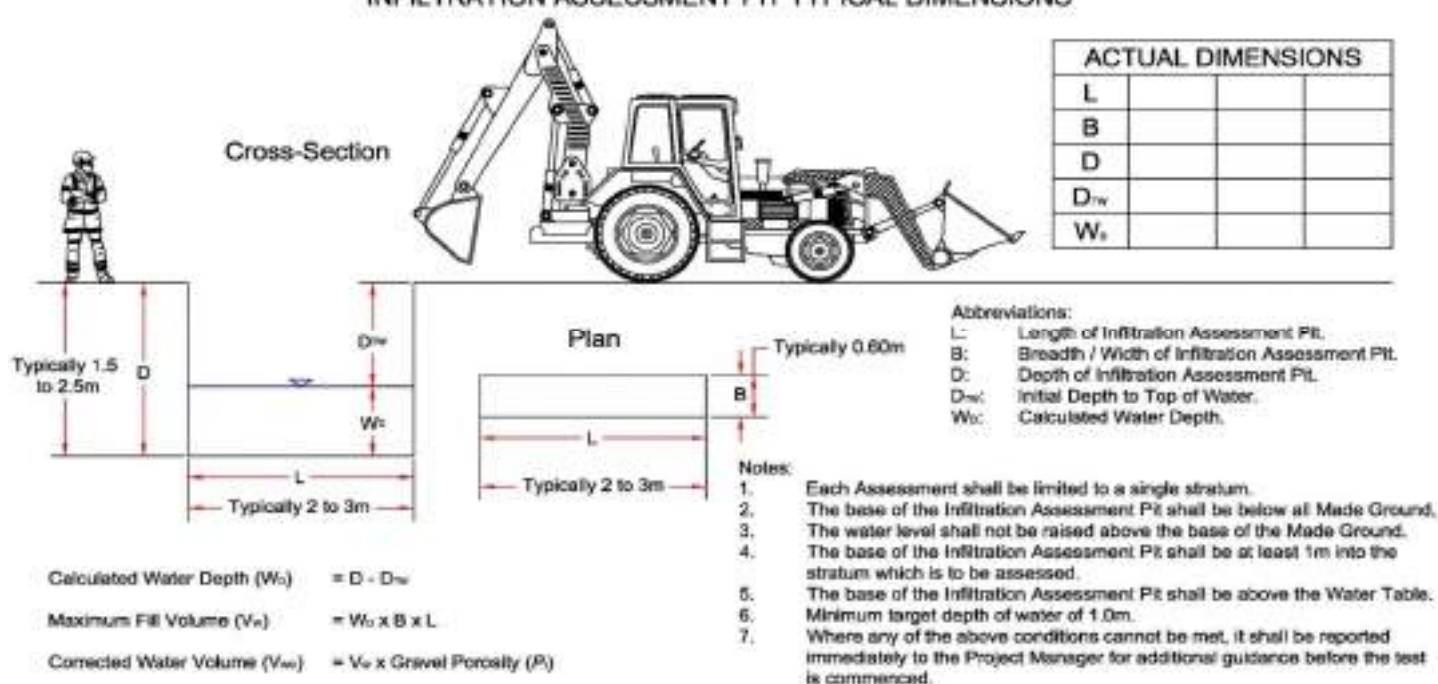
27/10/2020

**Date at end**

27/10/2020

| ANTICIPATED GROUND PROFILE FROM DESK STUDY |  |  | ACTUAL GROUND PROFILE FROM EXCAVATION |  |  |
|--------------------------------------------|--|--|---------------------------------------|--|--|
| GROUND LEVEL                               |  |  | GROUND LEVEL                          |  |  |
|                                            |  |  |                                       |  |  |
| BASE OF PIT                                |  |  | BASE OF PIT 1.70m                     |  |  |

## INFILTRATION ASSESSMENT PIT TYPICAL DIMENSIONS



| Infiltration                                                                                                                                                                                                                                                                                                                                                                   | RUN 1    |           | RUN 2    |           | RUN 3    |           | SITE OBSERVATIONS - VOLUME LOSS |                                    |                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------|----------|-----------|----------|-----------|---------------------------------|------------------------------------|------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                | $W_D$    |           | $W_D$    |           | $W_D$    |           | Test Run                        | Infiltration Records up to 6 Hours | Comments                                 |
|                                                                                                                                                                                                                                                                                                                                                                                | $W_{D1}$ | $D_{TW1}$ | $W_{D2}$ | $D_{TW2}$ | $W_{D3}$ | $D_{TW3}$ |                                 |                                    |                                          |
| 75% full                                                                                                                                                                                                                                                                                                                                                                       |          |           |          |           |          |           |                                 |                                    |                                          |
| 25% full                                                                                                                                                                                                                                                                                                                                                                       |          |           |          |           |          |           |                                 |                                    |                                          |
| <div>Assessment of Degree of Infiltration</div> <p>WD = 1.80 m</p> <p>WD = 1.60 m</p> <p>WD = 1.40 m</p> <p>WD = 1.20 m</p> <p>WD = 1.00 m</p> <p>WD = 0.80 m</p> <p>WD = 0.60 m</p> <p>WD = 0.40 m</p> <p>1.40 m 1.20 m 1.00 m 0.80 m 0.60 m 0.40 m 0.20 m 0.00 m</p> <p>Measured Depth of Water During Assessment</p> <p>—○— 75 % full    —△— 50 % full    —□— 25 % full</p> |          |           |          |           |          |           | 1                               | <25%                               | Unlikely without significant attenuation |
|                                                                                                                                                                                                                                                                                                                                                                                |          |           |          |           |          |           |                                 | <75%                               | Requires additional BRE DG365 testing    |
|                                                                                                                                                                                                                                                                                                                                                                                |          |           |          |           |          |           |                                 | >75%                               | Refer to results of Run 2                |
|                                                                                                                                                                                                                                                                                                                                                                                |          |           |          |           |          |           | 2                               | <25%                               | Unlikely without significant attenuation |
|                                                                                                                                                                                                                                                                                                                                                                                |          |           |          |           |          |           |                                 | <75%                               | Requires additional BRE DG365 testing    |
|                                                                                                                                                                                                                                                                                                                                                                                |          |           |          |           |          |           |                                 | >75%                               | Refer to results of Run 3                |
|                                                                                                                                                                                                                                                                                                                                                                                |          |           |          |           |          |           | 3                               | <25%                               | Unlikely without significant attenuation |
|                                                                                                                                                                                                                                                                                                                                                                                |          |           |          |           |          |           |                                 | <75%                               | Requires additional BRE DG365 testing    |
|                                                                                                                                                                                                                                                                                                                                                                                |          |           |          |           |          |           |                                 | >75%                               | Indicative Infiltration Rate achieved.   |

**1 DAY INFILTRATION ASSESSMENT - WORKSHEET**

Site: Land at Fathoms Reach, Hayling Island

Client: Taylor Wimpey UK Ltd.

Test Location SA01

Date of start 27/10/2020

Date at end 27/10/2020

| Test Run 1                                     |        |                     |          | Test Run 2                                      |      |                |          | Test Run 3                                      |      |                |          |
|------------------------------------------------|--------|---------------------|----------|-------------------------------------------------|------|----------------|----------|-------------------------------------------------|------|----------------|----------|
| Pit Dimensions (m)                             |        |                     |          | Pit Dimensions (m)                              |      |                |          | Pit Dimensions (m)                              |      |                |          |
| Trial Pit Length (L)                           |        | 1.800m              |          | Trial Pit Length (L)                            |      |                |          | Trial Pit Length (L)                            |      |                |          |
| Trial Pit Breadth / Width (B)                  |        | 0.600m              |          | Trial Pit Breadth / Width (B)                   |      |                |          | Trial Pit Breadth / Width (B)                   |      |                |          |
| Effective Depth (D)                            |        | 2.000m              |          | Effective Depth (D)                             |      |                |          | Effective Depth (D)                             |      |                |          |
| Time at Start of Filling                       |        | 11.37               |          | Time at Start of Filling                        |      |                |          | Time at Start of Filling                        |      |                |          |
| Time at End of Filling                         |        | 11.39               |          | Time at End of Filling                          |      |                |          | Time at End of Filling                          |      |                |          |
| Depth from Surface to Water (D <sub>TW</sub> ) |        | 1.000m              |          | Depth below Surface to Water (D <sub>TW</sub> ) |      |                |          | Depth below Surface to Water (D <sub>TW</sub> ) |      |                |          |
| Water Depth (W <sub>D</sub> )                  |        | 1.000m              |          | Water Depth (W <sub>D</sub> )                   |      | -              |          | Water Depth (W <sub>D</sub> )                   |      | -              |          |
| Maximum Fill Volume (V <sub>w</sub> )          |        | 1.080m <sup>3</sup> |          | Maximum Fill Volume (V <sub>w</sub> )           |      | -              |          | Maximum Fill Volume (V <sub>w</sub> )           |      | -              |          |
| Gravel used to backfill Test Pit               |        | No                  |          | Gravel used to backfill Test Pit                |      |                |          | Gravel used to backfill Test Pit                |      |                |          |
| Porosity of Gravel Backfill (P <sub>i</sub> )  |        | 0.300               |          | Porosity of Gravel Backfill (P <sub>i</sub> )   |      |                |          | Porosity of Gravel Backfill (P <sub>i</sub> )   |      |                |          |
| Corrected Water Volume (V <sub>wc</sub> )      |        | 1.080m <sup>3</sup> |          | Corrected Water Volume (V <sub>wc</sub> )       |      | -              |          | Corrected Water Volume (V <sub>wc</sub> )       |      | -              |          |
| Time to soakaway                               |        |                     |          | Time to soakaway                                |      |                |          | Time to soakaway                                |      |                |          |
| Time                                           |        | Depth to water      | Duration | Time                                            |      | Depth to water | Duration | Time                                            |      | Depth to water | Duration |
| Day                                            | Time   | (m bgl)             | Seconds  | Day                                             | Time | (m bgl)        | Seconds  | Day                                             | Time | (m bgl)        | Seconds  |
| 1                                              | 11.390 | 1.000               | 0        |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 11.392 | 1.000               | 10       |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 11.393 | 1.000               | 20       |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 11.395 | 1.000               | 30       |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 11.397 | 1.000               | 40       |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 11.398 | 1.000               | 50       |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 11.400 | 1.000               | 60       |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 11.405 | 1.000               | 90       |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 11.410 | 1.000               | 120      |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 11.420 | 1.000               | 180      |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 11.430 | 1.010               | 240      |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 11.440 | 1.010               | 300      |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 11.450 | 1.010               | 360      |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 11.460 | 1.020               | 420      |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 11.470 | 1.020               | 480      |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 11.480 | 1.020               | 540      |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 11.490 | 1.020               | 600      |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 12.500 | 1.050               | 4260     |                                                 |      |                |          |                                                 |      |                |          |
| 1                                              | 14.000 | 1.060               | 8460     |                                                 |      |                |          |                                                 |      |                |          |
|                                                |        |                     | 8460     |                                                 |      |                |          |                                                 |      |                |          |
|                                                |        |                     | 8460     |                                                 |      |                |          |                                                 |      |                |          |
|                                                |        |                     | 8460     |                                                 |      |                |          |                                                 |      |                |          |
|                                                |        |                     | 8460     |                                                 |      |                |          |                                                 |      |                |          |
| 25% water loss (75% full)                      |        | 1.250m              |          | 25% water loss (75% full)                       |      | -              |          | 25% water loss (75% full)                       |      | -              |          |
| 50% water loss (50% full)                      |        | 1.500m              |          | 50% water loss (50% full)                       |      | -              |          | 50% water loss (50% full)                       |      | -              |          |
| 75% water loss (25% full)                      |        | 1.750m              |          | 75% water loss (25% full)                       |      | -              |          | 75% water loss (25% full)                       |      | -              |          |
| 25% time (seconds)                             |        | -                   |          | 25% time (seconds)                              |      | -              |          | 25% time (seconds)                              |      | -              |          |
| 75% time (seconds)                             |        | -                   |          | 75% time (seconds)                              |      | -              |          | 75% time (seconds)                              |      | -              |          |
| Vp 75-25                                       |        | 0.540m <sup>3</sup> |          | Vp 75-25                                        |      | -              |          | Vp 75-25                                        |      | -              |          |
| ap 50 (Actual area from test)                  |        | 3.480m <sup>3</sup> |          | ap 50 (Actual area from test)                   |      | -              |          | ap 50 (Actual area from test)                   |      | -              |          |
| tp 75 - 25                                     |        |                     |          | tp 75 - 25                                      |      |                |          | tp 75 - 25                                      |      |                |          |
| Soil Infiltration Rate                         |        | -                   |          | Soil Infiltration Rate                          |      | -              |          | Soil Infiltration Rate                          |      | -              |          |

Duration (Seconds): 0, 3600, 7200, 10800, 14400, 18000, 21600

Duration (Minutes): 0, 60, 120, 180, 240, 300, 360

Degree of Infiltration (%): 0, 25, 50, 75, 100

Legend: Test Run 1 (blue), Test Run 2 (green), Test Run 3 (red)

| Form completed by |       |               |
|-------------------|-------|---------------|
| Tested By         | PRINT | Yacklin Panza |
|                   | SIGN  | YP            |
|                   | DATE  | 27/10/2020    |
| Calculated By     | PRINT | Yacklin Panza |
|                   | SIGN  | YP            |
|                   | DATE  | 16/11/2020    |
| Checked by        | PRINT |               |
|                   | SIGN  |               |
|                   | DATE  |               |

# 1 DAY INFILTRATION ASSESSMENT - AIDE MEMOIR

**Site:** Land at Fathoms Reach, Hayling Island

**Client:** Taylor Wimpey UK Ltd.

**Test Location** SA02

**Date of start**

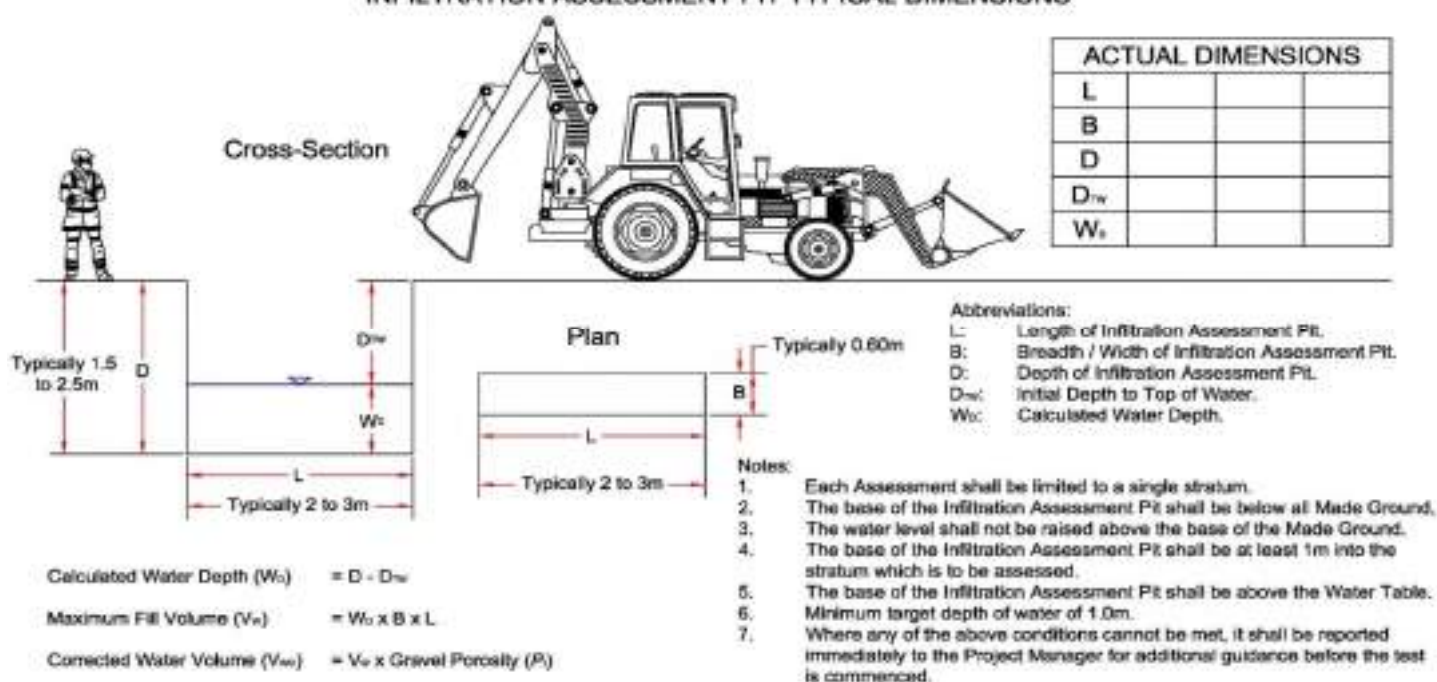
27/10/2020

**Date at end**

28/10/2020

| ANTICIPATED GROUND PROFILE FROM DESK STUDY |  |  | ACTUAL GROUND PROFILE FROM EXCAVATION |  |  |
|--------------------------------------------|--|--|---------------------------------------|--|--|
| GROUND LEVEL                               |  |  | GROUND LEVEL                          |  |  |
|                                            |  |  |                                       |  |  |
| BASE OF PIT                                |  |  | BASE OF PIT 1.70m                     |  |  |

## INFILTRATION ASSESSMENT PIT TYPICAL DIMENSIONS



| Infiltration                                                                                                                                                                                                                                                                                                                                                                 | RUN 1    |           | RUN 2    |           | RUN 3    |           | SITE OBSERVATIONS - VOLUME LOSS |                                    |                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------|----------|-----------|----------|-----------|---------------------------------|------------------------------------|------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                              | $W_D$    |           | $W_D$    |           | $W_D$    |           | Test Run                        | Infiltration Records up to 6 Hours | Comments                                 |
|                                                                                                                                                                                                                                                                                                                                                                              | $W_{D1}$ | $D_{TW1}$ | $W_{D2}$ | $D_{TW2}$ | $W_{D3}$ | $D_{TW3}$ |                                 |                                    |                                          |
| 75% full                                                                                                                                                                                                                                                                                                                                                                     |          |           |          |           |          |           |                                 |                                    |                                          |
| 25% full                                                                                                                                                                                                                                                                                                                                                                     |          |           |          |           |          |           |                                 |                                    |                                          |
| <div><h3>Assessment of Degree of Infiltration</h3><p>WD = 1.80 m</p><p>WD = 1.60 m</p><p>WD = 1.40 m</p><p>WD = 1.20 m</p><p>WD = 1.00 m</p><p>WD = 0.80 m</p><p>WD = 0.60 m</p><p>WD = 0.40 m</p><p>1.40 m 1.20 m 1.00 m 0.80 m 0.60 m 0.40 m 0.20 m 0.00 m</p><p>Measured Depth of Water During Assessment</p><p>—○— 75 % full    —△— 50 % full    —□— 25 % full</p></div> |          |           |          |           |          |           | 1                               | <25%                               | Unlikely without significant attenuation |
|                                                                                                                                                                                                                                                                                                                                                                              |          |           |          |           |          |           |                                 | <75%                               | Requires additional BRE DG365 testing    |
|                                                                                                                                                                                                                                                                                                                                                                              |          |           |          |           |          |           |                                 | >75%                               | Refer to results of Run 2                |
|                                                                                                                                                                                                                                                                                                                                                                              |          |           |          |           |          |           | 2                               | <25%                               | Unlikely without significant attenuation |
|                                                                                                                                                                                                                                                                                                                                                                              |          |           |          |           |          |           |                                 | <75%                               | Requires additional BRE DG365 testing    |
|                                                                                                                                                                                                                                                                                                                                                                              |          |           |          |           |          |           |                                 | >75%                               | Refer to results of Run 3                |
|                                                                                                                                                                                                                                                                                                                                                                              |          |           |          |           |          |           | 3                               | <25%                               | Unlikely without significant attenuation |
|                                                                                                                                                                                                                                                                                                                                                                              |          |           |          |           |          |           |                                 | <75%                               | Requires additional BRE DG365 testing    |
|                                                                                                                                                                                                                                                                                                                                                                              |          |           |          |           |          |           |                                 | >75%                               | Indicative Infiltration Rate achieved.   |



# 1 DAY INFILTRATION ASSESSMENT - WORKSHEET

Site: Land at Fathoms Reach, Hayling Island

Client: Taylor Wimpey UK Ltd.

Test Location SA02

Date of start 27/10/2020

Date at end 28/10/2020

| Test Run 1                               |        |                     |          | Test Run 2                                |      |                |          | Test Run 3                                |      |                |          |
|------------------------------------------|--------|---------------------|----------|-------------------------------------------|------|----------------|----------|-------------------------------------------|------|----------------|----------|
| Pit Dimensions (m)                       |        |                     |          | Pit Dimensions (m)                        |      |                |          | Pit Dimensions (m)                        |      |                |          |
| Trial Pit Length (L)                     |        | 1.800m              |          | Trial Pit Length (L)                      |      |                |          | Trial Pit Length (L)                      |      |                |          |
| Trial Pit Breadth / Width (B)            |        | 0.600m              |          | Trial Pit Breadth / Width (B)             |      |                |          | Trial Pit Breadth / Width (B)             |      |                |          |
| Effective Depth (D)                      |        | 1.900m              |          | Effective Depth (D)                       |      |                |          | Effective Depth (D)                       |      |                |          |
| Time at Start of Filling                 |        | 14.22               |          | Time at Start of Filling                  |      |                |          | Time at Start of Filling                  |      |                |          |
| Time at End of Filling                   |        | 14.23               |          | Time at End of Filling                    |      |                |          | Time at End of Filling                    |      |                |          |
| Depth from Surface to Water ( $D_{TW}$ ) |        | 1.050m              |          | Depth below Surface to Water ( $D_{TW}$ ) |      |                |          | Depth below Surface to Water ( $D_{TW}$ ) |      |                |          |
| Water Depth ( $W_D$ )                    |        | 0.850m              |          | Water Depth ( $W_D$ )                     |      | -              |          | Water Depth ( $W_D$ )                     |      | -              |          |
| Maximum Fill Volume ( $V_W$ )            |        | 0.918m <sup>3</sup> |          | Maximum Fill Volume ( $V_W$ )             |      | -              |          | Maximum Fill Volume ( $V_W$ )             |      | -              |          |
| Gravel used to backfill Test Pit         |        | Yes                 |          | Gravel used to backfill Test Pit          |      |                |          | Gravel used to backfill Test Pit          |      |                |          |
| Porosity of Gravel Backfill ( $P_I$ )    |        | 0.300               |          | Porosity of Gravel Backfill ( $P_I$ )     |      |                |          | Porosity of Gravel Backfill ( $P_I$ )     |      |                |          |
| Corrected Water Volume ( $V_{WC}$ )      |        | 0.275m <sup>3</sup> |          | Corrected Water Volume ( $V_{WC}$ )       |      | -              |          | Corrected Water Volume ( $V_{WC}$ )       |      | -              |          |
| Time to soakaway                         |        |                     |          | Time to soakaway                          |      |                |          | Time to soakaway                          |      |                |          |
| Time                                     |        | Depth to water      | Duration | Time                                      |      | Depth to water | Duration | Time                                      |      | Depth to water | Duration |
| Day                                      | Time   | (m bgl)             | Seconds  | Day                                       | Time | (m bgl)        | Seconds  | Day                                       | Time | (m bgl)        | Seconds  |
| 1                                        | 14.230 | 1.050               | 0        |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 14.232 | 1.050               | 10       |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 14.233 | 1.050               | 20       |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 14.235 | 1.050               | 30       |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 14.237 | 1.050               | 40       |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 14.238 | 1.050               | 50       |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 14.240 | 1.050               | 60       |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 14.245 | 1.050               | 90       |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 14.250 | 1.050               | 120      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 14.260 | 1.060               | 180      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 14.270 | 1.060               | 240      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 14.280 | 1.060               | 300      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 14.290 | 1.070               | 360      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 14.300 | 1.070               | 420      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 14.310 | 1.070               | 480      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 14.320 | 1.070               | 540      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 14.330 | 1.070               | 600      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 15.000 | 1.100               | 2220     |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 17.090 | 1.200               | 9960     |                                           |      |                |          |                                           |      |                |          |
| 2                                        | 10.000 | 1.550               | 70620    |                                           |      |                |          |                                           |      |                |          |
| 2                                        | 12.150 | 1.580               | 78720    |                                           |      |                |          |                                           |      |                |          |
| 2                                        | 14.300 | 1.600               | 86820    |                                           |      |                |          |                                           |      |                |          |
|                                          |        |                     | 86820    |                                           |      |                |          |                                           |      |                |          |
| 25% water loss (75% full)                |        | 1.263m              |          | 25% water loss (75% full)                 |      | -              |          | 25% water loss (75% full)                 |      | -              |          |
| 50% water loss (50% full)                |        | 1.475m              |          | 50% water loss (50% full)                 |      | -              |          | 50% water loss (50% full)                 |      | -              |          |
| 75% water loss (25% full)                |        | 1.688m              |          | 75% water loss (25% full)                 |      | -              |          | 75% water loss (25% full)                 |      | -              |          |
| 25% time (seconds)                       |        | 20792 sec           |          | 25% time (seconds)                        |      | -              |          | 25% time (seconds)                        |      | -              |          |
| 75% time (seconds)                       |        | -                   |          | 75% time (seconds)                        |      | -              |          | 75% time (seconds)                        |      | -              |          |
| Vp 75-25                                 |        | 0.138m <sup>3</sup> |          | Vp 75-25                                  |      | -              |          | Vp 75-25                                  |      | -              |          |
| ap 50 (Actual area from test)            |        | 3.120m <sup>3</sup> |          | ap 50 (Actual area from test)             |      | -              |          | ap 50 (Actual area from test)             |      | -              |          |
| tp 75 - 25                               |        |                     |          | tp 75 - 25                                |      |                |          | tp 75 - 25                                |      |                |          |
| Soil Infiltration Rate                   |        | -                   |          | Soil Infiltration Rate                    |      | -              |          | Soil Infiltration Rate                    |      | -              |          |

Duration (Seconds)

Duration (Minutes)

Degree of Infiltration (%)

— Test Run 1 — Test Run 2 — Test Run 3

| Form completed by |       |               |
|-------------------|-------|---------------|
| Tested By         | PRINT | Yacklin Panza |
|                   | SIGN  | YP            |
|                   | DATE  | 27/10/2020    |
| Calculated By     | PRINT | Yacklin Panza |
|                   | SIGN  | YP            |
|                   | DATE  | 16/11/2020    |
| Checked by        | PRINT |               |
|                   | SIGN  |               |
|                   | DATE  |               |

# 1 DAY INFILTRATION ASSESSMENT - AIDE MEMOIR

**Site:** Land at Fathoms Reach, Hayling Island

**Client:** Taylor Wimpey UK Ltd.

**Test Location** SA03

**Date of start**

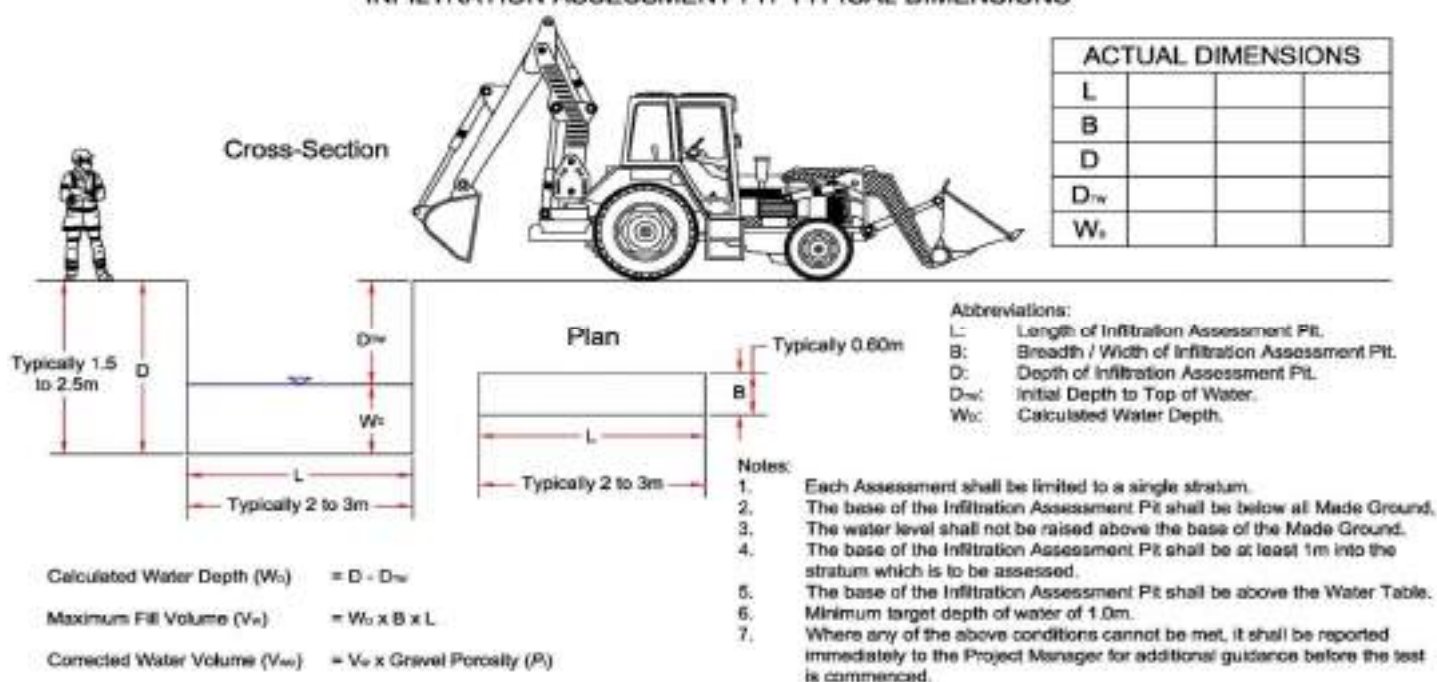
27/10/2020

**Date at end**

28/10/2020

| ANTICIPATED GROUND PROFILE FROM DESK STUDY |  |  | ACTUAL GROUND PROFILE FROM EXCAVATION |  |  |
|--------------------------------------------|--|--|---------------------------------------|--|--|
| GROUND LEVEL                               |  |  | GROUND LEVEL                          |  |  |
|                                            |  |  |                                       |  |  |
| BASE OF PIT                                |  |  | BASE OF PIT 1.70m                     |  |  |

## INFILTRATION ASSESSMENT PIT TYPICAL DIMENSIONS



| Infiltration                                                                                                                                                                                                                                                                                                                                                                   | RUN 1    |           | RUN 2    |           | RUN 3    |           | SITE OBSERVATIONS - VOLUME LOSS |                                    |                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------|----------|-----------|----------|-----------|---------------------------------|------------------------------------|------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                | $W_D$    |           | $W_D$    |           | $W_D$    |           | Test Run                        | Infiltration Records up to 6 Hours | Comments                                 |
|                                                                                                                                                                                                                                                                                                                                                                                | $W_{D1}$ | $D_{TW1}$ | $W_{D2}$ | $D_{TW2}$ | $W_{D3}$ | $D_{TW3}$ |                                 |                                    |                                          |
| 75% full                                                                                                                                                                                                                                                                                                                                                                       |          |           |          |           |          |           |                                 |                                    |                                          |
| 25% full                                                                                                                                                                                                                                                                                                                                                                       |          |           |          |           |          |           |                                 |                                    |                                          |
| <div>Assessment of Degree of Infiltration</div> <p>WD = 1.80 m</p> <p>WD = 1.60 m</p> <p>WD = 1.40 m</p> <p>WD = 1.20 m</p> <p>WD = 1.00 m</p> <p>WD = 0.80 m</p> <p>WD = 0.60 m</p> <p>WD = 0.40 m</p> <p>1.40 m 1.20 m 1.00 m 0.80 m 0.60 m 0.40 m 0.20 m 0.00 m</p> <p>Measured Depth of Water During Assessment</p> <p>—○— 75 % full    —△— 50 % full    —□— 25 % full</p> |          |           |          |           |          |           | 1                               | <25%                               | Unlikely without significant attenuation |
|                                                                                                                                                                                                                                                                                                                                                                                |          |           |          |           |          |           |                                 | <75%                               | Requires additional BRE DG365 testing    |
|                                                                                                                                                                                                                                                                                                                                                                                |          |           |          |           |          |           |                                 | >75%                               | Refer to results of Run 2                |
|                                                                                                                                                                                                                                                                                                                                                                                |          |           |          |           |          |           | 2                               | <25%                               | Unlikely without significant attenuation |
|                                                                                                                                                                                                                                                                                                                                                                                |          |           |          |           |          |           |                                 | <75%                               | Requires additional BRE DG365 testing    |
|                                                                                                                                                                                                                                                                                                                                                                                |          |           |          |           |          |           |                                 | >75%                               | Refer to results of Run 3                |
|                                                                                                                                                                                                                                                                                                                                                                                |          |           |          |           |          |           | 3                               | <25%                               | Unlikely without significant attenuation |
|                                                                                                                                                                                                                                                                                                                                                                                |          |           |          |           |          |           |                                 | <75%                               | Requires additional BRE DG365 testing    |
|                                                                                                                                                                                                                                                                                                                                                                                |          |           |          |           |          |           |                                 | >75%                               | Indicative Infiltration Rate achieved.   |



# 1 DAY INFILTRATION ASSESSMENT - WORKSHEET

Site: Land at Fathoms Reach, Hayling Island

Client: Taylor Wimpey UK Ltd.

Test Location SA03

Date of start 27/10/2020

Date at end 28/10/2020

| Test Run 1                               |        |                     |          | Test Run 2                                |      |                |          | Test Run 3                                |      |                |          |
|------------------------------------------|--------|---------------------|----------|-------------------------------------------|------|----------------|----------|-------------------------------------------|------|----------------|----------|
| Pit Dimensions (m)                       |        |                     |          | Pit Dimensions (m)                        |      |                |          | Pit Dimensions (m)                        |      |                |          |
| Trial Pit Length (L)                     |        | 1.900m              |          | Trial Pit Length (L)                      |      |                |          | Trial Pit Length (L)                      |      |                |          |
| Trial Pit Breadth / Width (B)            |        | 0.600m              |          | Trial Pit Breadth / Width (B)             |      |                |          | Trial Pit Breadth / Width (B)             |      |                |          |
| Effective Depth (D)                      |        | 2.200m              |          | Effective Depth (D)                       |      |                |          | Effective Depth (D)                       |      |                |          |
| Time at Start of Filling                 |        | 15.05               |          | Time at Start of Filling                  |      |                |          | Time at Start of Filling                  |      |                |          |
| Time at End of Filling                   |        | 15.07               |          | Time at End of Filling                    |      |                |          | Time at End of Filling                    |      |                |          |
| Depth from Surface to Water ( $D_{TW}$ ) |        | 1.070m              |          | Depth below Surface to Water ( $D_{TW}$ ) |      |                |          | Depth below Surface to Water ( $D_{TW}$ ) |      |                |          |
| Water Depth ( $W_D$ )                    |        | 1.130m              |          | Water Depth ( $W_D$ )                     |      | -              |          | Water Depth ( $W_D$ )                     |      | -              |          |
| Maximum Fill Volume ( $V_W$ )            |        | 1.288m <sup>3</sup> |          | Maximum Fill Volume ( $V_W$ )             |      | -              |          | Maximum Fill Volume ( $V_W$ )             |      | -              |          |
| Gravel used to backfill Test Pit         |        | Yes                 |          | Gravel used to backfill Test Pit          |      |                |          | Gravel used to backfill Test Pit          |      |                |          |
| Porosity of Gravel Backfill ( $P_I$ )    |        | 0.300               |          | Porosity of Gravel Backfill ( $P_I$ )     |      |                |          | Porosity of Gravel Backfill ( $P_I$ )     |      |                |          |
| Corrected Water Volume ( $V_{WC}$ )      |        | 0.386m <sup>3</sup> |          | Corrected Water Volume ( $V_{WC}$ )       |      | -              |          | Corrected Water Volume ( $V_{WC}$ )       |      | -              |          |
| Time to soakaway                         |        |                     |          | Time to soakaway                          |      |                |          | Time to soakaway                          |      |                |          |
| Time                                     |        | Depth to water      | Duration | Time                                      |      | Depth to water | Duration | Time                                      |      | Depth to water | Duration |
| Day                                      | Time   | (m bgl)             | Seconds  | Day                                       | Time | (m bgl)        | Seconds  | Day                                       | Time | (m bgl)        | Seconds  |
| 1                                        | 15.070 | 1.070               | 0        |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 15.072 | 1.070               | 10       |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 15.073 | 1.070               | 20       |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 15.075 | 1.070               | 30       |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 15.077 | 1.070               | 40       |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 15.078 | 1.070               | 50       |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 15.080 | 1.070               | 60       |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 15.085 | 1.070               | 90       |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 15.090 | 1.070               | 120      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 15.100 | 1.070               | 180      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 15.110 | 1.070               | 240      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 15.120 | 1.070               | 300      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 15.130 | 1.070               | 360      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 15.140 | 1.070               | 420      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 15.150 | 1.070               | 480      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 15.160 | 1.070               | 540      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 15.170 | 1.070               | 600      |                                           |      |                |          |                                           |      |                |          |
| 1                                        | 17.000 | 1.070               | 6780     |                                           |      |                |          |                                           |      |                |          |
| 2                                        | 10.150 | 1.070               | 68880    |                                           |      |                |          |                                           |      |                |          |
| 2                                        | 12.150 | 1.080               | 76080    |                                           |      |                |          |                                           |      |                |          |
| 2                                        | 14.000 | 1.080               | 82380    |                                           |      |                |          |                                           |      |                |          |
|                                          |        |                     | 82380    |                                           |      |                |          |                                           |      |                |          |
|                                          |        |                     | 82380    |                                           |      |                |          |                                           |      |                |          |
| 25% water loss (75% full)                |        | 1.353m              |          | 25% water loss (75% full)                 |      | -              |          | 25% water loss (75% full)                 |      | -              |          |
| 50% water loss (50% full)                |        | 1.635m              |          | 50% water loss (50% full)                 |      | -              |          | 50% water loss (50% full)                 |      | -              |          |
| 75% water loss (25% full)                |        | 1.918m              |          | 75% water loss (25% full)                 |      | -              |          | 75% water loss (25% full)                 |      | -              |          |
| 25% time (seconds)                       |        | -                   |          | 25% time (seconds)                        |      | -              |          | 25% time (seconds)                        |      | -              |          |
| 75% time (seconds)                       |        | -                   |          | 75% time (seconds)                        |      | -              |          | 75% time (seconds)                        |      | -              |          |
| Vp 75-25                                 |        | 0.193m <sup>3</sup> |          | Vp 75-25                                  |      | -              |          | Vp 75-25                                  |      | -              |          |
| ap 50 (Actual area from test)            |        | 3.965m <sup>3</sup> |          | ap 50 (Actual area from test)             |      | -              |          | ap 50 (Actual area from test)             |      | -              |          |
| tp 75 - 25                               |        |                     |          | tp 75 - 25                                |      |                |          | tp 75 - 25                                |      |                |          |
| Soil Infiltration Rate                   |        | -                   |          | Soil Infiltration Rate                    |      | -              |          | Soil Infiltration Rate                    |      | -              |          |

Duration (Seconds)

0 3600 7200 10800 14400 18000 21600

0 25 50 75 100

0 60 120 180 240 300 360

Duration (Minutes)

— Test Run 1 — Test Run 2 — Test Run 3

| Form completed by |       |               |
|-------------------|-------|---------------|
| Tested By         | PRINT | Yacklin Panza |
|                   | SIGN  | YP            |
|                   | DATE  | 27/10/2020    |
| Calculated By     | PRINT | Yacklin Panza |
|                   | SIGN  | YP            |
|                   | DATE  | 16/11/2020    |
| Checked by        | PRINT |               |
|                   | SIGN  |               |
|                   | DATE  |               |

|                                                      |                                                              |
|------------------------------------------------------|--------------------------------------------------------------|
| <b>Client</b><br><b>Project</b><br><b>Job number</b> | <b>Location or material to which this assessment applies</b> |
|------------------------------------------------------|--------------------------------------------------------------|

Concrete in aggressive ground

After BRE Special Digest 1, 2005

**Soil data**

|                                 | (Adjusted) water<br>soluble sulfate<br>(mg/l) | Total potential<br>sulfate<br>(%) | Water<br>soluble<br>magnesium<br>(mg/l) |
|---------------------------------|-----------------------------------------------|-----------------------------------|-----------------------------------------|
| Number of tests                 | 5                                             | 5                                 | 5                                       |
| No. tests in 20% data set       | 1                                             | 1                                 | 1                                       |
| No. tests with suspected pyrite |                                               | 0                                 |                                         |
| Maximum value                   | 141.5                                         | 0.1                               | 5.6                                     |
| Mean of highest two values      | 89                                            | 0                                 | 6                                       |
| Mean of highest 20%             |                                               |                                   |                                         |
| <b>Characteristic Value</b>     | <b>89</b>                                     | <b>0</b>                          | <b>6</b>                                |

Mg not required

|                 | [no pyrite] | [pyrite suspected] |
|-----------------|-------------|--------------------|
| <b>DS Class</b> | <b>DS-1</b> | <b>DS-1</b>        |

If pyrite suspected, DS Class limited to DS-1

Is pyrite assumed to be present? No Adopted DS Class = DS-1

**Water data**

|                                                | (Adjusted) soluble<br>sulfate<br>(mg/l) | Soluble<br>magnesium<br>(mg/l) |
|------------------------------------------------|-----------------------------------------|--------------------------------|
| <b>Characteristic Value</b><br>(Maximum Level) | 0                                       | 0                              |

Mg not required

| DS Class    |
|-------------|
| <b>DS-1</b> |

**pH data**

|                             | Soil       | Water |
|-----------------------------|------------|-------|
| Number of tests             | 5          | 0     |
| No. tests in 20% data set   | 1          |       |
| Lowest pH                   | 8.1        |       |
| Mean of lowest 20%          | 8.1        |       |
| <b>Characteristic value</b> | <b>8.1</b> |       |

|                     |            |
|---------------------|------------|
| <b>Design value</b> | <b>8.1</b> |
|---------------------|------------|

Number of soil pH results less than 5.5 0

DS Class design value

Based on higher of soil and water data

ACEC Class design value

Brownfield

Mobile groundwater

DS-1

AC-1

## Appendix G

# Contamination Test Results and Statistical Analysis

## Contamination Test Results

**Yacklin Panza**  
Hydrock Consultants Ltd  
Suite 8  
White Building  
1-4 Cumberland Place  
Southampton  
Hampshire  
SO15 2NP

i2 Analytical Ltd.  
7 Woodshots Meadow,  
Croxley Green  
Business Park,  
Watford,  
Herts,  
WD18 8YS

**t:** 01923 225404  
**f:** 01923 237404  
**e:** reception@i2analytical.com

**e:** Group Southampton cc engineer

## **Analytical Report Number : 20-38546**

Replaces Analytical Report Number: 20-38546, issue no. 1  
Additional analysis undertaken.

|                             |                                       |                                                        |            |
|-----------------------------|---------------------------------------|--------------------------------------------------------|------------|
| <b>Project / Site name:</b> | Land at Fathoms Reach, Hayling Island | <b>Samples received on:</b>                            | 28/10/2020 |
| <b>Your job number:</b>     | 16117                                 | <b>Samples instructed on/<br/>Analysis started on:</b> | 29/10/2020 |
| <b>Your order number:</b>   | PO02939                               | <b>Analysis completed by:</b>                          | 30/12/2020 |
| <b>Report Issue Number:</b> | 2                                     | <b>Report issued on:</b>                               | 30/12/2020 |
| <b>Samples Analysed:</b>    | 9 soil samples                        |                                                        |            |

**Signed:** *Karolina Marek*

Karolina Marek  
PL Head of Reporting Team  
**For & on behalf of i2 Analytical Ltd.**

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting  
leachates - 2 weeks from reporting  
waters - 2 weeks from reporting  
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.  
Application of uncertainty of measurement would provide a range within which the true result lies.  
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 20-38546

Project / Site name: Land at Fathoms Reach, Hayling Island

Your Order No: PO02939

| Lab Sample Number                       |       |                    |                      | 1668354       | 1668355       | 1668356       | 1668357       | 1668358       |
|-----------------------------------------|-------|--------------------|----------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                    |                      | WS01B         | WS01B         | SA01          | WS03          | TP01          |
| Sample Number                           |       |                    |                      | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                    |                      | 0.10          | 0.50          | 0.10          | 0.10          | 0.10          |
| Date Sampled                            |       |                    |                      | 28/10/2020    | 28/10/2020    | 27/10/2020    | 28/10/2020    | 27/10/2020    |
| Time Taken                              |       |                    |                      | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation Status |               |               |               |               |               |
| Stone Content                           | %     | 0.1                | NONE                 | < 0.1         | < 0.1         | < 0.1         | < 0.1         | < 0.1         |
| Moisture Content                        | %     | 0.01               | NONE                 | 17            | 13            | 14            | 25            | 17            |
| Total mass of sample received           | kg    | 0.001              | NONE                 | 0.5           | 0.5           | 0.5           | 0.5           | 1.2           |

| Asbestos in Soil Screen / Identification Name | Type | N/A   | ISO 17025 | -            | Amosite  | -            | -            | -            |
|-----------------------------------------------|------|-------|-----------|--------------|----------|--------------|--------------|--------------|
| Asbestos in Soil                              | Type | N/A   | ISO 17025 | Not-detected | Detected | Not-detected | Not-detected | Not-detected |
| Asbestos Quantification (Stage 2)             | %    | 0.001 | ISO 17025 | -            | < 0.001  | -            | -            | -            |
| Asbestos Quantification Total                 | %    | 0.001 | ISO 17025 | -            | < 0.001  | -            | -            | -            |

#### General Inorganics

|                                                             |          |         |        |       |       |       |       |       |
|-------------------------------------------------------------|----------|---------|--------|-------|-------|-------|-------|-------|
| pH - Automated                                              | pH Units | N/A     | MCERTS | 8.4   | 10.1  | 7     | 6.8   | 7.1   |
| Free Cyanide                                                | mg/kg    | 1       | MCERTS | < 1   | < 1   | < 1   | < 1   | < 1   |
| Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent) | g/l      | 0.00125 | MCERTS | 0.026 | 0.15  | 0.02  | 0.021 | 0.039 |
| Fraction Organic Carbon (FOC)                               | N/A      | 0.001   | MCERTS | 0.027 | 0.011 | 0.015 | 0.026 | 0.022 |

#### Total Phenols

|                            |       |   |        |       |       |       |       |       |
|----------------------------|-------|---|--------|-------|-------|-------|-------|-------|
| Total Phenols (monohydric) | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
|----------------------------|-------|---|--------|-------|-------|-------|-------|-------|

#### Speciated PAHs

|                        |       |      |        |        |        |        |        |        |
|------------------------|-------|------|--------|--------|--------|--------|--------|--------|
| Naphthalene            | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Acenaphthylene         | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Acenaphthene           | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Fluorene               | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | 0.2    |
| Phenanthrene           | mg/kg | 0.05 | MCERTS | 0.89   | 0.33   | 0.22   | < 0.05 | 2      |
| Anthracene             | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | 0.36   |
| Fluoranthene           | mg/kg | 0.05 | MCERTS | 1.6    | 0.87   | 0.47   | < 0.05 | 2.9    |
| Pyrene                 | mg/kg | 0.05 | MCERTS | 1.3    | 0.71   | 0.49   | < 0.05 | 2.4    |
| Benzo(a)anthracene     | mg/kg | 0.05 | MCERTS | 0.89   | 0.65   | 0.36   | < 0.05 | 1.6    |
| Chrysene               | mg/kg | 0.05 | MCERTS | 0.63   | 0.46   | 0.32   | < 0.05 | 1.2    |
| Benzo(b)fluoranthene   | mg/kg | 0.05 | MCERTS | 1      | 0.85   | 0.84   | < 0.05 | 1.6    |
| Benzo(k)fluoranthene   | mg/kg | 0.05 | MCERTS | 0.32   | 0.23   | 0.27   | < 0.05 | 0.74   |
| Benzo(a)pyrene         | mg/kg | 0.05 | MCERTS | 0.87   | 0.55   | 0.61   | < 0.05 | 1.3    |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.05 | MCERTS | 0.46   | 0.3    | 0.45   | < 0.05 | 0.67   |
| Dibenz(a,h)anthracene  | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(ghi)perylene     | mg/kg | 0.05 | MCERTS | 0.53   | 0.38   | 0.54   | < 0.05 | 0.8    |

#### Total PAH

|                             |       |     |        |      |      |      |        |      |
|-----------------------------|-------|-----|--------|------|------|------|--------|------|
| Speciated Total EPA-16 PAHs | mg/kg | 0.8 | MCERTS | 8.53 | 5.33 | 4.57 | < 0.80 | 15.8 |
|-----------------------------|-------|-----|--------|------|------|------|--------|------|

Analytical Report Number: 20-38546

Project / Site name: Land at Fathoms Reach, Hayling Island

Your Order No: PO02939

| Lab Sample Number                       |       |                    |                         | 1668354       | 1668355       | 1668356       | 1668357       | 1668358       |
|-----------------------------------------|-------|--------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                    |                         | WS01B         | WS01B         | SA01          | WS03          | TP01          |
| Sample Number                           |       |                    |                         | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                    |                         | 0.10          | 0.50          | 0.10          | 0.10          | 0.10          |
| Date Sampled                            |       |                    |                         | 28/10/2020    | 28/10/2020    | 27/10/2020    | 28/10/2020    | 27/10/2020    |
| Time Taken                              |       |                    |                         | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation<br>Status |               |               |               |               |               |

#### Heavy Metals / Metalloids

|                                    |       |      |        |       |       |       |       |       |
|------------------------------------|-------|------|--------|-------|-------|-------|-------|-------|
| Arsenic (aqua regia extractable)   | mg/kg | 1    | MCERTS | 14    | 7.6   | 9.6   | 7.2   | 8     |
| Beryllium (aqua regia extractable) | mg/kg | 0.06 | MCERTS | 0.66  | 0.53  | 0.61  | 0.54  | 0.56  |
| Boron (water soluble)              | mg/kg | 0.2  | MCERTS | 2.1   | 0.7   | 1     | 0.8   | 0.6   |
| Cadmium (aqua regia extractable)   | mg/kg | 0.2  | MCERTS | < 0.2 | 0.4   | < 0.2 | < 0.2 | 0.4   |
| Chromium (hexavalent)              | mg/kg | 1.2  | MCERTS | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 |
| Chromium (III)                     | mg/kg | 1    | NONE   | 25    | 18    | 22    | 19    | 21    |
| Chromium (aqua regia extractable)  | mg/kg | 1    | MCERTS | 25    | 19    | 22    | 20    | 21    |
| Copper (aqua regia extractable)    | mg/kg | 1    | MCERTS | 25    | 17    | 14    | 15    | 89    |
| Lead (aqua regia extractable)      | mg/kg | 1    | MCERTS | 51    | 39    | 37    | 28    | 100   |
| Mercury (aqua regia extractable)   | mg/kg | 0.3  | MCERTS | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 |
| Nickel (aqua regia extractable)    | mg/kg | 1    | MCERTS | 16    | 12    | 14    | 12    | 13    |
| Selenium (aqua regia extractable)  | mg/kg | 1    | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Vanadium (aqua regia extractable)  | mg/kg | 1    | MCERTS | 35    | 29    | 34    | 28    | 29    |
| Zinc (aqua regia extractable)      | mg/kg | 1    | MCERTS | 82    | 110   | 73    | 55    | 120   |

#### Monoaromatics & Oxygenates

|                                    |       |   |        |   |       |   |   |       |
|------------------------------------|-------|---|--------|---|-------|---|---|-------|
| Benzene                            | µg/kg | 1 | MCERTS | - | < 1.0 | - | - | < 1.0 |
| Toluene                            | µg/kg | 1 | MCERTS | - | < 1.0 | - | - | < 1.0 |
| Ethylbenzene                       | µg/kg | 1 | MCERTS | - | < 1.0 | - | - | < 1.0 |
| p & m-xylene                       | µg/kg | 1 | MCERTS | - | < 1.0 | - | - | < 1.0 |
| o-xylene                           | µg/kg | 1 | MCERTS | - | < 1.0 | - | - | < 1.0 |
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 1 | MCERTS | - | < 1.0 | - | - | < 1.0 |

#### Petroleum Hydrocarbons

|                                   |       |       |        |   |         |   |   |         |
|-----------------------------------|-------|-------|--------|---|---------|---|---|---------|
| TPH-CWG - Aliphatic >EC5 - EC6    | mg/kg | 0.001 | MCERTS | - | < 0.001 | - | - | < 0.001 |
| TPH-CWG - Aliphatic >EC6 - EC8    | mg/kg | 0.001 | MCERTS | - | < 0.001 | - | - | < 0.001 |
| TPH-CWG - Aliphatic >EC8 - EC10   | mg/kg | 0.001 | MCERTS | - | < 0.001 | - | - | < 0.001 |
| TPH-CWG - Aliphatic >EC10 - EC12  | mg/kg | 1     | MCERTS | - | < 1.0   | - | - | < 1.0   |
| TPH-CWG - Aliphatic >EC12 - EC16  | mg/kg | 2     | MCERTS | - | < 2.0   | - | - | < 2.0   |
| TPH-CWG - Aliphatic >EC16 - EC21  | mg/kg | 8     | MCERTS | - | < 8.0   | - | - | < 8.0   |
| TPH-CWG - Aliphatic >EC21 - EC35  | mg/kg | 8     | MCERTS | - | < 8.0   | - | - | < 8.0   |
| TPH-CWG - Aliphatic > EC35 - EC44 | mg/kg | 8.4   | NONE   | - | < 8.4   | - | - | < 8.4   |

|                                  |       |       |        |   |         |   |   |         |
|----------------------------------|-------|-------|--------|---|---------|---|---|---------|
| TPH-CWG - Aromatic >EC5 - EC7    | mg/kg | 0.001 | MCERTS | - | < 0.001 | - | - | < 0.001 |
| TPH-CWG - Aromatic >EC7 - EC8    | mg/kg | 0.001 | MCERTS | - | < 0.001 | - | - | < 0.001 |
| TPH-CWG - Aromatic >EC8 - EC10   | mg/kg | 0.001 | MCERTS | - | < 0.001 | - | - | < 0.001 |
| TPH-CWG - Aromatic >EC10 - EC12  | mg/kg | 1     | MCERTS | - | < 1.0   | - | - | < 1.0   |
| TPH-CWG - Aromatic >EC12 - EC16  | mg/kg | 2     | MCERTS | - | < 2.0   | - | - | < 2.0   |
| TPH-CWG - Aromatic >EC16 - EC21  | mg/kg | 10    | MCERTS | - | < 10    | - | - | 18      |
| TPH-CWG - Aromatic >EC21 - EC35  | mg/kg | 10    | MCERTS | - | 32      | - | - | 56      |
| TPH-CWG - Aromatic > EC35 - EC44 | mg/kg | 8.4   | NONE   | - | 43      | - | - | 65      |

Analytical Report Number: 20-38546

Project / Site name: Land at Fathoms Reach, Hayling Island

Your Order No: PO02939

| Lab Sample Number                       |       |                    |                         | 1668354       | 1668355       | 1668356       | 1668357       | 1668358       |
|-----------------------------------------|-------|--------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                    |                         | WS01B         | WS01B         | SA01          | WS03          | TP01          |
| Sample Number                           |       |                    |                         | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                    |                         | 0.10          | 0.50          | 0.10          | 0.10          | 0.10          |
| Date Sampled                            |       |                    |                         | 28/10/2020    | 28/10/2020    | 27/10/2020    | 28/10/2020    | 27/10/2020    |
| Time Taken                              |       |                    |                         | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation<br>Status |               |               |               |               |               |

#### SVOCs

|                             |       |      |           |   |   |   |   |        |
|-----------------------------|-------|------|-----------|---|---|---|---|--------|
| Aniline                     | mg/kg | 0.1  | NONE      | - | - | - | - | < 0.1  |
| Phenol                      | mg/kg | 0.2  | ISO 17025 | - | - | - | - | < 0.2  |
| 2-Chlorophenol              | mg/kg | 0.1  | MCERTS    | - | - | - | - | < 0.1  |
| Bis(2-chloroethyl)ether     | mg/kg | 0.2  | MCERTS    | - | - | - | - | < 0.2  |
| 1,3-Dichlorobenzene         | mg/kg | 0.2  | MCERTS    | - | - | - | - | < 0.2  |
| 1,2-Dichlorobenzene         | mg/kg | 0.1  | MCERTS    | - | - | - | - | < 0.1  |
| 1,4-Dichlorobenzene         | mg/kg | 0.2  | MCERTS    | - | - | - | - | < 0.2  |
| Bis(2-chloroisopropyl)ether | mg/kg | 0.1  | MCERTS    | - | - | - | - | < 0.1  |
| 2-Methylphenol              | mg/kg | 0.3  | MCERTS    | - | - | - | - | < 0.3  |
| Hexachloroethane            | mg/kg | 0.05 | MCERTS    | - | - | - | - | < 0.05 |
| Nitrobenzene                | mg/kg | 0.3  | MCERTS    | - | - | - | - | < 0.3  |
| 4-Methylphenol              | mg/kg | 0.2  | NONE      | - | - | - | - | < 0.2  |
| Isophorone                  | mg/kg | 0.2  | MCERTS    | - | - | - | - | < 0.2  |
| 2-Nitrophenol               | mg/kg | 0.3  | MCERTS    | - | - | - | - | < 0.3  |
| 2,4-Dimethylphenol          | mg/kg | 0.3  | MCERTS    | - | - | - | - | < 0.3  |
| Bis(2-chloroethoxy)methane  | mg/kg | 0.3  | MCERTS    | - | - | - | - | < 0.3  |
| 1,2,4-Trichlorobenzene      | mg/kg | 0.3  | MCERTS    | - | - | - | - | < 0.3  |
| Naphthalene                 | mg/kg | 0.05 | MCERTS    | - | - | - | - | < 0.05 |
| 2,4-Dichlorophenol          | mg/kg | 0.3  | MCERTS    | - | - | - | - | < 0.3  |
| 4-Chloroaniline             | mg/kg | 0.1  | NONE      | - | - | - | - | < 0.1  |
| Hexachlorobutadiene         | mg/kg | 0.1  | MCERTS    | - | - | - | - | < 0.1  |
| 4-Chloro-3-methylphenol     | mg/kg | 0.1  | NONE      | - | - | - | - | < 0.1  |
| 2,4,6-Trichlorophenol       | mg/kg | 0.1  | MCERTS    | - | - | - | - | < 0.1  |
| 2,4,5-Trichlorophenol       | mg/kg | 0.2  | MCERTS    | - | - | - | - | < 0.2  |
| 2-Methylnaphthalene         | mg/kg | 0.1  | NONE      | - | - | - | - | < 0.1  |
| 2-Chloronaphthalene         | mg/kg | 0.1  | MCERTS    | - | - | - | - | < 0.1  |
| Dimethylphthalate           | mg/kg | 0.1  | MCERTS    | - | - | - | - | < 0.1  |
| 2,6-Dinitrotoluene          | mg/kg | 0.1  | MCERTS    | - | - | - | - | < 0.1  |
| Acenaphthylene              | mg/kg | 0.05 | MCERTS    | - | - | - | - | < 0.05 |
| Acenaphthene                | mg/kg | 0.05 | MCERTS    | - | - | - | - | < 0.05 |
| 2,4-Dinitrotoluene          | mg/kg | 0.2  | MCERTS    | - | - | - | - | < 0.2  |
| Dibenzofuran                | mg/kg | 0.2  | MCERTS    | - | - | - | - | < 0.2  |
| 4-Chlorophenyl phenyl ether | mg/kg | 0.3  | ISO 17025 | - | - | - | - | < 0.3  |
| Diethyl phthalate           | mg/kg | 0.2  | MCERTS    | - | - | - | - | < 0.2  |
| 4-Nitroaniline              | mg/kg | 0.2  | MCERTS    | - | - | - | - | < 0.2  |
| Fluorene                    | mg/kg | 0.05 | MCERTS    | - | - | - | - | 0.2    |
| Azobenzene                  | mg/kg | 0.3  | MCERTS    | - | - | - | - | < 0.3  |
| Bromophenyl phenyl ether    | mg/kg | 0.2  | MCERTS    | - | - | - | - | < 0.2  |
| Hexachlorobenzene           | mg/kg | 0.3  | MCERTS    | - | - | - | - | < 0.3  |
| Phenanthrene                | mg/kg | 0.05 | MCERTS    | - | - | - | - | 2      |
| Anthracene                  | mg/kg | 0.05 | MCERTS    | - | - | - | - | 0.36   |
| Carbazole                   | mg/kg | 0.3  | MCERTS    | - | - | - | - | < 0.3  |
| Dibutyl phthalate           | mg/kg | 0.2  | MCERTS    | - | - | - | - | < 0.2  |
| Anthraquinone               | mg/kg | 0.3  | MCERTS    | - | - | - | - | < 0.3  |
| Fluoranthene                | mg/kg | 0.05 | MCERTS    | - | - | - | - | 2.9    |
| Pyrene                      | mg/kg | 0.05 | MCERTS    | - | - | - | - | 2.4    |
| Butyl benzyl phthalate      | mg/kg | 0.3  | ISO 17025 | - | - | - | - | < 0.3  |
| Benzo(a)anthracene          | mg/kg | 0.05 | MCERTS    | - | - | - | - | 1.6    |
| Chrysene                    | mg/kg | 0.05 | MCERTS    | - | - | - | - | 1.2    |
| Benzo(b)fluoranthene        | mg/kg | 0.05 | MCERTS    | - | - | - | - | 1.6    |

Analytical Report Number: 20-38546

Project / Site name: Land at Fathoms Reach, Hayling Island

Your Order No: PO02939

| Lab Sample Number                       |       |                    |                         | 1668354       | 1668355       | 1668356       | 1668357       | 1668358       |
|-----------------------------------------|-------|--------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                    |                         | WS01B         | WS01B         | SA01          | WS03          | TP01          |
| Sample Number                           |       |                    |                         | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                    |                         | 0.10          | 0.50          | 0.10          | 0.10          | 0.10          |
| Date Sampled                            |       |                    |                         | 28/10/2020    | 28/10/2020    | 27/10/2020    | 28/10/2020    | 27/10/2020    |
| Time Taken                              |       |                    |                         | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation<br>Status |               |               |               |               |               |
| Benzo(k)fluoranthene                    | mg/kg | 0.05               | MCERTS                  | -             | -             | -             | -             | 0.74          |
| Benzo(a)pyrene                          | mg/kg | 0.05               | MCERTS                  | -             | -             | -             | -             | 1.3           |
| Indeno(1,2,3-cd)pyrene                  | mg/kg | 0.05               | MCERTS                  | -             | -             | -             | -             | 0.67          |
| Dibenz(a,h)anthracene                   | mg/kg | 0.05               | MCERTS                  | -             | -             | -             | -             | < 0.05        |
| Benzo(ghi)perylene                      | mg/kg | 0.05               | MCERTS                  | -             | -             | -             | -             | 0.8           |

#### SVOCs TICs

|                          |   |     |      |   |   |   |   |                                                                                         |
|--------------------------|---|-----|------|---|---|---|---|-----------------------------------------------------------------------------------------|
| SVOCs TICs Compound Name |   | N/A | NONE | - | - | - | - | Phenol, 4,4'-(1-methylethylidene) bis-                                                  |
| SVOC % Match             | % | N/A | NONE | - | - | - | - | 96                                                                                      |
| SVOCs TICs Compound Name |   | N/A | NONE | - | - | - | - | 11H-Benzo[b]fluorene                                                                    |
| SVOC % Match             | % | N/A | NONE | - | - | - | - | 95                                                                                      |
| SVOCs TICs Compound Name |   | N/A | NONE | - | - | - | - | Perylene                                                                                |
| SVOC % Match             | % | N/A | NONE | - | - | - | - | 95                                                                                      |
| SVOCs TICs Compound Name |   | N/A | NONE | - | - | - | - | Naphthalene, 1,5-dimethyl-                                                              |
| SVOC % Match             | % | N/A | NONE | - | - | - | - | 94                                                                                      |
| SVOCs TICs Compound Name |   | N/A | NONE | - | - | - | - | Dibenzothiophene                                                                        |
| SVOC % Match             | % | N/A | NONE | - | - | - | - | 94                                                                                      |
| SVOCs TICs Compound Name |   | N/A | NONE | - | - | - | - | 1H-Imidazole-4,5-dicarboxylic acid, 2-methyl-1-(2-phenylethenyl)-, 4-methyl ester, (E)- |
| SVOC % Match             | % | N/A | NONE | - | - | - | - | 93                                                                                      |
| SVOCs TICs Compound Name |   | N/A | NONE | - | - | - | - | Antra-9,10-quinone, 1-(3-hydroxy-3-phenyl-1-triazenyl)-                                 |
| SVOC % Match             | % | N/A | NONE | - | - | - | - | 93                                                                                      |
| SVOCs TICs Compound Name |   | N/A | NONE | - | - | - | - | Naphthalene, 2,6-dimethyl-                                                              |
| SVOC % Match             | % | N/A | NONE | - | - | - | - | 92                                                                                      |
| SVOCs TICs Compound Name |   | N/A | NONE | - | - | - | - | Pyrene, 1-methyl-                                                                       |
| SVOC % Match             | % | N/A | NONE | - | - | - | - | 92                                                                                      |
| SVOCs TICs Compound Name |   | N/A | NONE | - | - | - | - | Chrysene, 6-methyl-                                                                     |
| SVOC % Match             | % | N/A | NONE | - | - | - | - | 91                                                                                      |

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 20-38546

Project / Site name: Land at Fathoms Reach, Hayling Island

Your Order No: PO02939

| Lab Sample Number                       |       |                    |                      | 1668359       | 1668360       | 1668361       | 1668362       |
|-----------------------------------------|-------|--------------------|----------------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                    |                      | SA02          | WS04          | WS05          | TP03          |
| Sample Number                           |       |                    |                      | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                    |                      | 0.10          | 0.10          | 0.10          | 0.10          |
| Date Sampled                            |       |                    |                      | 27/10/2020    | 28/10/2020    | 28/10/2020    | 27/10/2020    |
| Time Taken                              |       |                    |                      | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation Status |               |               |               |               |
| Stone Content                           | %     | 0.1                | NONE                 | < 0.1         | < 0.1         | < 0.1         | < 0.1         |
| Moisture Content                        | %     | 0.01               | NONE                 | 24            | 28            | 22            | 21            |
| Total mass of sample received           | kg    | 0.001              | NONE                 | 1.2           | 0.5           | 0.5           | 1.2           |

| Asbestos in Soil Screen / Identification Name | Type | N/A   | ISO 17025 | -            | -            | -            | - |
|-----------------------------------------------|------|-------|-----------|--------------|--------------|--------------|---|
| Asbestos in Soil                              | Type | N/A   | ISO 17025 | Not-detected | Not-detected | Not-detected | - |
| Asbestos Quantification (Stage 2)             | %    | 0.001 | ISO 17025 | -            | -            | -            | - |
| Asbestos Quantification Total                 | %    | 0.001 | ISO 17025 | -            | -            | -            | - |

#### General Inorganics

|                                                                         |          |         |        |       |       |       |   |
|-------------------------------------------------------------------------|----------|---------|--------|-------|-------|-------|---|
| pH - Automated                                                          | pH Units | N/A     | MCERTS | 6.4   | 6.1   | 7     | - |
| Free Cyanide                                                            | mg/kg    | 1       | MCERTS | < 1   | < 1   | < 1   | - |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | g/l      | 0.00125 | MCERTS | 0.022 | 0.078 | 0.038 | - |
| Fraction Organic Carbon (FOC)                                           | N/A      | 0.001   | MCERTS | 0.025 | 0.033 | 0.026 | - |

#### Total Phenols

|                            |       |   |        |       |       |       |   |
|----------------------------|-------|---|--------|-------|-------|-------|---|
| Total Phenols (monohydric) | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | - |
|----------------------------|-------|---|--------|-------|-------|-------|---|

#### Speciated PAHs

|                        |       |      |        |        |        |        |   |
|------------------------|-------|------|--------|--------|--------|--------|---|
| Naphthalene            | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | - |
| Acenaphthylene         | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | - |
| Acenaphthene           | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | - |
| Fluorene               | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | - |
| Phenanthrene           | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | - |
| Anthracene             | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | - |
| Fluoranthene           | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | - |
| Pyrene                 | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | - |
| Benzo(a)anthracene     | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | - |
| Chrysene               | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | - |
| Benzo(b)fluoranthene   | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | - |
| Benzo(k)fluoranthene   | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | - |
| Benzo(a)pyrene         | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | - |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | - |
| Dibenz(a,h)anthracene  | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | - |
| Benzo(ghi)perylene     | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | - |

#### Total PAH

|                             |       |     |        |        |        |        |   |
|-----------------------------|-------|-----|--------|--------|--------|--------|---|
| Speciated Total EPA-16 PAHs | mg/kg | 0.8 | MCERTS | < 0.80 | < 0.80 | < 0.80 | - |
|-----------------------------|-------|-----|--------|--------|--------|--------|---|

Analytical Report Number: 20-38546

Project / Site name: Land at Fathoms Reach, Hayling Island

Your Order No: PO02939

| Lab Sample Number                       |       |                    |                         | 1668359       | 1668360       | 1668361       | 1668362       |
|-----------------------------------------|-------|--------------------|-------------------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                    |                         | SA02          | WS04          | WS05          | TP03          |
| Sample Number                           |       |                    |                         | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                    |                         | 0.10          | 0.10          | 0.10          | 0.10          |
| Date Sampled                            |       |                    |                         | 27/10/2020    | 28/10/2020    | 28/10/2020    | 27/10/2020    |
| Time Taken                              |       |                    |                         | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation<br>Status |               |               |               |               |
| <b>Heavy Metals / Metalloids</b>        |       |                    |                         |               |               |               |               |
| Arsenic (aqua regia extractable)        | mg/kg | 1                  | MCERTS                  | 7.7           | 5.4           | 6.4           | -             |
| Beryllium (aqua regia extractable)      | mg/kg | 0.06               | MCERTS                  | 0.58          | 0.52          | 0.6           | -             |
| Boron (water soluble)                   | mg/kg | 0.2                | MCERTS                  | 1.5           | 0.8           | 1             | -             |
| Cadmium (aqua regia extractable)        | mg/kg | 0.2                | MCERTS                  | < 0.2         | < 0.2         | 0.2           | -             |
| Chromium (hexavalent)                   | mg/kg | 1.2                | MCERTS                  | < 1.2         | < 1.2         | < 1.2         | -             |
| Chromium (III)                          | mg/kg | 1                  | NONE                    | 22            | 20            | 22            | -             |
| Chromium (aqua regia extractable)       | mg/kg | 1                  | MCERTS                  | 22            | 20            | 22            | -             |
| Copper (aqua regia extractable)         | mg/kg | 1                  | MCERTS                  | 13            | 13            | 11            | -             |
| Lead (aqua regia extractable)           | mg/kg | 1                  | MCERTS                  | 79            | 27            | 24            | -             |
| Mercury (aqua regia extractable)        | mg/kg | 0.3                | MCERTS                  | < 0.3         | < 0.3         | < 0.3         | -             |
| Nickel (aqua regia extractable)         | mg/kg | 1                  | MCERTS                  | 13            | 12            | 13            | -             |
| Selenium (aqua regia extractable)       | mg/kg | 1                  | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | -             |
| Vanadium (aqua regia extractable)       | mg/kg | 1                  | MCERTS                  | 30            | 27            | 31            | -             |
| Zinc (aqua regia extractable)           | mg/kg | 1                  | MCERTS                  | 66            | 55            | 46            | -             |

#### Monoaromatics & Oxygenates

|                                    |       |   |        |       |   |   |       |
|------------------------------------|-------|---|--------|-------|---|---|-------|
| Benzene                            | µg/kg | 1 | MCERTS | < 1.0 | - | - | < 1.0 |
| Toluene                            | µg/kg | 1 | MCERTS | < 1.0 | - | - | < 1.0 |
| Ethylbenzene                       | µg/kg | 1 | MCERTS | < 1.0 | - | - | < 1.0 |
| p & m-xylene                       | µg/kg | 1 | MCERTS | < 1.0 | - | - | < 1.0 |
| o-xylene                           | µg/kg | 1 | MCERTS | < 1.0 | - | - | < 1.0 |
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 1 | MCERTS | < 1.0 | - | - | < 1.0 |

#### Petroleum Hydrocarbons

|                                   |       |       |        |         |   |   |         |
|-----------------------------------|-------|-------|--------|---------|---|---|---------|
| TPH-CWG - Aliphatic >EC5 - EC6    | mg/kg | 0.001 | MCERTS | < 0.001 | - | - | < 0.001 |
| TPH-CWG - Aliphatic >EC6 - EC8    | mg/kg | 0.001 | MCERTS | < 0.001 | - | - | < 0.001 |
| TPH-CWG - Aliphatic >EC8 - EC10   | mg/kg | 0.001 | MCERTS | < 0.001 | - | - | < 0.001 |
| TPH-CWG - Aliphatic >EC10 - EC12  | mg/kg | 1     | MCERTS | < 1.0   | - | - | < 1.0   |
| TPH-CWG - Aliphatic >EC12 - EC16  | mg/kg | 2     | MCERTS | < 2.0   | - | - | < 2.0   |
| TPH-CWG - Aliphatic >EC16 - EC21  | mg/kg | 8     | MCERTS | < 8.0   | - | - | < 8.0   |
| TPH-CWG - Aliphatic >EC21 - EC35  | mg/kg | 8     | MCERTS | < 8.0   | - | - | < 8.0   |
| TPH-CWG - Aliphatic > EC35 - EC44 | mg/kg | 8.4   | NONE   | < 8.4   | - | - | < 8.4   |

|                                  |       |       |        |         |   |   |         |
|----------------------------------|-------|-------|--------|---------|---|---|---------|
| TPH-CWG - Aromatic >EC5 - EC7    | mg/kg | 0.001 | MCERTS | < 0.001 | - | - | < 0.001 |
| TPH-CWG - Aromatic >EC7 - EC8    | mg/kg | 0.001 | MCERTS | < 0.001 | - | - | < 0.001 |
| TPH-CWG - Aromatic >EC8 - EC10   | mg/kg | 0.001 | MCERTS | < 0.001 | - | - | < 0.001 |
| TPH-CWG - Aromatic >EC10 - EC12  | mg/kg | 1     | MCERTS | < 1.0   | - | - | < 1.0   |
| TPH-CWG - Aromatic >EC12 - EC16  | mg/kg | 2     | MCERTS | < 2.0   | - | - | < 2.0   |
| TPH-CWG - Aromatic >EC16 - EC21  | mg/kg | 10    | MCERTS | < 10    | - | - | < 10    |
| TPH-CWG - Aromatic >EC21 - EC35  | mg/kg | 10    | MCERTS | < 10    | - | - | < 10    |
| TPH-CWG - Aromatic > EC35 - EC44 | mg/kg | 8.4   | NONE   | < 8.4   | - | - | < 8.4   |

Analytical Report Number: 20-38546

Project / Site name: Land at Fathoms Reach, Hayling Island

Your Order No: PO02939

| Lab Sample Number                       |       |                    |                         | 1668359       | 1668360       | 1668361       | 1668362       |
|-----------------------------------------|-------|--------------------|-------------------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                    |                         | SA02          | WS04          | WS05          | TP03          |
| Sample Number                           |       |                    |                         | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                    |                         | 0.10          | 0.10          | 0.10          | 0.10          |
| Date Sampled                            |       |                    |                         | 27/10/2020    | 28/10/2020    | 28/10/2020    | 27/10/2020    |
| Time Taken                              |       |                    |                         | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation<br>Status |               |               |               |               |
| <b>SVOCs</b>                            |       |                    |                         |               |               |               |               |
| Aniline                                 | mg/kg | 0.1                | NONE                    | < 0.1         | -             | -             | -             |
| Phenol                                  | mg/kg | 0.2                | ISO 17025               | < 0.2         | -             | -             | -             |
| 2-Chlorophenol                          | mg/kg | 0.1                | MCERTS                  | < 0.1         | -             | -             | -             |
| Bis(2-chloroethyl)ether                 | mg/kg | 0.2                | MCERTS                  | < 0.2         | -             | -             | -             |
| 1,3-Dichlorobenzene                     | mg/kg | 0.2                | MCERTS                  | < 0.2         | -             | -             | -             |
| 1,2-Dichlorobenzene                     | mg/kg | 0.1                | MCERTS                  | < 0.1         | -             | -             | -             |
| 1,4-Dichlorobenzene                     | mg/kg | 0.2                | MCERTS                  | < 0.2         | -             | -             | -             |
| Bis(2-chloroisopropyl)ether             | mg/kg | 0.1                | MCERTS                  | < 0.1         | -             | -             | -             |
| 2-Methylphenol                          | mg/kg | 0.3                | MCERTS                  | < 0.3         | -             | -             | -             |
| Hexachloroethane                        | mg/kg | 0.05               | MCERTS                  | < 0.05        | -             | -             | -             |
| Nitrobenzene                            | mg/kg | 0.3                | MCERTS                  | < 0.3         | -             | -             | -             |
| 4-Methylphenol                          | mg/kg | 0.2                | NONE                    | < 0.2         | -             | -             | -             |
| Isophorone                              | mg/kg | 0.2                | MCERTS                  | < 0.2         | -             | -             | -             |
| 2-Nitrophenol                           | mg/kg | 0.3                | MCERTS                  | < 0.3         | -             | -             | -             |
| 2,4-Dimethylphenol                      | mg/kg | 0.3                | MCERTS                  | < 0.3         | -             | -             | -             |
| Bis(2-chloroethoxy)methane              | mg/kg | 0.3                | MCERTS                  | < 0.3         | -             | -             | -             |
| 1,2,4-Trichlorobenzene                  | mg/kg | 0.3                | MCERTS                  | < 0.3         | -             | -             | -             |
| Naphthalene                             | mg/kg | 0.05               | MCERTS                  | < 0.05        | -             | -             | -             |
| 2,4-Dichlorophenol                      | mg/kg | 0.3                | MCERTS                  | < 0.3         | -             | -             | -             |
| 4-Chloroaniline                         | mg/kg | 0.1                | NONE                    | < 0.1         | -             | -             | -             |
| Hexachlorobutadiene                     | mg/kg | 0.1                | MCERTS                  | < 0.1         | -             | -             | -             |
| 4-Chloro-3-methylphenol                 | mg/kg | 0.1                | NONE                    | < 0.1         | -             | -             | -             |
| 2,4,6-Trichlorophenol                   | mg/kg | 0.1                | MCERTS                  | < 0.1         | -             | -             | -             |
| 2,4,5-Trichlorophenol                   | mg/kg | 0.2                | MCERTS                  | < 0.2         | -             | -             | -             |
| 2-Methylnaphthalene                     | mg/kg | 0.1                | NONE                    | < 0.1         | -             | -             | -             |
| 2-Chloronaphthalene                     | mg/kg | 0.1                | MCERTS                  | < 0.1         | -             | -             | -             |
| Dimethylphthalate                       | mg/kg | 0.1                | MCERTS                  | < 0.1         | -             | -             | -             |
| 2,6-Dinitrotoluene                      | mg/kg | 0.1                | MCERTS                  | < 0.1         | -             | -             | -             |
| Acenaphthylene                          | mg/kg | 0.05               | MCERTS                  | < 0.05        | -             | -             | -             |
| Acenaphthene                            | mg/kg | 0.05               | MCERTS                  | < 0.05        | -             | -             | -             |
| 2,4-Dinitrotoluene                      | mg/kg | 0.2                | MCERTS                  | < 0.2         | -             | -             | -             |
| Dibenzofuran                            | mg/kg | 0.2                | MCERTS                  | < 0.2         | -             | -             | -             |
| 4-Chlorophenyl phenyl ether             | mg/kg | 0.3                | ISO 17025               | < 0.3         | -             | -             | -             |
| Diethyl phthalate                       | mg/kg | 0.2                | MCERTS                  | < 0.2         | -             | -             | -             |
| 4-Nitroaniline                          | mg/kg | 0.2                | MCERTS                  | < 0.2         | -             | -             | -             |
| Fluorene                                | mg/kg | 0.05               | MCERTS                  | < 0.05        | -             | -             | -             |
| Azobenzene                              | mg/kg | 0.3                | MCERTS                  | < 0.3         | -             | -             | -             |
| Bromophenyl phenyl ether                | mg/kg | 0.2                | MCERTS                  | < 0.2         | -             | -             | -             |
| Hexachlorobenzene                       | mg/kg | 0.3                | MCERTS                  | < 0.3         | -             | -             | -             |
| Phenanthrene                            | mg/kg | 0.05               | MCERTS                  | < 0.05        | -             | -             | -             |
| Anthracene                              | mg/kg | 0.05               | MCERTS                  | < 0.05        | -             | -             | -             |
| Carbazole                               | mg/kg | 0.3                | MCERTS                  | < 0.3         | -             | -             | -             |
| Dibutyl phthalate                       | mg/kg | 0.2                | MCERTS                  | < 0.2         | -             | -             | -             |
| Anthraquinone                           | mg/kg | 0.3                | MCERTS                  | < 0.3         | -             | -             | -             |
| Fluoranthene                            | mg/kg | 0.05               | MCERTS                  | < 0.05        | -             | -             | -             |
| Pyrene                                  | mg/kg | 0.05               | MCERTS                  | < 0.05        | -             | -             | -             |
| Butyl benzyl phthalate                  | mg/kg | 0.3                | ISO 17025               | < 0.3         | -             | -             | -             |
| Benzo(a)anthracene                      | mg/kg | 0.05               | MCERTS                  | < 0.05        | -             | -             | -             |
| Chrysene                                | mg/kg | 0.05               | MCERTS                  | < 0.05        | -             | -             | -             |
| Benzo(b)fluoranthene                    | mg/kg | 0.05               | MCERTS                  | < 0.05        | -             | -             | -             |

Analytical Report Number: 20-38546

Project / Site name: Land at Fathoms Reach, Hayling Island

Your Order No: PO02939

| Lab Sample Number                       |       |                    |                         | 1668359       | 1668360       | 1668361       | 1668362       |
|-----------------------------------------|-------|--------------------|-------------------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                    |                         | SA02          | WS04          | WS05          | TP03          |
| Sample Number                           |       |                    |                         | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                    |                         | 0.10          | 0.10          | 0.10          | 0.10          |
| Date Sampled                            |       |                    |                         | 27/10/2020    | 28/10/2020    | 28/10/2020    | 27/10/2020    |
| Time Taken                              |       |                    |                         | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation<br>Status |               |               |               |               |
| Benzo(k)fluoranthene                    | mg/kg | 0.05               | MCERTS                  | < 0.05        | -             | -             | -             |
| Benzo(a)pyrene                          | mg/kg | 0.05               | MCERTS                  | < 0.05        | -             | -             | -             |
| Indeno(1,2,3-cd)pyrene                  | mg/kg | 0.05               | MCERTS                  | < 0.05        | -             | -             | -             |
| Dibenz(a,h)anthracene                   | mg/kg | 0.05               | MCERTS                  | < 0.05        | -             | -             | -             |
| Benzo(ghi)perylene                      | mg/kg | 0.05               | MCERTS                  | < 0.05        | -             | -             | -             |

#### SVOCs TICs

|                          |   |     |      |    |   |   |   |
|--------------------------|---|-----|------|----|---|---|---|
| SVOCs TICs Compound Name |   | N/A | NONE | ND | - | - | - |
| SVOC % Match             | % | N/A | NONE | 0  | - | - | - |
| SVOCs TICs Compound Name |   | N/A | NONE |    | - | - | - |
| SVOC % Match             | % | N/A | NONE |    | - | - | - |
| SVOCs TICs Compound Name |   | N/A | NONE |    | - | - | - |
| SVOC % Match             | % | N/A | NONE |    | - | - | - |
| SVOCs TICs Compound Name |   | N/A | NONE |    | - | - | - |
| SVOC % Match             | % | N/A | NONE |    | - | - | - |
| SVOCs TICs Compound Name |   | N/A | NONE |    | - | - | - |
| SVOC % Match             | % | N/A | NONE |    | - | - | - |
| SVOCs TICs Compound Name |   | N/A | NONE |    | - | - | - |
| SVOC % Match             | % | N/A | NONE |    | - | - | - |
| SVOCs TICs Compound Name |   | N/A | NONE |    | - | - | - |
| SVOC % Match             | % | N/A | NONE |    | - | - | - |
| SVOCs TICs Compound Name |   | N/A | NONE |    | - | - | - |
| SVOC % Match             | % | N/A | NONE |    | - | - | - |
| SVOCs TICs Compound Name |   | N/A | NONE |    | - | - | - |
| SVOC % Match             | % | N/A | NONE |    | - | - | - |

U/S = Unsuitable Sample I/S = Insufficient Sample



**Analytical Report Number:** 20-38546  
**Project / Site name:** Land at Fathoms Reach, Hayling Island  
**Your Order No:** PO02939

## Certificate of Analysis - Asbestos Quantification

### Methods:

#### Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

#### Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

| Sample Number | Sample ID | Sample Depth (m) | Sample Weight (g) | Asbestos Containing Material Types Detected (ACM) | PLM Results | Asbestos by hand picking/weighing (%) | Total % Asbestos in Sample |
|---------------|-----------|------------------|-------------------|---------------------------------------------------|-------------|---------------------------------------|----------------------------|
| 1668355       | WS01B     | 0.50             | 80                | Loose Fibres                                      | Amosite     | < 0.001                               | < 0.001                    |

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

**Analytical Report Number : 20-38546**

**Project / Site name: Land at Fathoms Reach, Hayling Island**

\* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

| Lab Sample Number | Sample Reference | Sample Number | Depth (m) | Sample Description *                            |
|-------------------|------------------|---------------|-----------|-------------------------------------------------|
| 1668354           | WS01B            | None Supplied | 0.1       | Brown loam and clay with gravel and vegetation. |
| 1668355           | WS01B            | None Supplied | 0.5       | Brown loam and sand with gravel and vegetation. |
| 1668356           | SA01             | None Supplied | 0.1       | Brown loam and clay with gravel and vegetation. |
| 1668357           | WS03             | None Supplied | 0.1       | Brown loam and clay with gravel and vegetation. |
| 1668358           | TP01             | None Supplied | 0.1       | Brown loam and clay with gravel and vegetation. |
| 1668359           | SA02             | None Supplied | 0.1       | Brown loam and clay with gravel and vegetation. |
| 1668360           | WS04             | None Supplied | 0.1       | Brown loam and clay with gravel and vegetation. |
| 1668361           | WS05             | None Supplied | 0.1       | Brown loam and clay with gravel and vegetation. |
| 1668362           | TP03             | None Supplied | 0.1       | Brown loam and clay with gravel and vegetation. |

**Analytical Report Number : 20-38546**

**Project / Site name: Land at Fathoms Reach, Hayling Island**

**Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)**

| Analytical Test Name                               | Analytical Method Description                                                                                                                                             | Analytical Method Reference                                                                                     | Method number | Wet / Dry Analysis | Accreditation Status |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------|--------------------|----------------------|
| Sulphate, water soluble, in soil (16hr extraction) | Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).                 | In house method.                                                                                                | L038-PL       | D                  | MCERTS               |
| Metals in soil by ICP-OES                          | Determination of metals in soil by aqua-regia digestion followed by ICP-OES.                                                                                              | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.                            | L038-PL       | D                  | MCERTS               |
| Asbestos identification in soil                    | Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.                                                     | In house method based on HSG 248                                                                                | A001-PL       | D                  | ISO 17025            |
| Boron, water soluble, in soil                      | Determination of water soluble boron in soil by hot water extract followed by ICP-OES.                                                                                    | In-house method based on Second Site Properties version 3                                                       | L038-PL       | D                  | MCERTS               |
| Hexavalent chromium in soil (Lower Level)          | Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.                     | In-house method                                                                                                 | L080-PL       | W                  | MCERTS               |
| Free cyanide in soil                               | Determination of free cyanide by distillation followed by colorimetry.                                                                                                    | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar) | L080-PL       | W                  | MCERTS               |
| Fraction of Organic Carbon in soil                 | Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.                                 | In house method.                                                                                                | L009-PL       | D                  | MCERTS               |
| Moisture Content                                   | Moisture content, determined gravimetrically. (30 oC)                                                                                                                     | In house method.                                                                                                | L019-UK/PL    | W                  | NONE                 |
| Monohydric phenols in soil                         | Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.                                                    | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar) | L080-PL       | W                  | MCERTS               |
| Speciated EPA-16 PAHs in soil                      | Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.                    | In-house method based on USEPA 8270                                                                             | L064-PL       | D                  | MCERTS               |
| pH in soil (automated)                             | Determination of pH in soil by addition of water followed by automated electrometric measurement.                                                                         | In house method.                                                                                                | L099-PL       | D                  | MCERTS               |
| Stones content of soil                             | Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.                                               | In-house method based on British Standard Methods and MCERTS requirements.                                      | L019-UK/PL    | D                  | NONE                 |
| Semi-volatile organic compounds in soil            | Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.                                                   | In-house method based on USEPA 8270                                                                             | L064-PL       | D                  | MCERTS               |
| Tentatively identified compounds (SVOC) in soil    | Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan. | In-house method based on USEPA 8270                                                                             | L064-PL       | D                  | NONE                 |
| BTEX and MTBE in soil (Monoaromatics)              | Determination of BTEX in soil by headspace GC-MS.                                                                                                                         | In-house method based on USEPA8260                                                                              | L073B-PL      | W                  | MCERTS               |
| TPH Chromatogram in Soil                           | TPH Chromatogram in Soil.                                                                                                                                                 | In-house method                                                                                                 | L064-PL       | D                  | NONE                 |
| Cr (III) in soil                                   | In-house method by calculation from total Cr and Cr VI.                                                                                                                   | In-house method by calculation                                                                                  | L080-PL       | W                  | NONE                 |

**Analytical Report Number : 20-38546**

**Project / Site name: Land at Fathoms Reach, Hayling Island**

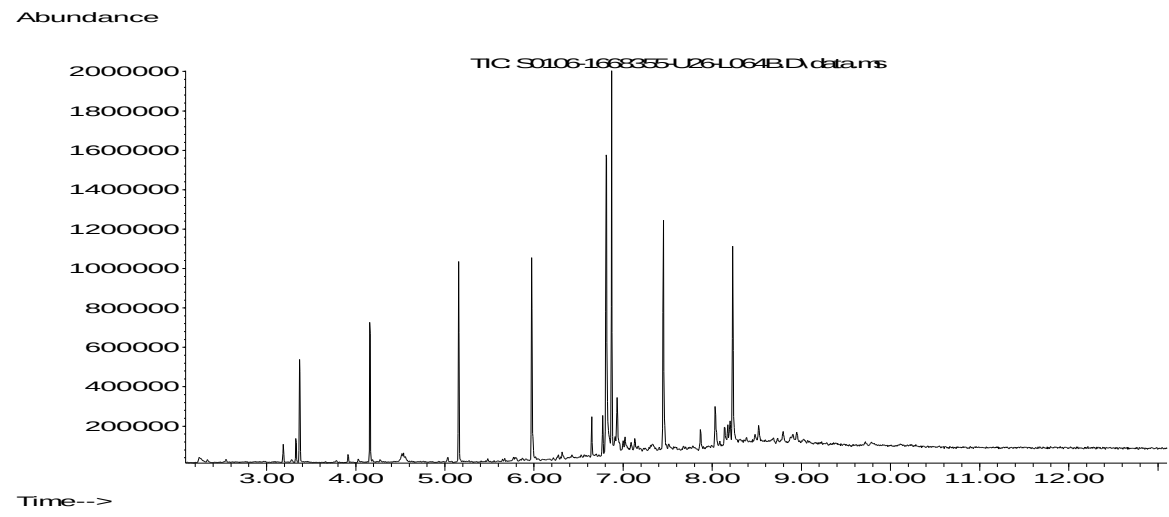
**Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)**

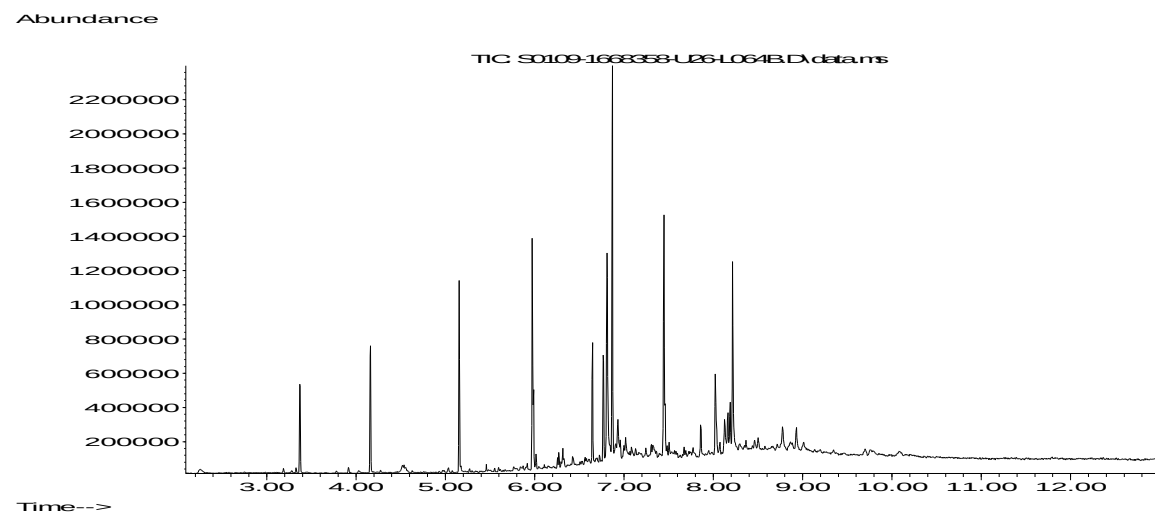
| Analytical Test Name                  | Analytical Method Description                                                        | Analytical Method Reference                                            | Method number | Wet / Dry Analysis | Accreditation Status |
|---------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------|--------------------|----------------------|
| TPHCWG (Soil)                         | Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.            | In-house method with silica gel split/clean up.                        | L088/76-PL    | W                  | MCERTS               |
| TPH in (Soil)                         | Determination of TPH bands by HS-GC-MS/GC-FID                                        | In-house method, TPH with carbon banding and silica gel split/cleanup. | L076-PL       | D                  | NONE                 |
| Asbestos Quantification - Gravimetric | Asbestos quantification by gravimetric method - in house method based on references. | HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).      | A006-PL       | D                  | ISO 17025            |

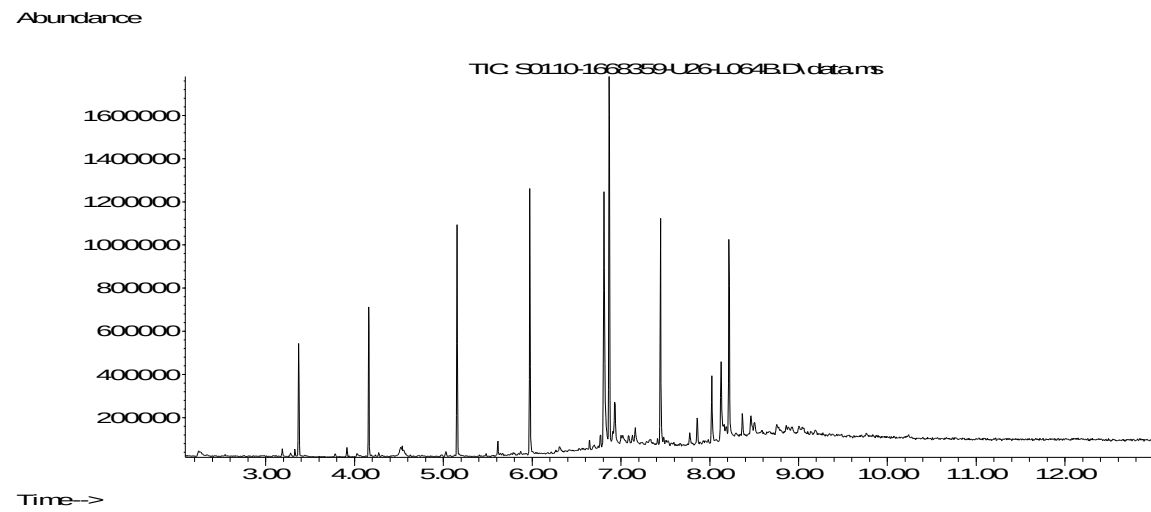
**For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.**

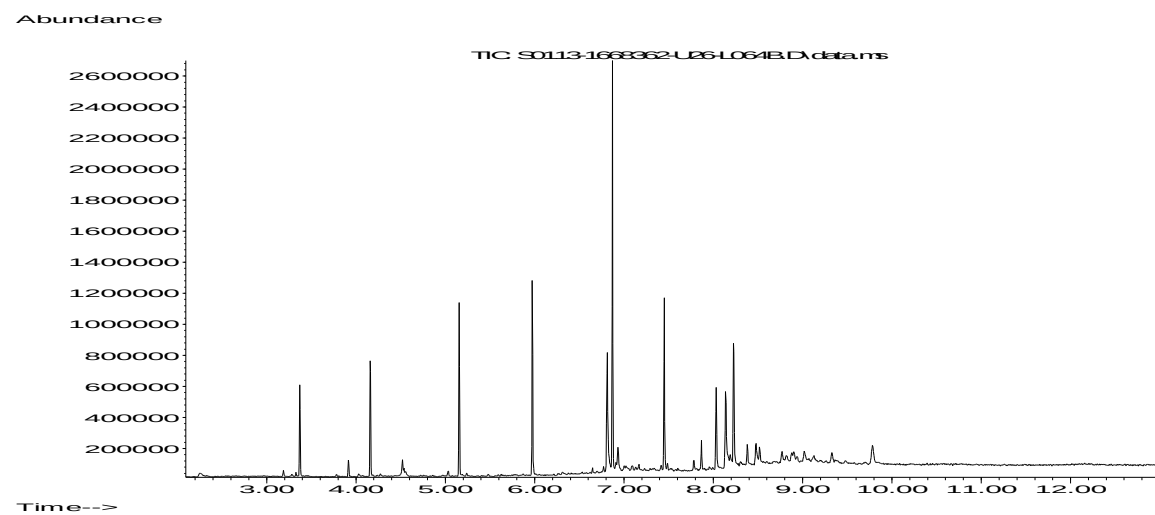
**For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.**

**Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.**









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## **Analytical Report Number : 20-38546**

|                             |                                       |                                                        |            |
|-----------------------------|---------------------------------------|--------------------------------------------------------|------------|
| <b>Project / Site name:</b> | Land at Fathoms Reach, Hayling Island | <b>Samples received on:</b>                            | 28/10/2020 |
| <b>Your job number:</b>     | 16117                                 | <b>Samples instructed on/<br/>Analysis started on:</b> | 29/10/2020 |
| <b>Your order number:</b>   | PO02939                               | <b>Analysis completed by:</b>                          | 05/11/2020 |
| <b>Report Issue Number:</b> | 1                                     | <b>Report issued on:</b>                               | 05/11/2020 |
| <b>Samples Analysed:</b>    | 9 soil samples                        |                                                        |            |

**Signed:**

Will Fardon  
Technical Reviewer (CS Team)  
**For & on behalf of i2 Analytical Ltd.**

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting  
leachates - 2 weeks from reporting  
waters - 2 weeks from reporting  
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.  
Application of uncertainty of measurement would provide a range within which the true result lies.  
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 20-38546  
Project / Site name: Land at Fathoms Reach, Hayling Island  
Your Order No: PO02939

|                                      |               |                    |                      |               |
|--------------------------------------|---------------|--------------------|----------------------|---------------|
| Lab Sample Number                    | 1668354       | 1668355            | 1668356              | 1668357       |
| Sample Reference                     | WS01B         | WS01B              | SA01                 | WS03          |
| Sample Number                        | None Supplied | None Supplied      | None Supplied        | None Supplied |
| Depth (m)                            | 0.10          | 0.50               | 0.10                 | 0.10          |
| Date Sampled                         | 28/10/2020    | 28/10/2020         | 27/10/2020           | 28/10/2020    |
| Time Taken                           | None Supplied | None Supplied      | None Supplied        | None Supplied |
| Analytical Parameter (Soil Analysis) | Units         | Limit of detection | Accreditation Status |               |
| Stone Content                        | %             | 0.1                | NONE                 | < 0.1         |
| Moisture Content                     | %             | 0.01               | NONE                 | 17            |
| Total mass of sample received        | kg            | 0.001              | NONE                 | 0.5           |

|                                               |      |     |           |              |                       |              |              |
|-----------------------------------------------|------|-----|-----------|--------------|-----------------------|--------------|--------------|
| Asbestos in Soil Screen / Identification Name | Type | N/A | ISO 17025 | -            | Amosite- Loose Fibres | -            | -            |
| Asbestos in Soil                              | Type | N/A | ISO 17025 | Not-detected | Detected              | Not-detected | Not-detected |

#### General Inorganics

|                                                             |          |         |        |       |       |       |       |
|-------------------------------------------------------------|----------|---------|--------|-------|-------|-------|-------|
| pH - Automated                                              | pH Units | N/A     | MCERTS | 8.4   | 10.1  | 7     | 6.8   |
| Free Cyanide                                                | mg/kg    | 1       | MCERTS | < 1   | < 1   | < 1   | < 1   |
| Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent) | g/l      | 0.00125 | MCERTS | 0.026 | 0.15  | 0.02  | 0.021 |
| Fraction Organic Carbon (FOC)                               | N/A      | 0.001   | MCERTS | 0.027 | 0.011 | 0.015 | 0.026 |

#### Total Phenols

|                            |       |   |        |       |       |       |       |
|----------------------------|-------|---|--------|-------|-------|-------|-------|
| Total Phenols (monohydric) | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
|----------------------------|-------|---|--------|-------|-------|-------|-------|

#### Speciated PAHs

|                        |       |      |        |        |        |        |        |
|------------------------|-------|------|--------|--------|--------|--------|--------|
| Naphthalene            | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Acenaphthylene         | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Acenaphthene           | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Fluorene               | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Phenanthrene           | mg/kg | 0.05 | MCERTS | 0.89   | 0.33   | 0.22   | < 0.05 |
| Anthracene             | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Fluoranthene           | mg/kg | 0.05 | MCERTS | 1.6    | 0.87   | 0.47   | < 0.05 |
| Pyrene                 | mg/kg | 0.05 | MCERTS | 1.3    | 0.71   | 0.49   | < 0.05 |
| Benzo(a)anthracene     | mg/kg | 0.05 | MCERTS | 0.89   | 0.65   | 0.36   | < 0.05 |
| Chrysene               | mg/kg | 0.05 | MCERTS | 0.63   | 0.46   | 0.32   | < 0.05 |
| Benzo(b)fluoranthene   | mg/kg | 0.05 | MCERTS | 1      | 0.85   | 0.84   | < 0.05 |
| Benzo(k)fluoranthene   | mg/kg | 0.05 | MCERTS | 0.32   | 0.23   | 0.27   | < 0.05 |
| Benzo(a)pyrene         | mg/kg | 0.05 | MCERTS | 0.87   | 0.55   | 0.61   | < 0.05 |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.05 | MCERTS | 0.46   | 0.3    | 0.45   | < 0.05 |
| Dibenz(a,h)anthracene  | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(ghi)perylene     | mg/kg | 0.05 | MCERTS | 0.53   | 0.38   | 0.54   | < 0.05 |

#### Total PAH

|                             |       |     |        |      |      |      |        |
|-----------------------------|-------|-----|--------|------|------|------|--------|
| Speciated Total EPA-16 PAHs | mg/kg | 0.8 | MCERTS | 8.53 | 5.33 | 4.57 | < 0.80 |
|-----------------------------|-------|-----|--------|------|------|------|--------|

#### Heavy Metals / Metalloids

|                                    |       |      |        |       |       |       |       |
|------------------------------------|-------|------|--------|-------|-------|-------|-------|
| Arsenic (aqua regia extractable)   | mg/kg | 1    | MCERTS | 14    | 7.6   | 9.6   | 7.2   |
| Beryllium (aqua regia extractable) | mg/kg | 0.06 | MCERTS | 0.66  | 0.53  | 0.61  | 0.54  |
| Boron (water soluble)              | mg/kg | 0.2  | MCERTS | 2.1   | 0.7   | 1     | 0.8   |
| Cadmium (aqua regia extractable)   | mg/kg | 0.2  | MCERTS | < 0.2 | 0.4   | < 0.2 | < 0.2 |
| Chromium (hexavalent)              | mg/kg | 1.2  | MCERTS | < 1.2 | < 1.2 | < 1.2 | < 1.2 |
| Chromium (III)                     | mg/kg | 1    | NONE   | 25    | 18    | 22    | 19    |
| Chromium (aqua regia extractable)  | mg/kg | 1    | MCERTS | 25    | 19    | 22    | 20    |
| Copper (aqua regia extractable)    | mg/kg | 1    | MCERTS | 25    | 17    | 14    | 15    |
| Lead (aqua regia extractable)      | mg/kg | 1    | MCERTS | 51    | 39    | 37    | 28    |
| Mercury (aqua regia extractable)   | mg/kg | 0.3  | MCERTS | < 0.3 | < 0.3 | < 0.3 | < 0.3 |
| Nickel (aqua regia extractable)    | mg/kg | 1    | MCERTS | 16    | 12    | 14    | 12    |
| Selenium (aqua regia extractable)  | mg/kg | 1    | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 |

Analytical Report Number: 20-38546

Project / Site name: Land at Fathoms Reach, Hayling Island

Your Order No: PO02939

| Lab Sample Number                       |       |                    |                      | 1668354       | 1668355       | 1668356       | 1668357       |
|-----------------------------------------|-------|--------------------|----------------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                    |                      | WS01B         | WS01B         | SA01          | WS03          |
| Sample Number                           |       |                    |                      | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                    |                      | 0.10          | 0.50          | 0.10          | 0.10          |
| Date Sampled                            |       |                    |                      | 28/10/2020    | 28/10/2020    | 27/10/2020    | 28/10/2020    |
| Time Taken                              |       |                    |                      | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation Status |               |               |               |               |
| Vanadium (aqua regia extractable)       | mg/kg | 1                  | MCERTS               | 35            | 29            | 34            | 28            |
| Zinc (aqua regia extractable)           | mg/kg | 1                  | MCERTS               | 82            | 110           | 73            | 55            |

#### Monoaromatics & Oxygenates

|                                    |       |   |        |   |       |   |   |
|------------------------------------|-------|---|--------|---|-------|---|---|
| Benzene                            | µg/kg | 1 | MCERTS | - | < 1.0 | - | - |
| Toluene                            | µg/kg | 1 | MCERTS | - | < 1.0 | - | - |
| Ethylbenzene                       | µg/kg | 1 | MCERTS | - | < 1.0 | - | - |
| p & m-xylene                       | µg/kg | 1 | MCERTS | - | < 1.0 | - | - |
| o-xylene                           | µg/kg | 1 | MCERTS | - | < 1.0 | - | - |
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 1 | MCERTS | - | < 1.0 | - | - |

#### Petroleum Hydrocarbons

|                                   |       |       |        |   |         |   |   |
|-----------------------------------|-------|-------|--------|---|---------|---|---|
| TPH-CWG - Aliphatic >EC5 - EC6    | mg/kg | 0.001 | MCERTS | - | < 0.001 | - | - |
| TPH-CWG - Aliphatic >EC6 - EC8    | mg/kg | 0.001 | MCERTS | - | < 0.001 | - | - |
| TPH-CWG - Aliphatic >EC8 - EC10   | mg/kg | 0.001 | MCERTS | - | < 0.001 | - | - |
| TPH-CWG - Aliphatic >EC10 - EC12  | mg/kg | 1     | MCERTS | - | < 1.0   | - | - |
| TPH-CWG - Aliphatic >EC12 - EC16  | mg/kg | 2     | MCERTS | - | < 2.0   | - | - |
| TPH-CWG - Aliphatic >EC16 - EC21  | mg/kg | 8     | MCERTS | - | < 8.0   | - | - |
| TPH-CWG - Aliphatic >EC21 - EC35  | mg/kg | 8     | MCERTS | - | < 8.0   | - | - |
| TPH-CWG - Aliphatic > EC35 - EC44 | mg/kg | 8.4   | NONE   | - | < 8.4   | - | - |

|                                  |       |       |        |   |         |   |   |
|----------------------------------|-------|-------|--------|---|---------|---|---|
| TPH-CWG - Aromatic >EC5 - EC7    | mg/kg | 0.001 | MCERTS | - | < 0.001 | - | - |
| TPH-CWG - Aromatic >EC7 - EC8    | mg/kg | 0.001 | MCERTS | - | < 0.001 | - | - |
| TPH-CWG - Aromatic >EC8 - EC10   | mg/kg | 0.001 | MCERTS | - | < 0.001 | - | - |
| TPH-CWG - Aromatic >EC10 - EC12  | mg/kg | 1     | MCERTS | - | < 1.0   | - | - |
| TPH-CWG - Aromatic >EC12 - EC16  | mg/kg | 2     | MCERTS | - | < 2.0   | - | - |
| TPH-CWG - Aromatic >EC16 - EC21  | mg/kg | 10    | MCERTS | - | < 10    | - | - |
| TPH-CWG - Aromatic >EC21 - EC35  | mg/kg | 10    | MCERTS | - | 32      | - | - |
| TPH-CWG - Aromatic > EC35 - EC44 | mg/kg | 8.4   | NONE   | - | 43      | - | - |

#### SVOCs

|                             |       |      |           |   |   |   |   |
|-----------------------------|-------|------|-----------|---|---|---|---|
| Aniline                     | mg/kg | 0.1  | NONE      | - | - | - | - |
| Phenol                      | mg/kg | 0.2  | ISO 17025 | - | - | - | - |
| 2-Chlorophenol              | mg/kg | 0.1  | MCERTS    | - | - | - | - |
| Bis(2-chloroethyl)ether     | mg/kg | 0.2  | MCERTS    | - | - | - | - |
| 1,3-Dichlorobenzene         | mg/kg | 0.2  | MCERTS    | - | - | - | - |
| 1,2-Dichlorobenzene         | mg/kg | 0.1  | MCERTS    | - | - | - | - |
| 1,4-Dichlorobenzene         | mg/kg | 0.2  | MCERTS    | - | - | - | - |
| Bis(2-chloroisopropyl)ether | mg/kg | 0.1  | MCERTS    | - | - | - | - |
| 2-Methylphenol              | mg/kg | 0.3  | MCERTS    | - | - | - | - |
| Hexachloroethane            | mg/kg | 0.05 | MCERTS    | - | - | - | - |
| Nitrobenzene                | mg/kg | 0.3  | MCERTS    | - | - | - | - |
| 4-Methylphenol              | mg/kg | 0.2  | NONE      | - | - | - | - |
| Isophorone                  | mg/kg | 0.2  | MCERTS    | - | - | - | - |
| 2-Nitrophenol               | mg/kg | 0.3  | MCERTS    | - | - | - | - |
| 2,4-Dimethylphenol          | mg/kg | 0.3  | MCERTS    | - | - | - | - |
| Bis(2-chloroethoxy)methane  | mg/kg | 0.3  | MCERTS    | - | - | - | - |
| 1,2,4-Trichlorobenzene      | mg/kg | 0.3  | MCERTS    | - | - | - | - |
| Naphthalene                 | mg/kg | 0.05 | MCERTS    | - | - | - | - |
| 2,4-Dichlorophenol          | mg/kg | 0.3  | MCERTS    | - | - | - | - |

Analytical Report Number: 20-38546  
Project / Site name: Land at Fathoms Reach, Hayling Island  
Your Order No: PO02939

| Lab Sample Number                       |       |                    |                      | 1668354       | 1668355       | 1668356       | 1668357       |
|-----------------------------------------|-------|--------------------|----------------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                    |                      | WS01B         | WS01B         | SA01          | WS03          |
| Sample Number                           |       |                    |                      | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                    |                      | 0.10          | 0.50          | 0.10          | 0.10          |
| Date Sampled                            |       |                    |                      | 28/10/2020    | 28/10/2020    | 27/10/2020    | 28/10/2020    |
| Time Taken                              |       |                    |                      | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation Status |               |               |               |               |
| 4-Chloroaniline                         | mg/kg | 0.1                | NONE                 | -             | -             | -             | -             |
| Hexachlorobutadiene                     | mg/kg | 0.1                | MCERTS               | -             | -             | -             | -             |
| 4-Chloro-3-methylphenol                 | mg/kg | 0.1                | NONE                 | -             | -             | -             | -             |
| 2,4,6-Trichlorophenol                   | mg/kg | 0.1                | MCERTS               | -             | -             | -             | -             |
| 2,4,5-Trichlorophenol                   | mg/kg | 0.2                | MCERTS               | -             | -             | -             | -             |
| 2-Methylnaphthalene                     | mg/kg | 0.1                | NONE                 | -             | -             | -             | -             |
| 2-Chloronaphthalene                     | mg/kg | 0.1                | MCERTS               | -             | -             | -             | -             |
| Dimethylphthalate                       | mg/kg | 0.1                | MCERTS               | -             | -             | -             | -             |
| 2,6-Dinitrotoluene                      | mg/kg | 0.1                | MCERTS               | -             | -             | -             | -             |
| Acenaphthylene                          | mg/kg | 0.05               | MCERTS               | -             | -             | -             | -             |
| Acenaphthene                            | mg/kg | 0.05               | MCERTS               | -             | -             | -             | -             |
| 2,4-Dinitrotoluene                      | mg/kg | 0.2                | MCERTS               | -             | -             | -             | -             |
| Dibenzofuran                            | mg/kg | 0.2                | MCERTS               | -             | -             | -             | -             |
| 4-Chlorophenyl phenyl ether             | mg/kg | 0.3                | ISO 17025            | -             | -             | -             | -             |
| Diethyl phthalate                       | mg/kg | 0.2                | MCERTS               | -             | -             | -             | -             |
| 4-Nitroaniline                          | mg/kg | 0.2                | MCERTS               | -             | -             | -             | -             |
| Fluorene                                | mg/kg | 0.05               | MCERTS               | -             | -             | -             | -             |
| Azobenzene                              | mg/kg | 0.3                | MCERTS               | -             | -             | -             | -             |
| Bromophenyl phenyl ether                | mg/kg | 0.2                | MCERTS               | -             | -             | -             | -             |
| Hexachlorobenzene                       | mg/kg | 0.3                | MCERTS               | -             | -             | -             | -             |
| Phenanthrene                            | mg/kg | 0.05               | MCERTS               | -             | -             | -             | -             |
| Anthracene                              | mg/kg | 0.05               | MCERTS               | -             | -             | -             | -             |
| Carbazole                               | mg/kg | 0.3                | MCERTS               | -             | -             | -             | -             |
| Dibutyl phthalate                       | mg/kg | 0.2                | MCERTS               | -             | -             | -             | -             |
| Anthraquinone                           | mg/kg | 0.3                | MCERTS               | -             | -             | -             | -             |
| Fluoranthene                            | mg/kg | 0.05               | MCERTS               | -             | -             | -             | -             |
| Pyrene                                  | mg/kg | 0.05               | MCERTS               | -             | -             | -             | -             |
| Butyl benzyl phthalate                  | mg/kg | 0.3                | ISO 17025            | -             | -             | -             | -             |
| Benzo(a)anthracene                      | mg/kg | 0.05               | MCERTS               | -             | -             | -             | -             |
| Chrysene                                | mg/kg | 0.05               | MCERTS               | -             | -             | -             | -             |
| Benzo(b)fluoranthene                    | mg/kg | 0.05               | MCERTS               | -             | -             | -             | -             |
| Benzo(k)fluoranthene                    | mg/kg | 0.05               | MCERTS               | -             | -             | -             | -             |
| Benzo(a)pyrene                          | mg/kg | 0.05               | MCERTS               | -             | -             | -             | -             |
| Indeno(1,2,3-cd)pyrene                  | mg/kg | 0.05               | MCERTS               | -             | -             | -             | -             |
| Dibenz(a,h)anthracene                   | mg/kg | 0.05               | MCERTS               | -             | -             | -             | -             |
| Benzo(ghi)perylene                      | mg/kg | 0.05               | MCERTS               | -             | -             | -             | -             |

#### SVOCs TICs

|                          |   |     |      |   |   |   |   |
|--------------------------|---|-----|------|---|---|---|---|
| SVOCs TICs Compound Name |   | N/A | NONE | - | - | - | - |
| SVOC % Match             | % | N/A | NONE | - | - | - | - |
| SVOCs TICs Compound Name |   | N/A | NONE | - | - | - | - |
| SVOC % Match             | % | N/A | NONE | - | - | - | - |
| SVOCs TICs Compound Name |   | N/A | NONE | - | - | - | - |
| SVOC % Match             | % | N/A | NONE | - | - | - | - |
| SVOCs TICs Compound Name |   | N/A | NONE | - | - | - | - |
| SVOC % Match             | % | N/A | NONE | - | - | - | - |
| SVOCs TICs Compound Name |   | N/A | NONE | - | - | - | - |
| SVOC % Match             | % | N/A | NONE | - | - | - | - |

Analytical Report Number: 20-38546

Project / Site name: Land at Fathoms Reach, Hayling Island

Your Order No: PO02939

| Lab Sample Number                       |       |                    |                      | 1668354       | 1668355       | 1668356       | 1668357       |
|-----------------------------------------|-------|--------------------|----------------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                    |                      | WS01B         | WS01B         | SA01          | WS03          |
| Sample Number                           |       |                    |                      | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                    |                      | 0.10          | 0.50          | 0.10          | 0.10          |
| Date Sampled                            |       |                    |                      | 28/10/2020    | 28/10/2020    | 27/10/2020    | 28/10/2020    |
| Time Taken                              |       |                    |                      | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation Status |               |               |               |               |
| SVOCs TICs Compound Name                |       | N/A                | NONE                 | -             | -             | -             | -             |
| SVOC % Match                            | %     | N/A                | NONE                 | -             | -             | -             | -             |
| SVOCs TICs Compound Name                |       | N/A                | NONE                 | -             | -             | -             | -             |
| SVOC % Match                            | %     | N/A                | NONE                 | -             | -             | -             | -             |
| SVOCs TICs Compound Name                |       | N/A                | NONE                 | -             | -             | -             | -             |
| SVOC % Match                            | %     | N/A                | NONE                 | -             | -             | -             | -             |
| SVOCs TICs Compound Name                |       | N/A                | NONE                 | -             | -             | -             | -             |
| SVOC % Match                            | %     | N/A                | NONE                 | -             | -             | -             | -             |
| SVOCs TICs Compound Name                |       | N/A                | NONE                 | -             | -             | -             | -             |
| SVOC % Match                            | %     | N/A                | NONE                 | -             | -             | -             | -             |

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 20-38546  
Project / Site name: Land at Fathoms Reach, Hayling Island  
Your Order No: PO02939

| Lab Sample Number                       |       |                    |                      | 1668358       | 1668359       | 1668360       | 1668361       |
|-----------------------------------------|-------|--------------------|----------------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                    |                      | TP01          | SA02          | WS04          | WS05          |
| Sample Number                           |       |                    |                      | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                    |                      | 0.10          | 0.10          | 0.10          | 0.10          |
| Date Sampled                            |       |                    |                      | 27/10/2020    | 27/10/2020    | 28/10/2020    | 28/10/2020    |
| Time Taken                              |       |                    |                      | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation Status |               |               |               |               |
| Stone Content                           | %     | 0.1                | NONE                 | < 0.1         | < 0.1         | < 0.1         | < 0.1         |
| Moisture Content                        | %     | 0.01               | NONE                 | 17            | 24            | 28            | 22            |
| Total mass of sample received           | kg    | 0.001              | NONE                 | 1.2           | 1.2           | 0.5           | 0.5           |

|                                               |      |     |           |              |              |              |              |
|-----------------------------------------------|------|-----|-----------|--------------|--------------|--------------|--------------|
| Asbestos in Soil Screen / Identification Name | Type | N/A | ISO 17025 | -            | -            | -            | -            |
| Asbestos in Soil                              | Type | N/A | ISO 17025 | Not-detected | Not-detected | Not-detected | Not-detected |

#### General Inorganics

|                                                                         |          |         |        |       |       |       |       |
|-------------------------------------------------------------------------|----------|---------|--------|-------|-------|-------|-------|
| pH - Automated                                                          | pH Units | N/A     | MCERTS | 7.1   | 6.4   | 6.1   | 7     |
| Free Cyanide                                                            | mg/kg    | 1       | MCERTS | < 1   | < 1   | < 1   | < 1   |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | g/l      | 0.00125 | MCERTS | 0.039 | 0.022 | 0.078 | 0.038 |
| Fraction Organic Carbon (FOC)                                           | N/A      | 0.001   | MCERTS | 0.022 | 0.025 | 0.033 | 0.026 |

#### Total Phenols

|                            |       |   |        |       |       |       |       |
|----------------------------|-------|---|--------|-------|-------|-------|-------|
| Total Phenols (monohydric) | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
|----------------------------|-------|---|--------|-------|-------|-------|-------|

#### Speciated PAHs

|                        |       |      |        |        |        |        |        |
|------------------------|-------|------|--------|--------|--------|--------|--------|
| Naphthalene            | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Acenaphthylene         | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Acenaphthene           | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Fluorene               | mg/kg | 0.05 | MCERTS | 0.2    | < 0.05 | < 0.05 | < 0.05 |
| Phenanthrene           | mg/kg | 0.05 | MCERTS | 2      | < 0.05 | < 0.05 | < 0.05 |
| Anthracene             | mg/kg | 0.05 | MCERTS | 0.36   | < 0.05 | < 0.05 | < 0.05 |
| Fluoranthene           | mg/kg | 0.05 | MCERTS | 2.9    | < 0.05 | < 0.05 | < 0.05 |
| Pyrene                 | mg/kg | 0.05 | MCERTS | 2.4    | < 0.05 | < 0.05 | < 0.05 |
| Benzo(a)anthracene     | mg/kg | 0.05 | MCERTS | 1.6    | < 0.05 | < 0.05 | < 0.05 |
| Chrysene               | mg/kg | 0.05 | MCERTS | 1.2    | < 0.05 | < 0.05 | < 0.05 |
| Benzo(b)fluoranthene   | mg/kg | 0.05 | MCERTS | 1.6    | < 0.05 | < 0.05 | < 0.05 |
| Benzo(k)fluoranthene   | mg/kg | 0.05 | MCERTS | 0.74   | < 0.05 | < 0.05 | < 0.05 |
| Benzo(a)pyrene         | mg/kg | 0.05 | MCERTS | 1.3    | < 0.05 | < 0.05 | < 0.05 |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.05 | MCERTS | 0.67   | < 0.05 | < 0.05 | < 0.05 |
| Dibenz(a,h)anthracene  | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(ghi)perylene     | mg/kg | 0.05 | MCERTS | 0.8    | < 0.05 | < 0.05 | < 0.05 |

#### Total PAH

|                             |       |     |        |      |        |        |        |
|-----------------------------|-------|-----|--------|------|--------|--------|--------|
| Speciated Total EPA-16 PAHs | mg/kg | 0.8 | MCERTS | 15.8 | < 0.80 | < 0.80 | < 0.80 |
|-----------------------------|-------|-----|--------|------|--------|--------|--------|

#### Heavy Metals / Metalloids

|                                    |       |      |        |       |       |       |       |
|------------------------------------|-------|------|--------|-------|-------|-------|-------|
| Arsenic (aqua regia extractable)   | mg/kg | 1    | MCERTS | 8     | 7.7   | 5.4   | 6.4   |
| Beryllium (aqua regia extractable) | mg/kg | 0.06 | MCERTS | 0.56  | 0.58  | 0.52  | 0.6   |
| Boron (water soluble)              | mg/kg | 0.2  | MCERTS | 0.6   | 1.5   | 0.8   | 1     |
| Cadmium (aqua regia extractable)   | mg/kg | 0.2  | MCERTS | 0.4   | < 0.2 | < 0.2 | 0.2   |
| Chromium (hexavalent)              | mg/kg | 1.2  | MCERTS | < 1.2 | < 1.2 | < 1.2 | < 1.2 |
| Chromium (III)                     | mg/kg | 1    | NONE   | 21    | 22    | 20    | 22    |
| Chromium (aqua regia extractable)  | mg/kg | 1    | MCERTS | 21    | 22    | 20    | 22    |
| Copper (aqua regia extractable)    | mg/kg | 1    | MCERTS | 89    | 13    | 13    | 11    |
| Lead (aqua regia extractable)      | mg/kg | 1    | MCERTS | 100   | 79    | 27    | 24    |
| Mercury (aqua regia extractable)   | mg/kg | 0.3  | MCERTS | < 0.3 | < 0.3 | < 0.3 | < 0.3 |
| Nickel (aqua regia extractable)    | mg/kg | 1    | MCERTS | 13    | 13    | 12    | 13    |
| Selenium (aqua regia extractable)  | mg/kg | 1    | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 |

Analytical Report Number: 20-38546  
Project / Site name: Land at Fathoms Reach, Hayling Island  
Your Order No: PO02939

| Lab Sample Number                       |       |                    |                      | 1668358       | 1668359       | 1668360       | 1668361       |
|-----------------------------------------|-------|--------------------|----------------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                    |                      | TP01          | SA02          | WS04          | WS05          |
| Sample Number                           |       |                    |                      | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                    |                      | 0.10          | 0.10          | 0.10          | 0.10          |
| Date Sampled                            |       |                    |                      | 27/10/2020    | 27/10/2020    | 28/10/2020    | 28/10/2020    |
| Time Taken                              |       |                    |                      | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation Status |               |               |               |               |
| Vanadium (aqua regia extractable)       | mg/kg | 1                  | MCERTS               | 29            | 30            | 27            | 31            |
| Zinc (aqua regia extractable)           | mg/kg | 1                  | MCERTS               | 120           | 66            | 55            | 46            |

#### Monoaromatics & Oxygenates

|                                    |       |   |        |       |       |   |   |
|------------------------------------|-------|---|--------|-------|-------|---|---|
| Benzene                            | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | - | - |
| Toluene                            | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | - | - |
| Ethylbenzene                       | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | - | - |
| p & m-xylene                       | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | - | - |
| o-xylene                           | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | - | - |
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | - | - |

#### Petroleum Hydrocarbons

|                                   |       |       |        |         |         |   |   |
|-----------------------------------|-------|-------|--------|---------|---------|---|---|
| TPH-CWG - Aliphatic >EC5 - EC6    | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | - | - |
| TPH-CWG - Aliphatic >EC6 - EC8    | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | - | - |
| TPH-CWG - Aliphatic >EC8 - EC10   | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | - | - |
| TPH-CWG - Aliphatic >EC10 - EC12  | mg/kg | 1     | MCERTS | < 1.0   | < 1.0   | - | - |
| TPH-CWG - Aliphatic >EC12 - EC16  | mg/kg | 2     | MCERTS | < 2.0   | < 2.0   | - | - |
| TPH-CWG - Aliphatic >EC16 - EC21  | mg/kg | 8     | MCERTS | < 8.0   | < 8.0   | - | - |
| TPH-CWG - Aliphatic >EC21 - EC35  | mg/kg | 8     | MCERTS | < 8.0   | < 8.0   | - | - |
| TPH-CWG - Aliphatic > EC35 - EC44 | mg/kg | 8.4   | NONE   | < 8.4   | < 8.4   | - | - |

|                                  |       |       |        |         |         |   |   |
|----------------------------------|-------|-------|--------|---------|---------|---|---|
| TPH-CWG - Aromatic >EC5 - EC7    | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | - | - |
| TPH-CWG - Aromatic >EC7 - EC8    | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | - | - |
| TPH-CWG - Aromatic >EC8 - EC10   | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | - | - |
| TPH-CWG - Aromatic >EC10 - EC12  | mg/kg | 1     | MCERTS | < 1.0   | < 1.0   | - | - |
| TPH-CWG - Aromatic >EC12 - EC16  | mg/kg | 2     | MCERTS | < 2.0   | < 2.0   | - | - |
| TPH-CWG - Aromatic >EC16 - EC21  | mg/kg | 10    | MCERTS | 18      | < 10    | - | - |
| TPH-CWG - Aromatic >EC21 - EC35  | mg/kg | 10    | MCERTS | 56      | < 10    | - | - |
| TPH-CWG - Aromatic > EC35 - EC44 | mg/kg | 8.4   | NONE   | 65      | < 8.4   | - | - |

#### SVOCs

|                             |       |      |           |        |        |   |   |
|-----------------------------|-------|------|-----------|--------|--------|---|---|
| Aniline                     | mg/kg | 0.1  | NONE      | < 0.1  | < 0.1  | - | - |
| Phenol                      | mg/kg | 0.2  | ISO 17025 | < 0.2  | < 0.2  | - | - |
| 2-Chlorophenol              | mg/kg | 0.1  | MCERTS    | < 0.1  | < 0.1  | - | - |
| Bis(2-chloroethyl)ether     | mg/kg | 0.2  | MCERTS    | < 0.2  | < 0.2  | - | - |
| 1,3-Dichlorobenzene         | mg/kg | 0.2  | MCERTS    | < 0.2  | < 0.2  | - | - |
| 1,2-Dichlorobenzene         | mg/kg | 0.1  | MCERTS    | < 0.1  | < 0.1  | - | - |
| 1,4-Dichlorobenzene         | mg/kg | 0.2  | MCERTS    | < 0.2  | < 0.2  | - | - |
| Bis(2-chloroisopropyl)ether | mg/kg | 0.1  | MCERTS    | < 0.1  | < 0.1  | - | - |
| 2-Methylphenol              | mg/kg | 0.3  | MCERTS    | < 0.3  | < 0.3  | - | - |
| Hexachloroethane            | mg/kg | 0.05 | MCERTS    | < 0.05 | < 0.05 | - | - |
| Nitrobenzene                | mg/kg | 0.3  | MCERTS    | < 0.3  | < 0.3  | - | - |
| 4-Methylphenol              | mg/kg | 0.2  | NONE      | < 0.2  | < 0.2  | - | - |
| Isophorone                  | mg/kg | 0.2  | MCERTS    | < 0.2  | < 0.2  | - | - |
| 2-Nitrophenol               | mg/kg | 0.3  | MCERTS    | < 0.3  | < 0.3  | - | - |
| 2,4-Dimethylphenol          | mg/kg | 0.3  | MCERTS    | < 0.3  | < 0.3  | - | - |
| Bis(2-chloroethoxy)methane  | mg/kg | 0.3  | MCERTS    | < 0.3  | < 0.3  | - | - |
| 1,2,4-Trichlorobenzene      | mg/kg | 0.3  | MCERTS    | < 0.3  | < 0.3  | - | - |
| Naphthalene                 | mg/kg | 0.05 | MCERTS    | < 0.05 | < 0.05 | - | - |
| 2,4-Dichlorophenol          | mg/kg | 0.3  | MCERTS    | < 0.3  | < 0.3  | - | - |

Analytical Report Number: 20-38546  
Project / Site name: Land at Fathoms Reach, Hayling Island  
Your Order No: PO02939

| Lab Sample Number                       |       |                    |                      | 1668358       | 1668359       | 1668360       | 1668361       |
|-----------------------------------------|-------|--------------------|----------------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                    |                      | TP01          | SA02          | WS04          | WS05          |
| Sample Number                           |       |                    |                      | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                    |                      | 0.10          | 0.10          | 0.10          | 0.10          |
| Date Sampled                            |       |                    |                      | 27/10/2020    | 27/10/2020    | 28/10/2020    | 28/10/2020    |
| Time Taken                              |       |                    |                      | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation Status |               |               |               |               |
| 4-Chloroaniline                         | mg/kg | 0.1                | NONE                 | < 0.1         | < 0.1         | -             | -             |
| Hexachlorobutadiene                     | mg/kg | 0.1                | MCERTS               | < 0.1         | < 0.1         | -             | -             |
| 4-Chloro-3-methylphenol                 | mg/kg | 0.1                | NONE                 | < 0.1         | < 0.1         | -             | -             |
| 2,4,6-Trichlorophenol                   | mg/kg | 0.1                | MCERTS               | < 0.1         | < 0.1         | -             | -             |
| 2,4,5-Trichlorophenol                   | mg/kg | 0.2                | MCERTS               | < 0.2         | < 0.2         | -             | -             |
| 2-Methylnaphthalene                     | mg/kg | 0.1                | NONE                 | < 0.1         | < 0.1         | -             | -             |
| 2-Chloronaphthalene                     | mg/kg | 0.1                | MCERTS               | < 0.1         | < 0.1         | -             | -             |
| Dimethylphthalate                       | mg/kg | 0.1                | MCERTS               | < 0.1         | < 0.1         | -             | -             |
| 2,6-Dinitrotoluene                      | mg/kg | 0.1                | MCERTS               | < 0.1         | < 0.1         | -             | -             |
| Acenaphthylene                          | mg/kg | 0.05               | MCERTS               | < 0.05        | < 0.05        | -             | -             |
| Acenaphthene                            | mg/kg | 0.05               | MCERTS               | < 0.05        | < 0.05        | -             | -             |
| 2,4-Dinitrotoluene                      | mg/kg | 0.2                | MCERTS               | < 0.2         | < 0.2         | -             | -             |
| Dibenzofuran                            | mg/kg | 0.2                | MCERTS               | < 0.2         | < 0.2         | -             | -             |
| 4-Chlorophenyl phenyl ether             | mg/kg | 0.3                | ISO 17025            | < 0.3         | < 0.3         | -             | -             |
| Diethyl phthalate                       | mg/kg | 0.2                | MCERTS               | < 0.2         | < 0.2         | -             | -             |
| 4-Nitroaniline                          | mg/kg | 0.2                | MCERTS               | < 0.2         | < 0.2         | -             | -             |
| Fluorene                                | mg/kg | 0.05               | MCERTS               | 0.2           | < 0.05        | -             | -             |
| Azobenzene                              | mg/kg | 0.3                | MCERTS               | < 0.3         | < 0.3         | -             | -             |
| Bromophenyl phenyl ether                | mg/kg | 0.2                | MCERTS               | < 0.2         | < 0.2         | -             | -             |
| Hexachlorobenzene                       | mg/kg | 0.3                | MCERTS               | < 0.3         | < 0.3         | -             | -             |
| Phenanthrene                            | mg/kg | 0.05               | MCERTS               | 2             | < 0.05        | -             | -             |
| Anthracene                              | mg/kg | 0.05               | MCERTS               | 0.36          | < 0.05        | -             | -             |
| Carbazole                               | mg/kg | 0.3                | MCERTS               | < 0.3         | < 0.3         | -             | -             |
| Dibutyl phthalate                       | mg/kg | 0.2                | MCERTS               | < 0.2         | < 0.2         | -             | -             |
| Anthraquinone                           | mg/kg | 0.3                | MCERTS               | < 0.3         | < 0.3         | -             | -             |
| Fluoranthene                            | mg/kg | 0.05               | MCERTS               | 2.9           | < 0.05        | -             | -             |
| Pyrene                                  | mg/kg | 0.05               | MCERTS               | 2.4           | < 0.05        | -             | -             |
| Butyl benzyl phthalate                  | mg/kg | 0.3                | ISO 17025            | < 0.3         | < 0.3         | -             | -             |
| Benzo(a)anthracene                      | mg/kg | 0.05               | MCERTS               | 1.6           | < 0.05        | -             | -             |
| Chrysene                                | mg/kg | 0.05               | MCERTS               | 1.2           | < 0.05        | -             | -             |
| Benzo(b)fluoranthene                    | mg/kg | 0.05               | MCERTS               | 1.6           | < 0.05        | -             | -             |
| Benzo(k)fluoranthene                    | mg/kg | 0.05               | MCERTS               | 0.74          | < 0.05        | -             | -             |
| Benzo(a)pyrene                          | mg/kg | 0.05               | MCERTS               | 1.3           | < 0.05        | -             | -             |
| Indeno(1,2,3-cd)pyrene                  | mg/kg | 0.05               | MCERTS               | 0.67          | < 0.05        | -             | -             |
| Dibenz(a,h)anthracene                   | mg/kg | 0.05               | MCERTS               | < 0.05        | < 0.05        | -             | -             |
| Benzo(ghi)perylene                      | mg/kg | 0.05               | MCERTS               | 0.8           | < 0.05        | -             | -             |

#### SVOCs TICs

| SVOCs TICs Compound Name |   | N/A | NONE | Phenol, 4,4'-(1,1'-methylene)bis(4-hydroxy-5-phenyl)- | ND | - | - |
|--------------------------|---|-----|------|-------------------------------------------------------|----|---|---|
| SVOC % Match             | % | N/A | NONE | 96                                                    | -  | - | - |
| SVOCs TICs Compound Name |   | N/A | NONE | Benzo[b]fluorene                                      | -  | - | - |
| SVOC % Match             | % | N/A | NONE | 95                                                    | -  | - | - |
| SVOCs TICs Compound Name |   | N/A | NONE | Perylene                                              | -  | - | - |
| SVOC % Match             | % | N/A | NONE | 95                                                    | -  | - | - |
| SVOCs TICs Compound Name |   | N/A | NONE | Naphthalene, 1,5-dimethyl-                            | -  | - | - |
| SVOC % Match             | % | N/A | NONE | 94                                                    | -  | - | - |
| SVOCs TICs Compound Name |   | N/A | NONE | Dibenzothiophene                                      | -  | - | - |
| SVOC % Match             | % | N/A | NONE | 94                                                    | -  | - | - |

Analytical Report Number: 20-38546  
 Project / Site name: Land at Fathoms Reach, Hayling Island  
 Your Order No: PO02939

| Lab Sample Number                       |       |                    |                      | 1668358                                                                                 | 1668359       | 1668360       | 1668361       |
|-----------------------------------------|-------|--------------------|----------------------|-----------------------------------------------------------------------------------------|---------------|---------------|---------------|
| Sample Reference                        |       |                    |                      | TP01                                                                                    | SA02          | WS04          | WS05          |
| Sample Number                           |       |                    |                      | None Supplied                                                                           | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                    |                      | 0.10                                                                                    | 0.10          | 0.10          | 0.10          |
| Date Sampled                            |       |                    |                      | 27/10/2020                                                                              | 27/10/2020    | 28/10/2020    | 28/10/2020    |
| Time Taken                              |       |                    |                      | None Supplied                                                                           | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation Status |                                                                                         |               |               |               |
| SVOCs TICs Compound Name                |       | N/A                | NONE                 | 1H-Imidazole-4,5-dicarboxylic acid, 2-methyl-1-(2-phenylethenyl)-, 4-methyl ester, (E)- | -             | -             | -             |
| SVOC % Match                            | %     | N/A                | NONE                 | 93                                                                                      | -             | -             | -             |
| SVOCs TICs Compound Name                |       | N/A                | NONE                 | Andra-9,10-quinone, 1-(3-hydroxy-3-phenyl-1-triazenyl)-                                 | -             | -             | -             |
| SVOC % Match                            | %     | N/A                | NONE                 | 93                                                                                      | -             | -             | -             |
| SVOCs TICs Compound Name                |       | N/A                | NONE                 | Naphthalene, 2,6-dimethyl-                                                              | -             | -             | -             |
| SVOC % Match                            | %     | N/A                | NONE                 | 92                                                                                      | -             | -             | -             |
| SVOCs TICs Compound Name                |       | N/A                | NONE                 | Pyrene, 1-methyl-                                                                       | -             | -             | -             |
| SVOC % Match                            | %     | N/A                | NONE                 | 92                                                                                      | -             | -             | -             |
| SVOCs TICs Compound Name                |       | N/A                | NONE                 | Chrysene, 6-methyl-                                                                     | -             | -             | -             |
| SVOC % Match                            | %     | N/A                | NONE                 | 91                                                                                      | -             | -             | -             |

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 20-38546  
Project / Site name: Land at Fathoms Reach, Hayling Island  
Your Order No: PO02939

| Lab Sample Number                       | 1668362       |                    |                      |       |
|-----------------------------------------|---------------|--------------------|----------------------|-------|
| Sample Reference                        | TP03          |                    |                      |       |
| Sample Number                           | None Supplied |                    |                      |       |
| Depth (m)                               | 0.10          |                    |                      |       |
| Date Sampled                            | 27/10/2020    |                    |                      |       |
| Time Taken                              | None Supplied |                    |                      |       |
| Analytical Parameter<br>(Soil Analysis) | Units         | Limit of detection | Accreditation Status |       |
| Stone Content                           | %             | 0.1                | NONE                 | < 0.1 |
| Moisture Content                        | %             | 0.01               | NONE                 | 21    |
| Total mass of sample received           | kg            | 0.001              | NONE                 | 1.2   |

|                                               |      |     |           |   |
|-----------------------------------------------|------|-----|-----------|---|
| Asbestos in Soil Screen / Identification Name | Type | N/A | ISO 17025 | - |
| Asbestos in Soil                              | Type | N/A | ISO 17025 | - |

#### General Inorganics

|                                                                         |          |         |        |   |
|-------------------------------------------------------------------------|----------|---------|--------|---|
| pH - Automated                                                          | pH Units | N/A     | MCERTS | - |
| Free Cyanide                                                            | mg/kg    | 1       | MCERTS | - |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | g/l      | 0.00125 | MCERTS | - |
| Fraction Organic Carbon (FOC)                                           | N/A      | 0.001   | MCERTS | - |

#### Total Phenols

|                            |       |   |        |   |
|----------------------------|-------|---|--------|---|
| Total Phenols (monohydric) | mg/kg | 1 | MCERTS | - |
|----------------------------|-------|---|--------|---|

#### Speciated PAHs

|                        |       |      |        |   |
|------------------------|-------|------|--------|---|
| Naphthalene            | mg/kg | 0.05 | MCERTS | - |
| Acenaphthylene         | mg/kg | 0.05 | MCERTS | - |
| Acenaphthene           | mg/kg | 0.05 | MCERTS | - |
| Fluorene               | mg/kg | 0.05 | MCERTS | - |
| Phenanthrene           | mg/kg | 0.05 | MCERTS | - |
| Anthracene             | mg/kg | 0.05 | MCERTS | - |
| Fluoranthene           | mg/kg | 0.05 | MCERTS | - |
| Pyrene                 | mg/kg | 0.05 | MCERTS | - |
| Benzo(a)anthracene     | mg/kg | 0.05 | MCERTS | - |
| Chrysene               | mg/kg | 0.05 | MCERTS | - |
| Benzo(b)fluoranthene   | mg/kg | 0.05 | MCERTS | - |
| Benzo(k)fluoranthene   | mg/kg | 0.05 | MCERTS | - |
| Benzo(a)pyrene         | mg/kg | 0.05 | MCERTS | - |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.05 | MCERTS | - |
| Dibenz(a,h)anthracene  | mg/kg | 0.05 | MCERTS | - |
| Benzo(ghi)perylene     | mg/kg | 0.05 | MCERTS | - |

#### Total PAH

|                             |       |     |        |   |
|-----------------------------|-------|-----|--------|---|
| Speciated Total EPA-16 PAHs | mg/kg | 0.8 | MCERTS | - |
|-----------------------------|-------|-----|--------|---|

#### Heavy Metals / Metalloids

|                                    |       |      |        |   |
|------------------------------------|-------|------|--------|---|
| Arsenic (aqua regia extractable)   | mg/kg | 1    | MCERTS | - |
| Beryllium (aqua regia extractable) | mg/kg | 0.06 | MCERTS | - |
| Boron (water soluble)              | mg/kg | 0.2  | MCERTS | - |
| Cadmium (aqua regia extractable)   | mg/kg | 0.2  | MCERTS | - |
| Chromium (hexavalent)              | mg/kg | 1.2  | MCERTS | - |
| Chromium (III)                     | mg/kg | 1    | NONE   | - |
| Chromium (aqua regia extractable)  | mg/kg | 1    | MCERTS | - |
| Copper (aqua regia extractable)    | mg/kg | 1    | MCERTS | - |
| Lead (aqua regia extractable)      | mg/kg | 1    | MCERTS | - |
| Mercury (aqua regia extractable)   | mg/kg | 0.3  | MCERTS | - |
| Nickel (aqua regia extractable)    | mg/kg | 1    | MCERTS | - |
| Selenium (aqua regia extractable)  | mg/kg | 1    | MCERTS | - |

Analytical Report Number: 20-38546

Project / Site name: Land at Fathoms Reach, Hayling Island

Your Order No: PO02939

|                                         |       |                    |                      |               |
|-----------------------------------------|-------|--------------------|----------------------|---------------|
| Lab Sample Number                       |       |                    |                      | 1668362       |
| Sample Reference                        |       |                    |                      | TP03          |
| Sample Number                           |       |                    |                      | None Supplied |
| Depth (m)                               |       |                    |                      | 0.10          |
| Date Sampled                            |       |                    |                      | 27/10/2020    |
| Time Taken                              |       |                    |                      | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation Status |               |
|                                         |       |                    |                      |               |
|                                         |       |                    |                      |               |
| Vanadium (aqua regia extractable)       | mg/kg | 1                  | MCERTS               | -             |
| Zinc (aqua regia extractable)           | mg/kg | 1                  | MCERTS               | -             |

#### Monoaromatics & Oxygenates

|                                    |       |   |        |       |
|------------------------------------|-------|---|--------|-------|
| Benzene                            | µg/kg | 1 | MCERTS | < 1.0 |
| Toluene                            | µg/kg | 1 | MCERTS | < 1.0 |
| Ethylbenzene                       | µg/kg | 1 | MCERTS | < 1.0 |
| p & m-xylene                       | µg/kg | 1 | MCERTS | < 1.0 |
| o-xylene                           | µg/kg | 1 | MCERTS | < 1.0 |
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 1 | MCERTS | < 1.0 |

#### Petroleum Hydrocarbons

|                                   |       |       |        |         |
|-----------------------------------|-------|-------|--------|---------|
| TPH-CWG - Aliphatic >EC5 - EC6    | mg/kg | 0.001 | MCERTS | < 0.001 |
| TPH-CWG - Aliphatic >EC6 - EC8    | mg/kg | 0.001 | MCERTS | < 0.001 |
| TPH-CWG - Aliphatic >EC8 - EC10   | mg/kg | 0.001 | MCERTS | < 0.001 |
| TPH-CWG - Aliphatic >EC10 - EC12  | mg/kg | 1     | MCERTS | < 1.0   |
| TPH-CWG - Aliphatic >EC12 - EC16  | mg/kg | 2     | MCERTS | < 2.0   |
| TPH-CWG - Aliphatic >EC16 - EC21  | mg/kg | 8     | MCERTS | < 8.0   |
| TPH-CWG - Aliphatic >EC21 - EC35  | mg/kg | 8     | MCERTS | < 8.0   |
| TPH-CWG - Aliphatic > EC35 - EC44 | mg/kg | 8.4   | NONE   | < 8.4   |

|                                  |       |       |        |         |
|----------------------------------|-------|-------|--------|---------|
| TPH-CWG - Aromatic >EC5 - EC7    | mg/kg | 0.001 | MCERTS | < 0.001 |
| TPH-CWG - Aromatic >EC7 - EC8    | mg/kg | 0.001 | MCERTS | < 0.001 |
| TPH-CWG - Aromatic >EC8 - EC10   | mg/kg | 0.001 | MCERTS | < 0.001 |
| TPH-CWG - Aromatic >EC10 - EC12  | mg/kg | 1     | MCERTS | < 1.0   |
| TPH-CWG - Aromatic >EC12 - EC16  | mg/kg | 2     | MCERTS | < 2.0   |
| TPH-CWG - Aromatic >EC16 - EC21  | mg/kg | 10    | MCERTS | < 10    |
| TPH-CWG - Aromatic >EC21 - EC35  | mg/kg | 10    | MCERTS | < 10    |
| TPH-CWG - Aromatic > EC35 - EC44 | mg/kg | 8.4   | NONE   | < 8.4   |

#### SVOCs

|                             |       |      |           |   |
|-----------------------------|-------|------|-----------|---|
| Aniline                     | mg/kg | 0.1  | NONE      | - |
| Phenol                      | mg/kg | 0.2  | ISO 17025 | - |
| 2-Chlorophenol              | mg/kg | 0.1  | MCERTS    | - |
| Bis(2-chloroethyl)ether     | mg/kg | 0.2  | MCERTS    | - |
| 1,3-Dichlorobenzene         | mg/kg | 0.2  | MCERTS    | - |
| 1,2-Dichlorobenzene         | mg/kg | 0.1  | MCERTS    | - |
| 1,4-Dichlorobenzene         | mg/kg | 0.2  | MCERTS    | - |
| Bis(2-chloroisopropyl)ether | mg/kg | 0.1  | MCERTS    | - |
| 2-Methylphenol              | mg/kg | 0.3  | MCERTS    | - |
| Hexachloroethane            | mg/kg | 0.05 | MCERTS    | - |
| Nitrobenzene                | mg/kg | 0.3  | MCERTS    | - |
| 4-Methylphenol              | mg/kg | 0.2  | NONE      | - |
| Isophorone                  | mg/kg | 0.2  | MCERTS    | - |
| 2-Nitrophenol               | mg/kg | 0.3  | MCERTS    | - |
| 2,4-Dimethylphenol          | mg/kg | 0.3  | MCERTS    | - |
| Bis(2-chloroethoxy)methane  | mg/kg | 0.3  | MCERTS    | - |
| 1,2,4-Trichlorobenzene      | mg/kg | 0.3  | MCERTS    | - |
| Naphthalene                 | mg/kg | 0.05 | MCERTS    | - |
| 2,4-Dichlorophenol          | mg/kg | 0.3  | MCERTS    | - |

Analytical Report Number: 20-38546  
 Project / Site name: Land at Fathoms Reach, Hayling Island  
 Your Order No: PO02939

| Lab Sample Number                       |       |                    |                      | 1668362       |
|-----------------------------------------|-------|--------------------|----------------------|---------------|
| Sample Reference                        |       |                    |                      | TP03          |
| Sample Number                           |       |                    |                      | None Supplied |
| Depth (m)                               |       |                    |                      | 0.10          |
| Date Sampled                            |       |                    |                      | 27/10/2020    |
| Time Taken                              |       |                    |                      | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation Status |               |
| 4-Chloroaniline                         | mg/kg | 0.1                | NONE                 | -             |
| Hexachlorobutadiene                     | mg/kg | 0.1                | MCERTS               | -             |
| 4-Chloro-3-methylphenol                 | mg/kg | 0.1                | NONE                 | -             |
| 2,4,6-Trichlorophenol                   | mg/kg | 0.1                | MCERTS               | -             |
| 2,4,5-Trichlorophenol                   | mg/kg | 0.2                | MCERTS               | -             |
| 2-Methylnaphthalene                     | mg/kg | 0.1                | NONE                 | -             |
| 2-Chloronaphthalene                     | mg/kg | 0.1                | MCERTS               | -             |
| Dimethylphthalate                       | mg/kg | 0.1                | MCERTS               | -             |
| 2,6-Dinitrotoluene                      | mg/kg | 0.1                | MCERTS               | -             |
| Acenaphthylene                          | mg/kg | 0.05               | MCERTS               | -             |
| Acenaphthene                            | mg/kg | 0.05               | MCERTS               | -             |
| 2,4-Dinitrotoluene                      | mg/kg | 0.2                | MCERTS               | -             |
| Dibenzofuran                            | mg/kg | 0.2                | MCERTS               | -             |
| 4-Chlorophenyl phenyl ether             | mg/kg | 0.3                | ISO 17025            | -             |
| Diethyl phthalate                       | mg/kg | 0.2                | MCERTS               | -             |
| 4-Nitroaniline                          | mg/kg | 0.2                | MCERTS               | -             |
| Fluorene                                | mg/kg | 0.05               | MCERTS               | -             |
| Azobenzene                              | mg/kg | 0.3                | MCERTS               | -             |
| Bromophenyl phenyl ether                | mg/kg | 0.2                | MCERTS               | -             |
| Hexachlorobenzene                       | mg/kg | 0.3                | MCERTS               | -             |
| Phenanthrene                            | mg/kg | 0.05               | MCERTS               | -             |
| Anthracene                              | mg/kg | 0.05               | MCERTS               | -             |
| Carbazole                               | mg/kg | 0.3                | MCERTS               | -             |
| Dibutyl phthalate                       | mg/kg | 0.2                | MCERTS               | -             |
| Anthraquinone                           | mg/kg | 0.3                | MCERTS               | -             |
| Fluoranthene                            | mg/kg | 0.05               | MCERTS               | -             |
| Pyrene                                  | mg/kg | 0.05               | MCERTS               | -             |
| Butyl benzyl phthalate                  | mg/kg | 0.3                | ISO 17025            | -             |
| Benzo(a)anthracene                      | mg/kg | 0.05               | MCERTS               | -             |
| Chrysene                                | mg/kg | 0.05               | MCERTS               | -             |
| Benzo(b)fluoranthene                    | mg/kg | 0.05               | MCERTS               | -             |
| Benzo(k)fluoranthene                    | mg/kg | 0.05               | MCERTS               | -             |
| Benzo(a)pyrene                          | mg/kg | 0.05               | MCERTS               | -             |
| Indeno(1,2,3-cd)pyrene                  | mg/kg | 0.05               | MCERTS               | -             |
| Dibenz(a,h)anthracene                   | mg/kg | 0.05               | MCERTS               | -             |
| Benzo(ghi)perylene                      | mg/kg | 0.05               | MCERTS               | -             |

#### SVOCs TICs

|                          |   |     |      |   |
|--------------------------|---|-----|------|---|
| SVOCs TICs Compound Name |   | N/A | NONE | - |
| SVOC % Match             | % | N/A | NONE | - |
| SVOCs TICs Compound Name |   | N/A | NONE | - |
| SVOC % Match             | % | N/A | NONE | - |
| SVOCs TICs Compound Name |   | N/A | NONE | - |
| SVOC % Match             | % | N/A | NONE | - |
| SVOCs TICs Compound Name |   | N/A | NONE | - |
| SVOC % Match             | % | N/A | NONE | - |
| SVOCs TICs Compound Name |   | N/A | NONE | - |
| SVOC % Match             | % | N/A | NONE | - |

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| Lab Sample Number                       |       |                    |                      | 1668362       |
|-----------------------------------------|-------|--------------------|----------------------|---------------|
| Sample Reference                        |       |                    |                      | TP03          |
| Sample Number                           |       |                    |                      | None Supplied |
| Depth (m)                               |       |                    |                      | 0.10          |
| Date Sampled                            |       |                    |                      | 27/10/2020    |
| Time Taken                              |       |                    |                      | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of detection | Accreditation Status |               |
|                                         |       |                    |                      |               |
|                                         |       |                    |                      |               |
| SVOCs TICs Compound Name                |       | N/A                | NONE                 | -             |
| SVOC % Match                            | %     | N/A                | NONE                 | -             |
|                                         |       |                    |                      |               |
| SVOCs TICs Compound Name                |       | N/A                | NONE                 | -             |
| SVOC % Match                            | %     | N/A                | NONE                 | -             |
|                                         |       |                    |                      |               |
| SVOCs TICs Compound Name                |       | N/A                | NONE                 | -             |
| SVOC % Match                            | %     | N/A                | NONE                 | -             |
|                                         |       |                    |                      |               |
| SVOCs TICs Compound Name                |       | N/A                | NONE                 | -             |
| SVOC % Match                            | %     | N/A                | NONE                 | -             |
|                                         |       |                    |                      |               |
| SVOCs TICs Compound Name                |       | N/A                | NONE                 | -             |
| SVOC % Match                            | %     | N/A                | NONE                 | -             |

U/S = Unsuitable Sample I/S = Insufficient Sample

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**Project / Site name: Land at Fathoms Reach, Hayling Island**

\* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

| Lab Sample Number | Sample Reference | Sample Number | Depth (m) | Sample Description *                            |
|-------------------|------------------|---------------|-----------|-------------------------------------------------|
| 1668354           | WS01B            | None Supplied | 0.1       | Brown loam and clay with gravel and vegetation. |
| 1668355           | WS01B            | None Supplied | 0.5       | Brown loam and sand with gravel and vegetation. |
| 1668356           | SA01             | None Supplied | 0.1       | Brown loam and clay with gravel and vegetation. |
| 1668357           | WS03             | None Supplied | 0.1       | Brown loam and clay with gravel and vegetation. |
| 1668358           | TP01             | None Supplied | 0.1       | Brown loam and clay with gravel and vegetation. |
| 1668359           | SA02             | None Supplied | 0.1       | Brown loam and clay with gravel and vegetation. |
| 1668360           | WS04             | None Supplied | 0.1       | Brown loam and clay with gravel and vegetation. |
| 1668361           | WS05             | None Supplied | 0.1       | Brown loam and clay with gravel and vegetation. |
| 1668362           | TP03             | None Supplied | 0.1       | Brown loam and clay with gravel and vegetation. |

**Analytical Report Number : 20-38546**

**Project / Site name: Land at Fathoms Reach, Hayling Island**

**Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)**

| Analytical Test Name                               | Analytical Method Description                                                                                                                                             | Analytical Method Reference                                                                                     | Method number | Wet / Dry Analysis | Accreditation Status |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------|--------------------|----------------------|
| Metals in soil by ICP-OES                          | Determination of metals in soil by aqua-regia digestion followed by ICP-OES.                                                                                              | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.                            | L038-PL       | D                  | MCERTS               |
| Sulphate, water soluble, in soil (16hr extraction) | Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).                 | In house method.                                                                                                | L038-PL       | D                  | MCERTS               |
| Asbestos identification in soil                    | Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.                                                     | In house method based on HSG 248                                                                                | A001-PL       | D                  | ISO 17025            |
| Boron, water soluble, in soil                      | Determination of water soluble boron in soil by hot water extract followed by ICP-OES.                                                                                    | In-house method based on Second Site Properties version 3                                                       | L038-PL       | D                  | MCERTS               |
| Hexavalent chromium in soil (Lower Level)          | Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.                     | In-house method                                                                                                 | L080-PL       | W                  | MCERTS               |
| Free cyanide in soil                               | Determination of free cyanide by distillation followed by colorimetry.                                                                                                    | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar) | L080-PL       | W                  | MCERTS               |
| Fraction of Organic Carbon in soil                 | Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.                                 | In house method.                                                                                                | L009-PL       | D                  | MCERTS               |
| Moisture Content                                   | Moisture content, determined gravimetrically. (30 oC)                                                                                                                     | In house method.                                                                                                | L019-UK/PL    | W                  | NONE                 |
| Monohydric phenols in soil                         | Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.                                                    | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar) | L080-PL       | W                  | MCERTS               |
| Speciated EPA-16 PAHs in soil                      | Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.                    | In-house method based on USEPA 8270                                                                             | L064-PL       | D                  | MCERTS               |
| pH in soil (automated)                             | Determination of pH in soil by addition of water followed by automated electrometric measurement.                                                                         | In house method.                                                                                                | L099-PL       | D                  | MCERTS               |
| Stones content of soil                             | Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.                                               | In-house method based on British Standard Methods and MCERTS requirements.                                      | L019-UK/PL    | D                  | NONE                 |
| Semi-volatile organic compounds in soil            | Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.                                                   | In-house method based on USEPA 8270                                                                             | L064-PL       | D                  | MCERTS               |
| Tentatively identified compounds (SVOC) in soil    | Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan. | In-house method based on USEPA 8270                                                                             | L064-PL       | D                  | NONE                 |
| BTEX and MTBE in soil (Monoaromatics)              | Determination of BTEX in soil by headspace GC-MS.                                                                                                                         | In-house method based on USEPA8260                                                                              | L0738-PL      | W                  | MCERTS               |
| TPH Chromatogram in Soil                           | TPH Chromatogram in Soil.                                                                                                                                                 | In-house method                                                                                                 | L064-PL       | D                  | NONE                 |

Analytical Report Number : 20-38546

Project / Site name: Land at Fathoms Reach, Hayling Island

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

| Analytical Test Name | Analytical Method Description                                             | Analytical Method Reference                                            | Method number | Wet / Dry Analysis | Accreditation Status |
|----------------------|---------------------------------------------------------------------------|------------------------------------------------------------------------|---------------|--------------------|----------------------|
| Cr (III) in soil     | In-house method by calculation from total Cr and Cr VI.                   | In-house method by calculation                                         | L080-PL       | W                  | NONE                 |
| TPHCWG (Soil)        | Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. | In-house method with silica gel split/clean up.                        | L088/76-PL    | W                  | MCERTS               |
| TPH in (Soil)        | Determination of TPH bands by HS-GC-MS/GC-FID                             | In-house method, TPH with carbon banding and silica gel split/cleanup. | L076-PL       | D                  | NONE                 |

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

# HazWaste Assessment

# Waste Classification Report



9C5CN-79YAJ-EZ4YD

## Job name

16117 Fathoms Reach

## Description/Comments

## Project

16117 Fathoms Reach

## Site

## Related Documents

| #    | Name | Description |
|------|------|-------------|
| None |      |             |

## Waste Stream Template

Hydrock Standard plus Cresol (ammended Lead)

## Classified by

|                              |                                |                                         |             |
|------------------------------|--------------------------------|-----------------------------------------|-------------|
| Name:                        | Company:                       | HazWasteOnline™ Training Record:        |             |
| <b>Andrew James</b>          | <b>Hydrock Consultants Ltd</b> | <b>Course</b>                           | <b>Date</b> |
| Date:                        |                                | Hazardous Waste Classification          | 07 Feb 2018 |
| <b>28 Jan 2021 17:09 GMT</b> |                                | Advanced Hazardous Waste Classification | 08 Feb 2018 |
| Telephone:                   |                                |                                         |             |
| <b>01454 619533</b>          |                                |                                         |             |

## Report

Created by: Andrew James  
Created date: 28 Jan 2021 17:09 GMT

## Job summary

| # | Sample Name | Depth [m] | Classification Result | Hazard properties | Page |
|---|-------------|-----------|-----------------------|-------------------|------|
| 1 | WS01B       | 0.10      | Non Hazardous         |                   | 3    |
| 2 | WS01B[2]    | 0.50      | Non Hazardous         |                   | 5    |
| 3 | SA01        | 0.10      | Non Hazardous         |                   | 8    |
| 4 | WS03        | 0.10      | Non Hazardous         |                   | 10   |
| 5 | TP01        | 0.10      | Non Hazardous         |                   | 12   |
| 6 | SA02        | 0.10      | Non Hazardous         |                   | 15   |
| 7 | WS04        | 0.10      | Non Hazardous         |                   | 18   |
| 8 | WS05        | 0.10      | Non Hazardous         |                   | 20   |
| 9 | TP03        | 0.10      | Non Hazardous         |                   | 22   |

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| Appendices                                              | Page |
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| Appendix A: Classifier defined and non CLP determinands | 23   |
| Appendix B: Rationale for selection of metal species    | 24   |
| Appendix C: Version                                     | 25   |

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## Classification of sample: WS01B

✔ **Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

|               |           |                                                                                           |
|---------------|-----------|-------------------------------------------------------------------------------------------|
| Sample Name:  | LoW Code: |                                                                                           |
| <b>WS01B</b>  | Chapter:  | 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| Sample Depth: | Entry:    | 17 05 04 (Soil and stones other than those mentioned in 17 05 03)                         |
| <b>0.10 m</b> |           |                                                                                           |

## Hazard properties

None identified

## Determinands

Moisture content: 0% No Moisture Correction applied (MC)

| #  | Determinand                                                              |              |                                         | CLP Note | User entered data | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------|--------------|-----------------------------------------|----------|-------------------|--------------|----------------|-------|----------------------|------------|----------------|
|    | CLP index number                                                         | EC Number    | CAS Number                              |          |                   |              |                |       |                      |            |                |
| 1  | acenaphthene                                                             | 201-469-6    | 83-32-9                                 |          | <0.05 mg/kg       |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 2  | acenaphthylene                                                           | 205-917-1    | 208-96-8                                |          | <0.05 mg/kg       |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 3  | anthracene                                                               | 204-371-1    | 120-12-7                                |          | <0.05 mg/kg       |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 4  | arsenic { arsenic trioxide }                                             | 033-003-00-0 | 215-481-4                               |          | 14 mg/kg          | 1.32         | 18.485         | mg/kg | 0.00185 %            |            |                |
| 5  | benzo[a]anthracene                                                       | 601-033-00-9 | 200-280-6                               |          | 0.89 mg/kg        |              | 0.89           | mg/kg | 0.000089 %           |            |                |
| 6  | benzo[a]pyrene; benzo[def]chrysene                                       | 601-032-00-3 | 200-028-5                               |          | 0.87 mg/kg        |              | 0.87           | mg/kg | 0.000087 %           |            |                |
| 7  | benzo[b]fluoranthene                                                     | 601-034-00-4 | 205-911-9                               |          | 1 mg/kg           |              | 1              | mg/kg | 0.0001 %             |            |                |
| 8  | benzo[ghi]perylene                                                       | 205-883-8    | 191-24-2                                |          | 0.53 mg/kg        |              | 0.53           | mg/kg | 0.000053 %           |            |                |
| 9  | benzo[k]fluoranthene                                                     | 601-036-00-5 | 205-916-6                               |          | 0.32 mg/kg        |              | 0.32           | mg/kg | 0.000032 %           |            |                |
| 10 | beryllium { beryllium oxide }                                            | 004-003-00-8 | 215-133-1                               |          | 0.66 mg/kg        | 2.775        | 1.832          | mg/kg | 0.000183 %           |            |                |
| 11 | boron { boron tribromide/trichloride/trifluoride (combined) }            |              | 10294-33-4,<br>10294-34-5,<br>7637-07-2 |          | 2.1 mg/kg         | 13.43        | 28.203         | mg/kg | 0.00282 %            |            |                |
| 12 | cadmium { cadmium sulfide }                                              | 048-010-00-4 | 215-147-8                               | 1        | <0.2 mg/kg        | 1.285        | <0.257         | mg/kg | <0.00002 %           |            | <LOD           |
| 13 | chromium in chromium(III) compounds { chromium(III) oxide (worst case) } | 215-160-9    | 1308-38-9                               |          | 25 mg/kg          | 1.462        | 36.539         | mg/kg | 0.00365 %            |            |                |
| 14 | chromium in chromium(VI) compounds { chromium(VI) oxide }                | 024-001-00-0 | 215-607-8                               |          | <1.2 mg/kg        | 1.923        | <2.308         | mg/kg | <0.000231 %          |            | <LOD           |

| #      | Determinand                                                                                                                                                                            |                                |                                  | CLP Note | User entered data |       | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------|----------|-------------------|-------|--------------|----------------|-------|----------------------|------------|----------------|
|        | CLP index number                                                                                                                                                                       | EC Number                      | CAS Number                       |          |                   |       |              |                |       |                      |            |                |
| 15     | chrysene                                                                                                                                                                               |                                |                                  |          | 0.63              | mg/kg |              | 0.63           | mg/kg | 0.000063 %           |            |                |
|        | 601-048-00-0                                                                                                                                                                           | 205-923-4                      | 218-01-9                         |          |                   |       |              |                |       |                      |            |                |
| 16     | copper { dicopper oxide; copper (I) oxide }                                                                                                                                            |                                |                                  |          | 25                | mg/kg | 1.126        | 28.147         | mg/kg | 0.00281 %            |            |                |
|        | 029-002-00-X                                                                                                                                                                           | 215-270-7                      | 1317-39-1                        |          |                   |       |              |                |       |                      |            |                |
| 17     | cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } |                                |                                  |          | <1                | mg/kg | 1.884        | <1.884         | mg/kg | <0.000188 %          |            | <LOD           |
|        | 006-007-00-5                                                                                                                                                                           |                                |                                  |          |                   |       |              |                |       |                      |            |                |
| 18     | dibenz[a,h]anthracene                                                                                                                                                                  |                                |                                  |          | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
|        | 601-041-00-2                                                                                                                                                                           | 200-181-8                      | 53-70-3                          |          |                   |       |              |                |       |                      |            |                |
| 19     | fluoranthene                                                                                                                                                                           |                                |                                  |          | 1.6               | mg/kg |              | 1.6            | mg/kg | 0.00016 %            |            |                |
|        |                                                                                                                                                                                        | 205-912-4                      | 206-44-0                         |          |                   |       |              |                |       |                      |            |                |
| 20     | fluorene                                                                                                                                                                               |                                |                                  |          | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
|        |                                                                                                                                                                                        | 201-695-5                      | 86-73-7                          |          |                   |       |              |                |       |                      |            |                |
| 21     | indeno[123-cd]pyrene                                                                                                                                                                   |                                |                                  |          | 0.46              | mg/kg |              | 0.46           | mg/kg | 0.000046 %           |            |                |
|        |                                                                                                                                                                                        | 205-893-2                      | 193-39-5                         |          |                   |       |              |                |       |                      |            |                |
| 22     | lead { lead compounds with the exception of those specified elsewhere in this Annex }                                                                                                  |                                |                                  | 1        | 51                | mg/kg |              | 51             | mg/kg | 0.0051 %             |            |                |
|        | 082-001-00-6                                                                                                                                                                           |                                |                                  |          |                   |       |              |                |       |                      |            |                |
| 23     | mercury { mercury dichloride }                                                                                                                                                         |                                |                                  |          | <0.3              | mg/kg | 1.353        | <0.406         | mg/kg | <0.0000406 %         |            | <LOD           |
|        | 080-010-00-X                                                                                                                                                                           | 231-299-8                      | 7487-94-7                        |          |                   |       |              |                |       |                      |            |                |
| 24     | naphthalene                                                                                                                                                                            |                                |                                  |          | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
|        | 601-052-00-2                                                                                                                                                                           | 202-049-5                      | 91-20-3                          |          |                   |       |              |                |       |                      |            |                |
| 25     | nickel { nickel dihydroxide }                                                                                                                                                          |                                |                                  |          | 16                | mg/kg | 1.579        | 25.272         | mg/kg | 0.00253 %            |            |                |
|        | 028-008-00-X                                                                                                                                                                           | 235-008-5 [1]<br>234-348-1 [2] | 12054-48-7 [1]<br>11113-74-9 [2] |          |                   |       |              |                |       |                      |            |                |
| 26     | pH                                                                                                                                                                                     |                                |                                  |          | 8.4               | pH    |              | 8.4            | pH    | 8.4 pH               |            |                |
|        |                                                                                                                                                                                        |                                | pH                               |          |                   |       |              |                |       |                      |            |                |
| 27     | phenanthrene                                                                                                                                                                           |                                |                                  |          | 0.89              | mg/kg |              | 0.89           | mg/kg | 0.000089 %           |            |                |
|        |                                                                                                                                                                                        | 201-581-5                      | 85-01-8                          |          |                   |       |              |                |       |                      |            |                |
| 28     | phenol                                                                                                                                                                                 |                                |                                  |          | <1                | mg/kg |              | <1             | mg/kg | <0.0001 %            |            | <LOD           |
|        | 604-001-00-2                                                                                                                                                                           | 203-632-7                      | 108-95-2                         |          |                   |       |              |                |       |                      |            |                |
| 29     | pyrene                                                                                                                                                                                 |                                |                                  |          | 1.3               | mg/kg |              | 1.3            | mg/kg | 0.00013 %            |            |                |
|        |                                                                                                                                                                                        | 204-927-3                      | 129-00-0                         |          |                   |       |              |                |       |                      |            |                |
| 30     | zinc { zinc oxide }                                                                                                                                                                    |                                |                                  |          | 82                | mg/kg | 1.245        | 102.067        | mg/kg | 0.0102 %             |            |                |
|        | 030-013-00-7                                                                                                                                                                           | 215-222-5                      | 1314-13-2                        |          |                   |       |              |                |       |                      |            |                |
| Total: |                                                                                                                                                                                        |                                |                                  |          |                   |       |              |                |       | 0.0306 %             |            |                |

#### Key

|             |                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|
|             | User supplied data                                                                                                              |
|             | Determinand values ignored for classification, see column 'Conc. Not Used' for reason                                           |
|             | Determinand defined or amended by HazWasteOnline (see Appendix A)                                                               |
|             | Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration |
| <LOD        | Below limit of detection                                                                                                        |
| ND          | Not detected                                                                                                                    |
| CLP: Note 1 | Only the metal concentration has been used for classification                                                                   |

## Classification of sample: WS01B[2]

✔ **Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

|                 |           |                                                                                           |
|-----------------|-----------|-------------------------------------------------------------------------------------------|
| Sample Name:    | LoW Code: |                                                                                           |
| <b>WS01B[2]</b> | Chapter:  | 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| Sample Depth:   | Entry:    | 17 05 04 (Soil and stones other than those mentioned in 17 05 03)                         |
| <b>0.50 m</b>   |           |                                                                                           |

## Hazard properties

None identified

## Determinands

Moisture content: 0% No Moisture Correction applied (MC)

| #  | Determinand                                                              |              |                                         | CLP Note | User entered data | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------|--------------|-----------------------------------------|----------|-------------------|--------------|----------------|-------|----------------------|------------|----------------|
|    | CLP index number                                                         | EC Number    | CAS Number                              |          |                   |              |                |       |                      |            |                |
| 1  | acenaphthene                                                             | 201-469-6    | 83-32-9                                 |          | <0.05 mg/kg       |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 2  | acenaphthylene                                                           | 205-917-1    | 208-96-8                                |          | <0.05 mg/kg       |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 3  | anthracene                                                               | 204-371-1    | 120-12-7                                |          | <0.05 mg/kg       |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 4  | arsenic { arsenic trioxide }                                             | 033-003-00-0 | 215-481-4                               |          | 7.6 mg/kg         | 1.32         | 10.034         | mg/kg | 0.001 %              |            |                |
| 5  | benzene                                                                  | 601-020-00-8 | 200-753-7                               |          | <0.001 mg/kg      |              | <0.001         | mg/kg | <0.0000001 %         |            | <LOD           |
| 6  | benzo[a]anthracene                                                       | 601-033-00-9 | 200-280-6                               |          | 0.65 mg/kg        |              | 0.65           | mg/kg | 0.000065 %           |            |                |
| 7  | benzo[a]pyrene; benzo[def]chrysene                                       | 601-032-00-3 | 200-028-5                               |          | 0.55 mg/kg        |              | 0.55           | mg/kg | 0.000055 %           |            |                |
| 8  | benzo[b]fluoranthene                                                     | 601-034-00-4 | 205-911-9                               |          | 0.85 mg/kg        |              | 0.85           | mg/kg | 0.000085 %           |            |                |
| 9  | benzo[ghi]perylene                                                       | 205-883-8    | 191-24-2                                |          | 0.38 mg/kg        |              | 0.38           | mg/kg | 0.000038 %           |            |                |
| 10 | benzo[k]fluoranthene                                                     | 601-036-00-5 | 205-916-6                               |          | 0.23 mg/kg        |              | 0.23           | mg/kg | 0.000023 %           |            |                |
| 11 | beryllium { beryllium oxide }                                            | 004-003-00-8 | 215-133-1                               |          | 0.53 mg/kg        | 2.775        | 1.471          | mg/kg | 0.000147 %           |            |                |
| 12 | boron { boron tribromide/trichloride/trifluoride (combined) }            |              | 10294-33-4,<br>10294-34-5,<br>7637-07-2 |          | 0.7 mg/kg         | 13.43        | 9.401          | mg/kg | 0.00094 %            |            |                |
| 13 | cadmium { cadmium sulfide }                                              | 048-010-00-4 | 215-147-8                               |          | 0.4 mg/kg         | 1.285        | 0.514          | mg/kg | 0.00004 %            |            |                |
| 14 | chromium in chromium(III) compounds { chromium(III) oxide (worst case) } | 215-160-9    | 1308-38-9                               |          | 18 mg/kg          | 1.462        | 26.308         | mg/kg | 0.00263 %            |            |                |

| #      |                                                                                     | Determinand                                                                                                                                                                            |                                                                                                 |            | CLP Note | User entered data |       | Conv. Factor | Compound conc. |       | Classification value |  | MC Applied | Conc. Not Used |
|--------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------|----------|-------------------|-------|--------------|----------------|-------|----------------------|--|------------|----------------|
|        |                                                                                     | CLP index number                                                                                                                                                                       | EC Number                                                                                       | CAS Number |          |                   |       |              |                |       |                      |  |            |                |
| 15     |    | chromium in chromium(VI) compounds { chromium(VI) oxide }                                                                                                                              |                                                                                                 |            |          | <1.2              | mg/kg | 1.923        | <2.308         | mg/kg | <0.000231 %          |  | <LOD       |                |
|        | 024-001-00-0                                                                        | 215-607-8                                                                                                                                                                              | 1333-82-0                                                                                       |            |          |                   |       |              |                |       |                      |  |            |                |
| 16     |                                                                                     | chrysene                                                                                                                                                                               |                                                                                                 |            |          | 0.46              | mg/kg |              | 0.46           | mg/kg | 0.000046 %           |  |            |                |
|        | 601-048-00-0                                                                        | 205-923-4                                                                                                                                                                              | 218-01-9                                                                                        |            |          |                   |       |              |                |       |                      |  |            |                |
| 17     |    | copper { dicopper oxide; copper (I) oxide }                                                                                                                                            |                                                                                                 |            |          | 17                | mg/kg | 1.126        | 19.14          | mg/kg | 0.00191 %            |  |            |                |
|        | 029-002-00-X                                                                        | 215-270-7                                                                                                                                                                              | 1317-39-1                                                                                       |            |          |                   |       |              |                |       |                      |  |            |                |
| 18     |    | cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } |                                                                                                 |            |          | <1                | mg/kg | 1.884        | <1.884         | mg/kg | <0.000188 %          |  | <LOD       |                |
|        | 006-007-00-5                                                                        |                                                                                                                                                                                        |                                                                                                 |            |          |                   |       |              |                |       |                      |  |            |                |
| 19     |                                                                                     | dibenz[a,h]anthracene                                                                                                                                                                  |                                                                                                 |            |          | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |  | <LOD       |                |
|        | 601-041-00-2                                                                        | 200-181-8                                                                                                                                                                              | 53-70-3                                                                                         |            |          |                   |       |              |                |       |                      |  |            |                |
| 20     |    | ethylbenzene                                                                                                                                                                           |                                                                                                 |            |          | <0.001            | mg/kg |              | <0.001         | mg/kg | <0.0000001 %         |  | <LOD       |                |
|        | 601-023-00-4                                                                        | 202-849-4                                                                                                                                                                              | 100-41-4                                                                                        |            |          |                   |       |              |                |       |                      |  |            |                |
| 21     |    | fluoranthene                                                                                                                                                                           |                                                                                                 |            |          | 0.87              | mg/kg |              | 0.87           | mg/kg | 0.000087 %           |  |            |                |
|        |                                                                                     | 205-912-4                                                                                                                                                                              | 206-44-0                                                                                        |            |          |                   |       |              |                |       |                      |  |            |                |
| 22     |    | fluorene                                                                                                                                                                               |                                                                                                 |            |          | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |  | <LOD       |                |
|        |                                                                                     | 201-695-5                                                                                                                                                                              | 86-73-7                                                                                         |            |          |                   |       |              |                |       |                      |  |            |                |
| 23     |    | indeno[123-cd]pyrene                                                                                                                                                                   |                                                                                                 |            |          | 0.3               | mg/kg |              | 0.3            | mg/kg | 0.00003 %            |  |            |                |
|        |                                                                                     | 205-893-2                                                                                                                                                                              | 193-39-5                                                                                        |            |          |                   |       |              |                |       |                      |  |            |                |
| 24     |   | lead { lead compounds with the exception of those specified elsewhere in this Annex }                                                                                                  |                                                                                                 |            | 1        | 39                | mg/kg |              | 39             | mg/kg | 0.0039 %             |  |            |                |
|        | 082-001-00-6                                                                        |                                                                                                                                                                                        |                                                                                                 |            |          |                   |       |              |                |       |                      |  |            |                |
| 25     |  | mercury { mercury dichloride }                                                                                                                                                         |                                                                                                 |            |          | <0.3              | mg/kg | 1.353        | <0.406         | mg/kg | <0.0000406 %         |  | <LOD       |                |
|        | 080-010-00-X                                                                        | 231-299-8                                                                                                                                                                              | 7487-94-7                                                                                       |            |          |                   |       |              |                |       |                      |  |            |                |
| 26     |                                                                                     | naphthalene                                                                                                                                                                            |                                                                                                 |            |          | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |  | <LOD       |                |
|        | 601-052-00-2                                                                        | 202-049-5                                                                                                                                                                              | 91-20-3                                                                                         |            |          |                   |       |              |                |       |                      |  |            |                |
| 27     |  | nickel { nickel dihydroxide }                                                                                                                                                          |                                                                                                 |            |          | 12                | mg/kg | 1.579        | 18.954         | mg/kg | 0.0019 %             |  |            |                |
|        | 028-008-00-X                                                                        | 235-008-5 [1]<br>234-348-1 [2]                                                                                                                                                         | 12054-48-7 [1]<br>11113-74-9 [2]                                                                |            |          |                   |       |              |                |       |                      |  |            |                |
| 28     |  | pH                                                                                                                                                                                     |                                                                                                 |            |          | 10.1              | pH    |              | 10.1           | pH    | 10.1 pH              |  |            |                |
|        |                                                                                     |                                                                                                                                                                                        | PH                                                                                              |            |          |                   |       |              |                |       |                      |  |            |                |
| 29     |  | phenanthrene                                                                                                                                                                           |                                                                                                 |            |          | 0.33              | mg/kg |              | 0.33           | mg/kg | 0.000033 %           |  |            |                |
|        |                                                                                     | 201-581-5                                                                                                                                                                              | 85-01-8                                                                                         |            |          |                   |       |              |                |       |                      |  |            |                |
| 30     |                                                                                     | phenol                                                                                                                                                                                 |                                                                                                 |            |          | <1                | mg/kg |              | <1             | mg/kg | <0.0001 %            |  | <LOD       |                |
|        | 604-001-00-2                                                                        | 203-632-7                                                                                                                                                                              | 108-95-2                                                                                        |            |          |                   |       |              |                |       |                      |  |            |                |
| 31     |  | pyrene                                                                                                                                                                                 |                                                                                                 |            |          | 0.71              | mg/kg |              | 0.71           | mg/kg | 0.000071 %           |  |            |                |
|        |                                                                                     | 204-927-3                                                                                                                                                                              | 129-00-0                                                                                        |            |          |                   |       |              |                |       |                      |  |            |                |
| 32     |                                                                                     | toluene                                                                                                                                                                                |                                                                                                 |            |          | <0.001            | mg/kg |              | <0.001         | mg/kg | <0.0000001 %         |  | <LOD       |                |
|        | 601-021-00-3                                                                        | 203-625-9                                                                                                                                                                              | 108-88-3                                                                                        |            |          |                   |       |              |                |       |                      |  |            |                |
| 33     |  | TPH (C6 to C40) petroleum group                                                                                                                                                        |                                                                                                 |            |          | 75                | mg/kg |              | 75             | mg/kg | 0.0075 %             |  |            |                |
|        |                                                                                     |                                                                                                                                                                                        | TPH                                                                                             |            |          |                   |       |              |                |       |                      |  |            |                |
| 34     |                                                                                     | xylene                                                                                                                                                                                 |                                                                                                 |            |          | <0.001            | mg/kg |              | <0.001         | mg/kg | <0.0000001 %         |  | <LOD       |                |
|        | 601-022-00-9                                                                        | 202-422-2 [1]<br>203-396-5 [2]<br>203-576-3 [3]<br>215-535-7 [4]                                                                                                                       | 95-47-6 [1]<br>106-42-3 [2]<br>108-38-3 [3]<br>1330-20-7 [4]                                    |            |          |                   |       |              |                |       |                      |  |            |                |
| 35     |  | zinc { zinc oxide }                                                                                                                                                                    |                                                                                                 |            |          | 110               | mg/kg | 1.245        | 136.919        | mg/kg | 0.0137 %             |  |            |                |
|        | 030-013-00-7                                                                        | 215-222-5                                                                                                                                                                              | 1314-13-2                                                                                       |            |          |                   |       |              |                |       |                      |  |            |                |
| 36     |                                                                                     | asbestos                                                                                                                                                                               |                                                                                                 |            |          | <0.001            | mg/kg |              | <0.001         | mg/kg | <0.0000001 %         |  | <LOD       |                |
|        | 650-013-00-6                                                                        | -----                                                                                                                                                                                  | 12001-28-4<br>132207-32-0<br>12172-73-5<br>77536-66-4<br>77536-68-6<br>77536-67-5<br>12001-29-5 |            |          |                   |       |              |                |       |                      |  |            |                |
| Total: |                                                                                     |                                                                                                                                                                                        |                                                                                                 |            |          |                   |       |              |                |       | 0.0348 %             |  |            |                |

#### Key

|             |                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|
|             | User supplied data                                                                                                              |
|             | Determinand values ignored for classification, see column 'Conc. Not Used' for reason                                           |
|             | Determinand defined or amended by HazWasteOnline (see Appendix A)                                                               |
|             | Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration |
| <LOD        | Below limit of detection                                                                                                        |
| ND          | Not detected                                                                                                                    |
| CLP: Note 1 | Only the metal concentration has been used for classification                                                                   |

### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

**Force this Hazardous property to non hazardous because** Concentrations of TPH are considered unlikely to represent a flammable risk.

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0075%)

## Classification of sample: SA01

 **Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

|               |        |           |                                                                                           |
|---------------|--------|-----------|-------------------------------------------------------------------------------------------|
| Sample Name:  | SA01   | LoW Code: | 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| Sample Depth: | 0.10 m | Chapter:  | 17 05 04 (Soil and stones other than those mentioned in 17 05 03)                         |
|               |        | Entry:    |                                                                                           |

## Hazard properties

None identified

## Determinands

Moisture content: 0% No Moisture Correction applied (MC)

| #  | Determinand                                                              |              |                                   | CLP Note | User entered data | Conv. Factor | Compound conc. |             | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------|--------------|-----------------------------------|----------|-------------------|--------------|----------------|-------------|----------------------|------------|----------------|
|    | CLP index number                                                         | EC Number    | CAS Number                        |          |                   |              |                |             |                      |            |                |
| 1  | acenaphthene                                                             | 201-469-6    | 83-32-9                           |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 % |                      |            | <LOD           |
| 2  | acenaphthylene                                                           | 205-917-1    | 208-96-8                          |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 % |                      |            | <LOD           |
| 3  | anthracene                                                               | 204-371-1    | 120-12-7                          |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 % |                      |            | <LOD           |
| 4  | arsenic { arsenic trioxide }                                             | 033-003-00-0 | 215-481-4                         |          | 9.6 mg/kg         | 1.32         | 12.675 mg/kg   | 0.00127 %   |                      |            |                |
| 5  | benzo[a]anthracene                                                       | 601-033-00-9 | 200-280-6                         |          | 0.36 mg/kg        |              | 0.36 mg/kg     | 0.000036 %  |                      |            |                |
| 6  | benzo[a]pyrene; benzo[def]chrysene                                       | 601-032-00-3 | 200-028-5                         |          | 0.61 mg/kg        |              | 0.61 mg/kg     | 0.000061 %  |                      |            |                |
| 7  | benzo[b]fluoranthene                                                     | 601-034-00-4 | 205-911-9                         |          | 0.84 mg/kg        |              | 0.84 mg/kg     | 0.000084 %  |                      |            |                |
| 8  | benzo[ghi]perylene                                                       | 205-883-8    | 191-24-2                          |          | 0.54 mg/kg        |              | 0.54 mg/kg     | 0.000054 %  |                      |            |                |
| 9  | benzo[k]fluoranthene                                                     | 601-036-00-5 | 205-916-6                         |          | 0.27 mg/kg        |              | 0.27 mg/kg     | 0.000027 %  |                      |            |                |
| 10 | beryllium { beryllium oxide }                                            | 004-003-00-8 | 215-133-1                         |          | 0.61 mg/kg        | 2.775        | 1.693 mg/kg    | 0.000169 %  |                      |            |                |
| 11 | boron { boron tribromide/trichloride/trifluoride (combined) }            |              | 10294-33-4, 10294-34-5, 7637-07-2 |          | 1 mg/kg           | 13.43        | 13.43 mg/kg    | 0.00134 %   |                      |            |                |
| 12 | cadmium { cadmium sulfide }                                              | 048-010-00-4 | 215-147-8                         |          | <0.2 mg/kg        | 1.285        | <0.257 mg/kg   | <0.00002 %  |                      |            | <LOD           |
| 13 | chromium in chromium(III) compounds { chromium(III) oxide (worst case) } | 215-160-9    | 1308-38-9                         |          | 22 mg/kg          | 1.462        | 32.154 mg/kg   | 0.00322 %   |                      |            |                |
| 14 | chromium in chromium(VI) compounds { chromium(VI) oxide }                | 024-001-00-0 | 215-607-8                         |          | <1.2 mg/kg        | 1.923        | <2.308 mg/kg   | <0.000231 % |                      |            | <LOD           |

| #      | Determinand                                                                                                                                                                            |                                |                                  | CLP Note | User entered data | Conv. Factor | Compound conc. |              | Classification value | MC Applied | Conc. Not Used |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------|----------|-------------------|--------------|----------------|--------------|----------------------|------------|----------------|
|        | CLP index number                                                                                                                                                                       | EC Number                      | CAS Number                       |          |                   |              |                |              |                      |            |                |
| 15     | chrysene                                                                                                                                                                               |                                |                                  |          | 0.32 mg/kg        |              | 0.32 mg/kg     | 0.000032 %   |                      |            |                |
|        | 601-048-00-0                                                                                                                                                                           | 205-923-4                      | 218-01-9                         |          |                   |              |                |              |                      |            |                |
| 16     | copper { dicopper oxide; copper (I) oxide }                                                                                                                                            |                                |                                  |          | 14 mg/kg          | 1.126        | 15.762 mg/kg   | 0.00158 %    |                      |            |                |
|        | 029-002-00-X                                                                                                                                                                           | 215-270-7                      | 1317-39-1                        |          |                   |              |                |              |                      |            |                |
| 17     | cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } |                                |                                  |          | <1 mg/kg          | 1.884        | <1.884 mg/kg   | <0.000188 %  |                      |            | <LOD           |
|        | 006-007-00-5                                                                                                                                                                           |                                |                                  |          |                   |              |                |              |                      |            |                |
| 18     | dibenz[a,h]anthracene                                                                                                                                                                  |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        | 601-041-00-2                                                                                                                                                                           | 200-181-8                      | 53-70-3                          |          |                   |              |                |              |                      |            |                |
| 19     | fluoranthene                                                                                                                                                                           |                                |                                  |          | 0.47 mg/kg        |              | 0.47 mg/kg     | 0.000047 %   |                      |            |                |
|        |                                                                                                                                                                                        | 205-912-4                      | 206-44-0                         |          |                   |              |                |              |                      |            |                |
| 20     | fluorene                                                                                                                                                                               |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        |                                                                                                                                                                                        | 201-695-5                      | 86-73-7                          |          |                   |              |                |              |                      |            |                |
| 21     | indeno[123-cd]pyrene                                                                                                                                                                   |                                |                                  |          | 0.45 mg/kg        |              | 0.45 mg/kg     | 0.000045 %   |                      |            |                |
|        |                                                                                                                                                                                        | 205-893-2                      | 193-39-5                         |          |                   |              |                |              |                      |            |                |
| 22     | lead { lead compounds with the exception of those specified elsewhere in this Annex }                                                                                                  |                                |                                  | 1        | 37 mg/kg          |              | 37 mg/kg       | 0.0037 %     |                      |            |                |
|        | 082-001-00-6                                                                                                                                                                           |                                |                                  |          |                   |              |                |              |                      |            |                |
| 23     | mercury { mercury dichloride }                                                                                                                                                         |                                |                                  |          | <0.3 mg/kg        | 1.353        | <0.406 mg/kg   | <0.0000406 % |                      |            | <LOD           |
|        | 080-010-00-X                                                                                                                                                                           | 231-299-8                      | 7487-94-7                        |          |                   |              |                |              |                      |            |                |
| 24     | naphthalene                                                                                                                                                                            |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        | 601-052-00-2                                                                                                                                                                           | 202-049-5                      | 91-20-3                          |          |                   |              |                |              |                      |            |                |
| 25     | nickel { nickel dihydroxide }                                                                                                                                                          |                                |                                  |          | 14 mg/kg          | 1.579        | 22.113 mg/kg   | 0.00221 %    |                      |            |                |
|        | 028-008-00-X                                                                                                                                                                           | 235-008-5 [1]<br>234-348-1 [2] | 12054-48-7 [1]<br>11113-74-9 [2] |          |                   |              |                |              |                      |            |                |
| 26     | pH                                                                                                                                                                                     |                                |                                  |          | 7 pH              |              | 7 pH           | 7pH          |                      |            |                |
|        |                                                                                                                                                                                        |                                | PH                               |          |                   |              |                |              |                      |            |                |
| 27     | phenanthrene                                                                                                                                                                           |                                |                                  |          | 0.22 mg/kg        |              | 0.22 mg/kg     | 0.000022 %   |                      |            |                |
|        |                                                                                                                                                                                        | 201-581-5                      | 85-01-8                          |          |                   |              |                |              |                      |            |                |
| 28     | phenol                                                                                                                                                                                 |                                |                                  |          | <1 mg/kg          |              | <1 mg/kg       | <0.0001 %    |                      |            | <LOD           |
|        | 604-001-00-2                                                                                                                                                                           | 203-632-7                      | 108-95-2                         |          |                   |              |                |              |                      |            |                |
| 29     | pyrene                                                                                                                                                                                 |                                |                                  |          | 0.49 mg/kg        |              | 0.49 mg/kg     | 0.000049 %   |                      |            |                |
|        |                                                                                                                                                                                        | 204-927-3                      | 129-00-0                         |          |                   |              |                |              |                      |            |                |
| 30     | zinc { zinc oxide }                                                                                                                                                                    |                                |                                  |          | 73 mg/kg          | 1.245        | 90.864 mg/kg   | 0.00909 %    |                      |            |                |
|        | 030-013-00-7                                                                                                                                                                           | 215-222-5                      | 1314-13-2                        |          |                   |              |                |              |                      |            |                |
| Total: |                                                                                                                                                                                        |                                |                                  |          |                   |              |                |              | 0.0236 %             |            |                |

Key

|             |                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|
|             | User supplied data                                                                                                              |
|             | Determinand values ignored for classification, see column 'Conc. Not Used' for reason                                           |
|             | Determinand defined or amended by HazWasteOnline (see Appendix A)                                                               |
|             | Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration |
| <LOD        | Below limit of detection                                                                                                        |
| ND          | Not detected                                                                                                                    |
| CLP: Note 1 | Only the metal concentration has been used for classification                                                                   |

## Classification of sample: WS03

 **Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

|               |        |           |                                                                   |                                                                                           |
|---------------|--------|-----------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Sample Name:  | WS03   | LoW Code: | Chapter:                                                          | 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| Sample Depth: | 0.10 m | Entry:    | 17 05 04 (Soil and stones other than those mentioned in 17 05 03) |                                                                                           |

## Hazard properties

None identified

## Determinands

Moisture content: 0% No Moisture Correction applied (MC)

| #  | Determinand                                                              | CLP index number | EC Number | CAS Number                              | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------|------------------|-----------|-----------------------------------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
| 1  | acenaphthene                                                             |                  | 201-469-6 | 83-32-9                                 |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
| 2  | acenaphthylene                                                           |                  | 205-917-1 | 208-96-8                                |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
| 3  | anthracene                                                               |                  | 204-371-1 | 120-12-7                                |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
| 4  | arsenic { arsenic trioxide }                                             | 033-003-00-0     | 215-481-4 | 1327-53-3                               |          | 7.2 mg/kg         | 1.32         | 9.506 mg/kg    | 0.000951 %           |            |                |
| 5  | benzo[a]anthracene                                                       | 601-033-00-9     | 200-280-6 | 56-55-3                                 |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
| 6  | benzo[a]pyrene; benzo[def]chrysene                                       | 601-032-00-3     | 200-028-5 | 50-32-8                                 |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
| 7  | benzo[b]fluoranthene                                                     | 601-034-00-4     | 205-911-9 | 205-99-2                                |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
| 8  | benzo[ghi]perylene                                                       |                  | 205-883-8 | 191-24-2                                |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
| 9  | benzo[k]fluoranthene                                                     | 601-036-00-5     | 205-916-6 | 207-08-9                                |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
| 10 | beryllium { beryllium oxide }                                            | 004-003-00-8     | 215-133-1 | 1304-56-9                               |          | 0.54 mg/kg        | 2.775        | 1.499 mg/kg    | 0.00015 %            |            |                |
| 11 | boron { boron tribromide/trichloride/trifluoride (combined) }            |                  |           | 10294-33-4,<br>10294-34-5,<br>7637-07-2 |          | 0.8 mg/kg         | 13.43        | 10.744 mg/kg   | 0.00107 %            |            |                |
| 12 | cadmium { cadmium sulfide }                                              | 048-010-00-4     | 215-147-8 | 1306-23-6                               | 1        | <0.2 mg/kg        | 1.285        | <0.257 mg/kg   | <0.00002 %           |            | <LOD           |
| 13 | chromium in chromium(III) compounds { chromium(III) oxide (worst case) } |                  | 215-160-9 | 1308-38-9                               |          | 19 mg/kg          | 1.462        | 27.77 mg/kg    | 0.00278 %            |            |                |
| 14 | chromium in chromium(VI) compounds { chromium(VI) oxide }                | 024-001-00-0     | 215-607-8 | 1333-82-0                               |          | <1.2 mg/kg        | 1.923        | <2.308 mg/kg   | <0.000231 %          |            | <LOD           |

| #      | Determinand                                                                                                                                                                            |                                |                                  | CLP Note | User entered data | Conv. Factor | Compound conc. |              | Classification value | MC Applied | Conc. Not Used |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------|----------|-------------------|--------------|----------------|--------------|----------------------|------------|----------------|
|        | CLP index number                                                                                                                                                                       | EC Number                      | CAS Number                       |          |                   |              |                |              |                      |            |                |
| 15     | chrysene                                                                                                                                                                               |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        | 601-048-00-0                                                                                                                                                                           | 205-923-4                      | 218-01-9                         |          |                   |              |                |              |                      |            |                |
| 16     | copper { dicopper oxide; copper (I) oxide }                                                                                                                                            |                                |                                  |          | 15 mg/kg          | 1.126        | 16.888 mg/kg   | 0.00169 %    |                      |            |                |
|        | 029-002-00-X                                                                                                                                                                           | 215-270-7                      | 1317-39-1                        |          |                   |              |                |              |                      |            |                |
| 17     | cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } |                                |                                  |          | <1 mg/kg          | 1.884        | <1.884 mg/kg   | <0.000188 %  |                      |            | <LOD           |
|        | 006-007-00-5                                                                                                                                                                           |                                |                                  |          |                   |              |                |              |                      |            |                |
| 18     | dibenz[a,h]anthracene                                                                                                                                                                  |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        | 601-041-00-2                                                                                                                                                                           | 200-181-8                      | 53-70-3                          |          |                   |              |                |              |                      |            |                |
| 19     | fluoranthene                                                                                                                                                                           |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        |                                                                                                                                                                                        | 205-912-4                      | 206-44-0                         |          |                   |              |                |              |                      |            |                |
| 20     | fluorene                                                                                                                                                                               |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        |                                                                                                                                                                                        | 201-695-5                      | 86-73-7                          |          |                   |              |                |              |                      |            |                |
| 21     | indeno[123-cd]pyrene                                                                                                                                                                   |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        |                                                                                                                                                                                        | 205-893-2                      | 193-39-5                         |          |                   |              |                |              |                      |            |                |
| 22     | lead { lead compounds with the exception of those specified elsewhere in this Annex }                                                                                                  |                                |                                  | 1        | 28 mg/kg          |              | 28 mg/kg       | 0.0028 %     |                      |            |                |
|        | 082-001-00-6                                                                                                                                                                           |                                |                                  |          |                   |              |                |              |                      |            |                |
| 23     | mercury { mercury dichloride }                                                                                                                                                         |                                |                                  |          | <0.3 mg/kg        | 1.353        | <0.406 mg/kg   | <0.0000406 % |                      |            | <LOD           |
|        | 080-010-00-X                                                                                                                                                                           | 231-299-8                      | 7487-94-7                        |          |                   |              |                |              |                      |            |                |
| 24     | naphthalene                                                                                                                                                                            |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        | 601-052-00-2                                                                                                                                                                           | 202-049-5                      | 91-20-3                          |          |                   |              |                |              |                      |            |                |
| 25     | nickel { nickel dihydroxide }                                                                                                                                                          |                                |                                  |          | 12 mg/kg          | 1.579        | 18.954 mg/kg   | 0.0019 %     |                      |            |                |
|        | 028-008-00-X                                                                                                                                                                           | 235-008-5 [1]<br>234-348-1 [2] | 12054-48-7 [1]<br>11113-74-9 [2] |          |                   |              |                |              |                      |            |                |
| 26     | pH                                                                                                                                                                                     |                                |                                  |          | 6.8 pH            |              | 6.8 pH         | 6.8 pH       |                      |            |                |
|        |                                                                                                                                                                                        |                                | PH                               |          |                   |              |                |              |                      |            |                |
| 27     | phenanthrene                                                                                                                                                                           |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        |                                                                                                                                                                                        | 201-581-5                      | 85-01-8                          |          |                   |              |                |              |                      |            |                |
| 28     | phenol                                                                                                                                                                                 |                                |                                  |          | <1 mg/kg          |              | <1 mg/kg       | <0.0001 %    |                      |            | <LOD           |
|        | 604-001-00-2                                                                                                                                                                           | 203-632-7                      | 108-95-2                         |          |                   |              |                |              |                      |            |                |
| 29     | pyrene                                                                                                                                                                                 |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        |                                                                                                                                                                                        | 204-927-3                      | 129-00-0                         |          |                   |              |                |              |                      |            |                |
| 30     | zinc { zinc oxide }                                                                                                                                                                    |                                |                                  |          | 55 mg/kg          | 1.245        | 68.459 mg/kg   | 0.00685 %    |                      |            |                |
|        | 030-013-00-7                                                                                                                                                                           | 215-222-5                      | 1314-13-2                        |          |                   |              |                |              |                      |            |                |
| Total: |                                                                                                                                                                                        |                                |                                  |          |                   |              |                |              | 0.0188 %             |            |                |

Key

|             |                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|
|             | User supplied data                                                                                                              |
|             | Determinand values ignored for classification, see column 'Conc. Not Used' for reason                                           |
|             | Determinand defined or amended by HazWasteOnline (see Appendix A)                                                               |
|             | Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration |
| <LOD        | Below limit of detection                                                                                                        |
| ND          | Not detected                                                                                                                    |
| CLP: Note 1 | Only the metal concentration has been used for classification                                                                   |

## Classification of sample: TP01

 **Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

|               |           |                                                                                           |
|---------------|-----------|-------------------------------------------------------------------------------------------|
| Sample Name:  | LoW Code: |                                                                                           |
| <b>TP01</b>   | Chapter:  | 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| Sample Depth: | Entry:    | 17 05 04 (Soil and stones other than those mentioned in 17 05 03)                         |
| <b>0.10 m</b> |           |                                                                                           |

## Hazard properties

None identified

## Determinands

Moisture content: 0% No Moisture Correction applied (MC)

| #  | Determinand                                                              |              |                                   | CLP Note  | User entered data | Conv. Factor | Compound conc. |              | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------|--------------|-----------------------------------|-----------|-------------------|--------------|----------------|--------------|----------------------|------------|----------------|
|    | CLP index number                                                         | EC Number    | CAS Number                        |           |                   |              |                |              |                      |            |                |
| 1  | acenaphthene                                                             | 201-469-6    | 83-32-9                           |           | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
| 2  | acenaphthylene                                                           | 205-917-1    | 208-96-8                          |           | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
| 3  | anthracene                                                               | 204-371-1    | 120-12-7                          |           | 0.36 mg/kg        |              | 0.36 mg/kg     | 0.000036 %   |                      |            |                |
| 4  | arsenic { arsenic trioxide }                                             | 033-003-00-0 | 215-481-4                         | 1327-53-3 | 8 mg/kg           | 1.32         | 10.563 mg/kg   | 0.00106 %    |                      |            |                |
| 5  | benzene                                                                  | 601-020-00-8 | 200-753-7                         | 71-43-2   | <0.001 mg/kg      |              | <0.001 mg/kg   | <0.0000001 % |                      |            | <LOD           |
| 6  | benzo[a]anthracene                                                       | 601-033-00-9 | 200-280-6                         | 56-55-3   | 1.6 mg/kg         |              | 1.6 mg/kg      | 0.00016 %    |                      |            |                |
| 7  | benzo[a]pyrene; benzo[def]chrysene                                       | 601-032-00-3 | 200-028-5                         | 50-32-8   | 1.3 mg/kg         |              | 1.3 mg/kg      | 0.00013 %    |                      |            |                |
| 8  | benzo[b]fluoranthene                                                     | 601-034-00-4 | 205-911-9                         | 205-99-2  | 1.6 mg/kg         |              | 1.6 mg/kg      | 0.00016 %    |                      |            |                |
| 9  | benzo[ghi]perylene                                                       | 205-883-8    | 191-24-2                          |           | 0.8 mg/kg         |              | 0.8 mg/kg      | 0.00008 %    |                      |            |                |
| 10 | benzo[k]fluoranthene                                                     | 601-036-00-5 | 205-916-6                         | 207-08-9  | 0.74 mg/kg        |              | 0.74 mg/kg     | 0.000074 %   |                      |            |                |
| 11 | beryllium { beryllium oxide }                                            | 004-003-00-8 | 215-133-1                         | 1304-56-9 | 0.56 mg/kg        | 2.775        | 1.554 mg/kg    | 0.000155 %   |                      |            |                |
| 12 | boron { boron tribromide/trichloride/trifluoride (combined) }            |              | 10294-33-4, 10294-34-5, 7637-07-2 |           | 0.6 mg/kg         | 13.43        | 8.058 mg/kg    | 0.000806 %   |                      |            |                |
| 13 | cadmium { cadmium sulfide }                                              | 048-010-00-4 | 215-147-8                         | 1306-23-6 | 0.4 mg/kg         | 1.285        | 0.514 mg/kg    | 0.00004 %    |                      |            |                |
| 14 | chromium in chromium(III) compounds { chromium(III) oxide (worst case) } | 215-160-9    | 1308-38-9                         |           | 21 mg/kg          | 1.462        | 30.693 mg/kg   | 0.00307 %    |                      |            |                |

| #      | Determinand                                                                                                                                                                            |                                                                  |                                                              | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
|        | CLP index number                                                                                                                                                                       | EC Number                                                        | CAS Number                                                   |          |                   |              |                |                      |            |                |
| 15     | chromium in chromium(VI) compounds { chromium(VI) oxide }                                                                                                                              |                                                                  |                                                              |          | <1.2 mg/kg        | 1.923        | <2.308 mg/kg   | <0.000231 %          |            | <LOD           |
|        | 024-001-00-0                                                                                                                                                                           | 215-607-8                                                        | 1333-82-0                                                    |          |                   |              |                |                      |            |                |
| 16     | chrysene                                                                                                                                                                               |                                                                  |                                                              |          | 1.2 mg/kg         |              | 1.2 mg/kg      | 0.00012 %            |            |                |
|        | 601-048-00-0                                                                                                                                                                           | 205-923-4                                                        | 218-01-9                                                     |          |                   |              |                |                      |            |                |
| 17     | copper { dicopper oxide; copper (I) oxide }                                                                                                                                            |                                                                  |                                                              |          | 89 mg/kg          | 1.126        | 100.204 mg/kg  | 0.01 %               |            |                |
|        | 029-002-00-X                                                                                                                                                                           | 215-270-7                                                        | 1317-39-1                                                    |          |                   |              |                |                      |            |                |
| 18     | cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } |                                                                  |                                                              |          | <1 mg/kg          | 1.884        | <1.884 mg/kg   | <0.000188 %          |            | <LOD           |
|        | 006-007-00-5                                                                                                                                                                           |                                                                  |                                                              |          |                   |              |                |                      |            |                |
| 19     | dibenz[a,h]anthracene                                                                                                                                                                  |                                                                  |                                                              |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
|        | 601-041-00-2                                                                                                                                                                           | 200-181-8                                                        | 53-70-3                                                      |          |                   |              |                |                      |            |                |
| 20     | ethylbenzene                                                                                                                                                                           |                                                                  |                                                              |          | <0.001 mg/kg      |              | <0.001 mg/kg   | <0.0000001 %         |            | <LOD           |
|        | 601-023-00-4                                                                                                                                                                           | 202-849-4                                                        | 100-41-4                                                     |          |                   |              |                |                      |            |                |
| 21     | fluoranthene                                                                                                                                                                           |                                                                  |                                                              |          | 2.9 mg/kg         |              | 2.9 mg/kg      | 0.00029 %            |            |                |
|        |                                                                                                                                                                                        | 205-912-4                                                        | 206-44-0                                                     |          |                   |              |                |                      |            |                |
| 22     | fluorene                                                                                                                                                                               |                                                                  |                                                              |          | 0.2 mg/kg         |              | 0.2 mg/kg      | 0.00002 %            |            |                |
|        |                                                                                                                                                                                        | 201-695-5                                                        | 86-73-7                                                      |          |                   |              |                |                      |            |                |
| 23     | indeno[123-cd]pyrene                                                                                                                                                                   |                                                                  |                                                              |          | 0.67 mg/kg        |              | 0.67 mg/kg     | 0.000067 %           |            |                |
|        |                                                                                                                                                                                        | 205-893-2                                                        | 193-39-5                                                     |          |                   |              |                |                      |            |                |
| 24     | lead { lead compounds with the exception of those specified elsewhere in this Annex }                                                                                                  |                                                                  |                                                              | 1        | 100 mg/kg         |              | 100 mg/kg      | 0.01 %               |            |                |
|        | 082-001-00-6                                                                                                                                                                           |                                                                  |                                                              |          |                   |              |                |                      |            |                |
| 25     | mercury { mercury dichloride }                                                                                                                                                         |                                                                  |                                                              |          | <0.3 mg/kg        | 1.353        | <0.406 mg/kg   | <0.0000406 %         |            | <LOD           |
|        | 080-010-00-X                                                                                                                                                                           | 231-299-8                                                        | 7487-94-7                                                    |          |                   |              |                |                      |            |                |
| 26     | naphthalene                                                                                                                                                                            |                                                                  |                                                              |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
|        | 601-052-00-2                                                                                                                                                                           | 202-049-5                                                        | 91-20-3                                                      |          |                   |              |                |                      |            |                |
| 27     | nickel { nickel dihydroxide }                                                                                                                                                          |                                                                  |                                                              |          | 13 mg/kg          | 1.579        | 20.533 mg/kg   | 0.00205 %            |            |                |
|        | 028-008-00-X                                                                                                                                                                           | 235-008-5 [1]<br>234-348-1 [2]                                   | 12054-48-7 [1]<br>11113-74-9 [2]                             |          |                   |              |                |                      |            |                |
| 28     | pH                                                                                                                                                                                     |                                                                  |                                                              |          | 7.1 pH            |              | 7.1 pH         | 7.1 pH               |            |                |
|        |                                                                                                                                                                                        |                                                                  | PH                                                           |          |                   |              |                |                      |            |                |
| 29     | phenanthrene                                                                                                                                                                           |                                                                  |                                                              |          | 2 mg/kg           |              | 2 mg/kg        | 0.0002 %             |            |                |
|        |                                                                                                                                                                                        | 201-581-5                                                        | 85-01-8                                                      |          |                   |              |                |                      |            |                |
| 30     | phenol                                                                                                                                                                                 |                                                                  |                                                              |          | <1 mg/kg          |              | <1 mg/kg       | <0.0001 %            |            | <LOD           |
|        | 604-001-00-2                                                                                                                                                                           | 203-632-7                                                        | 108-95-2                                                     |          |                   |              |                |                      |            |                |
| 31     | pyrene                                                                                                                                                                                 |                                                                  |                                                              |          | 2.4 mg/kg         |              | 2.4 mg/kg      | 0.00024 %            |            |                |
|        |                                                                                                                                                                                        | 204-927-3                                                        | 129-00-0                                                     |          |                   |              |                |                      |            |                |
| 32     | toluene                                                                                                                                                                                |                                                                  |                                                              |          | <0.001 mg/kg      |              | <0.001 mg/kg   | <0.0000001 %         |            | <LOD           |
|        | 601-021-00-3                                                                                                                                                                           | 203-625-9                                                        | 108-88-3                                                     |          |                   |              |                |                      |            |                |
| 33     | TPH (C6 to C40) petroleum group                                                                                                                                                        |                                                                  |                                                              |          | 139 mg/kg         |              | 139 mg/kg      | 0.0139 %             |            |                |
|        |                                                                                                                                                                                        |                                                                  | TPH                                                          |          |                   |              |                |                      |            |                |
| 34     | xylene                                                                                                                                                                                 |                                                                  |                                                              |          | <0.001 mg/kg      |              | <0.001 mg/kg   | <0.0000001 %         |            | <LOD           |
|        | 601-022-00-9                                                                                                                                                                           | 202-422-2 [1]<br>203-396-5 [2]<br>203-576-3 [3]<br>215-535-7 [4] | 95-47-6 [1]<br>106-42-3 [2]<br>108-38-3 [3]<br>1330-20-7 [4] |          |                   |              |                |                      |            |                |
| 35     | zinc { zinc oxide }                                                                                                                                                                    |                                                                  |                                                              |          | 120 mg/kg         | 1.245        | 149.366 mg/kg  | 0.0149 %             |            |                |
|        | 030-013-00-7                                                                                                                                                                           | 215-222-5                                                        | 1314-13-2                                                    |          |                   |              |                |                      |            |                |
| Total: |                                                                                                                                                                                        |                                                                  |                                                              |          |                   |              |                | 0.0582 %             |            |                |

## Key

|             |                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|
|             | User supplied data                                                                                                              |
|             | Determinand values ignored for classification, see column 'Conc. Not Used' for reason                                           |
|             | Determinand defined or amended by HazWasteOnline (see Appendix A)                                                               |
|             | Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration |
| <LOD        | Below limit of detection                                                                                                        |
| ND          | Not detected                                                                                                                    |
| CLP: Note 1 | Only the metal concentration has been used for classification                                                                   |

## Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

**Force this Hazardous property to non hazardous because** Concentrations of TPH are considered unlikely to represent a flammable risk.

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0139%)

## Classification of sample: SA02

✔ **Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

|               |        |           |                                                                                           |
|---------------|--------|-----------|-------------------------------------------------------------------------------------------|
| Sample Name:  | SA02   | LoW Code: | 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| Sample Depth: | 0.10 m | Chapter:  | 17 05 04 (Soil and stones other than those mentioned in 17 05 03)                         |
|               |        | Entry:    |                                                                                           |

## Hazard properties

None identified

## Determinands

Moisture content: 0% No Moisture Correction applied (MC)

| #  | Determinand                                                              |              |                                   | CLP Note | User entered data | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------|--------------|-----------------------------------|----------|-------------------|--------------|----------------|-------|----------------------|------------|----------------|
|    | CLP index number                                                         | EC Number    | CAS Number                        |          |                   |              |                |       |                      |            |                |
| 1  | acenaphthene                                                             | 201-469-6    | 83-32-9                           |          | <0.05 mg/kg       |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 2  | acenaphthylene                                                           | 205-917-1    | 208-96-8                          |          | <0.05 mg/kg       |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 3  | anthracene                                                               | 204-371-1    | 120-12-7                          |          | <0.05 mg/kg       |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 4  | arsenic { arsenic trioxide }                                             | 033-003-00-0 | 215-481-4                         |          | 7.7 mg/kg         | 1.32         | 10.167         | mg/kg | 0.00102 %            |            |                |
| 5  | benzene                                                                  | 601-020-00-8 | 200-753-7                         |          | <0.001 mg/kg      |              | <0.001         | mg/kg | <0.0000001 %         |            | <LOD           |
| 6  | benzo[a]anthracene                                                       | 601-033-00-9 | 200-280-6                         |          | <0.05 mg/kg       |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 7  | benzo[a]pyrene; benzo[def]chrysene                                       | 601-032-00-3 | 200-028-5                         |          | <0.05 mg/kg       |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 8  | benzo[b]fluoranthene                                                     | 601-034-00-4 | 205-911-9                         |          | <0.05 mg/kg       |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 9  | benzo[ghi]perylene                                                       | 205-883-8    | 191-24-2                          |          | <0.05 mg/kg       |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 10 | benzo[k]fluoranthene                                                     | 601-036-00-5 | 205-916-6                         |          | <0.05 mg/kg       |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 11 | beryllium { beryllium oxide }                                            | 004-003-00-8 | 215-133-1                         |          | 0.58 mg/kg        | 2.775        | 1.61           | mg/kg | 0.000161 %           |            |                |
| 12 | boron { boron tribromide/trichloride/trifluoride (combined) }            |              | 10294-33-4, 10294-34-5, 7637-07-2 |          | 1.5 mg/kg         | 13.43        | 20.145         | mg/kg | 0.00201 %            |            |                |
| 13 | cadmium { cadmium sulfide }                                              | 048-010-00-4 | 215-147-8                         |          | <0.2 mg/kg        | 1.285        | <0.257         | mg/kg | <0.00002 %           |            | <LOD           |
| 14 | chromium in chromium(III) compounds { chromium(III) oxide (worst case) } | 215-160-9    | 1308-38-9                         |          | 22 mg/kg          | 1.462        | 32.154         | mg/kg | 0.00322 %            |            |                |

| #      |                                                                                     | Determinand                                                                                                                                                                                                                                                              |                                                                  |                                                              | CLP Note | User entered data |       | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|--------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------------------|----------|-------------------|-------|--------------|----------------|-------|----------------------|------------|----------------|
|        |                                                                                     | CLP index number                                                                                                                                                                                                                                                         | EC Number                                                        | CAS Number                                                   |          |                   |       |              |                |       |                      |            |                |
| 15     |    | chromium in chromium(VI) compounds { chromium(VI) oxide }                                                                                                                                                                                                                |                                                                  |                                                              |          | <1.2              | mg/kg | 1.923        | <2.308         | mg/kg | <0.000231 %          |            | <LOD           |
|        |                                                                                     | 024-001-00-0                                                                                                                                                                                                                                                             | 215-607-8                                                        | 1333-82-0                                                    |          |                   |       |              |                |       |                      |            |                |
| 16     |                                                                                     | chrysene                                                                                                                                                                                                                                                                 |                                                                  |                                                              |          | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
|        |                                                                                     | 601-048-00-0                                                                                                                                                                                                                                                             | 205-923-4                                                        | 218-01-9                                                     |          |                   |       |              |                |       |                      |            |                |
| 17     |    | copper { dicopper oxide; copper (I) oxide }                                                                                                                                                                                                                              |                                                                  |                                                              |          | 13                | mg/kg | 1.126        | 14.637         | mg/kg | 0.00146 %            |            |                |
|        |                                                                                     | 029-002-00-X                                                                                                                                                                                                                                                             | 215-270-7                                                        | 1317-39-1                                                    |          |                   |       |              |                |       |                      |            |                |
| 18     |    | cyanides {  salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } |                                                                  |                                                              |          | <1                | mg/kg | 1.884        | <1.884         | mg/kg | <0.000188 %          |            | <LOD           |
|        |                                                                                     | 006-007-00-5                                                                                                                                                                                                                                                             |                                                                  |                                                              |          |                   |       |              |                |       |                      |            |                |
| 19     |                                                                                     | dibenz[a,h]anthracene                                                                                                                                                                                                                                                    |                                                                  |                                                              |          | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
|        |                                                                                     | 601-041-00-2                                                                                                                                                                                                                                                             | 200-181-8                                                        | 53-70-3                                                      |          |                   |       |              |                |       |                      |            |                |
| 20     |    | ethylbenzene                                                                                                                                                                                                                                                             |                                                                  |                                                              |          | <0.001            | mg/kg |              | <0.001         | mg/kg | <0.0000001 %         |            | <LOD           |
|        |                                                                                     | 601-023-00-4                                                                                                                                                                                                                                                             | 202-849-4                                                        | 100-41-4                                                     |          |                   |       |              |                |       |                      |            |                |
| 21     |    | fluoranthene                                                                                                                                                                                                                                                             |                                                                  |                                                              |          | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
|        |                                                                                     |                                                                                                                                                                                                                                                                          | 205-912-4                                                        | 206-44-0                                                     |          |                   |       |              |                |       |                      |            |                |
| 22     |    | fluorene                                                                                                                                                                                                                                                                 |                                                                  |                                                              |          | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
|        |                                                                                     |                                                                                                                                                                                                                                                                          | 201-695-5                                                        | 86-73-7                                                      |          |                   |       |              |                |       |                      |            |                |
| 23     |    | indeno[123-cd]pyrene                                                                                                                                                                                                                                                     |                                                                  |                                                              |          | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
|        |                                                                                     |                                                                                                                                                                                                                                                                          | 205-893-2                                                        | 193-39-5                                                     |          |                   |       |              |                |       |                      |            |                |
| 24     |  | lead {  lead compounds with the exception of those specified elsewhere in this Annex }                                                                                                |                                                                  |                                                              | 1        | 79                | mg/kg |              | 79             | mg/kg | 0.0079 %             |            |                |
|        |                                                                                     | 082-001-00-6                                                                                                                                                                                                                                                             |                                                                  |                                                              |          |                   |       |              |                |       |                      |            |                |
| 25     |  | mercury { mercury dichloride }                                                                                                                                                                                                                                           |                                                                  |                                                              |          | <0.3              | mg/kg | 1.353        | <0.406         | mg/kg | <0.0000406 %         |            | <LOD           |
|        |                                                                                     | 080-010-00-X                                                                                                                                                                                                                                                             | 231-299-8                                                        | 7487-94-7                                                    |          |                   |       |              |                |       |                      |            |                |
| 26     |                                                                                     | naphthalene                                                                                                                                                                                                                                                              |                                                                  |                                                              |          | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
|        |                                                                                     | 601-052-00-2                                                                                                                                                                                                                                                             | 202-049-5                                                        | 91-20-3                                                      |          |                   |       |              |                |       |                      |            |                |
| 27     |  | nickel { nickel dihydroxide }                                                                                                                                                                                                                                            |                                                                  |                                                              |          | 13                | mg/kg | 1.579        | 20.533         | mg/kg | 0.00205 %            |            |                |
|        |                                                                                     | 028-008-00-X                                                                                                                                                                                                                                                             | 235-008-5 [1]<br>234-348-1 [2]                                   | 12054-48-7 [1]<br>11113-74-9 [2]                             |          |                   |       |              |                |       |                      |            |                |
| 28     |  | pH                                                                                                                                                                                                                                                                       |                                                                  |                                                              |          | 6.4               | pH    |              | 6.4            | pH    | 6.4 pH               |            |                |
|        |                                                                                     |                                                                                                                                                                                                                                                                          |                                                                  | PH                                                           |          |                   |       |              |                |       |                      |            |                |
| 29     |  | phenanthrene                                                                                                                                                                                                                                                             |                                                                  |                                                              |          | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
|        |                                                                                     |                                                                                                                                                                                                                                                                          | 201-581-5                                                        | 85-01-8                                                      |          |                   |       |              |                |       |                      |            |                |
| 30     |                                                                                     | phenol                                                                                                                                                                                                                                                                   |                                                                  |                                                              |          | <1                | mg/kg |              | <1             | mg/kg | <0.0001 %            |            | <LOD           |
|        |                                                                                     | 604-001-00-2                                                                                                                                                                                                                                                             | 203-632-7                                                        | 108-95-2                                                     |          |                   |       |              |                |       |                      |            |                |
| 31     |  | pyrene                                                                                                                                                                                                                                                                   |                                                                  |                                                              |          | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
|        |                                                                                     |                                                                                                                                                                                                                                                                          | 204-927-3                                                        | 129-00-0                                                     |          |                   |       |              |                |       |                      |            |                |
| 32     |                                                                                     | toluene                                                                                                                                                                                                                                                                  |                                                                  |                                                              |          | <0.001            | mg/kg |              | <0.001         | mg/kg | <0.0000001 %         |            | <LOD           |
|        |                                                                                     | 601-021-00-3                                                                                                                                                                                                                                                             | 203-625-9                                                        | 108-88-3                                                     |          |                   |       |              |                |       |                      |            |                |
| 33     |  | TPH (C6 to C40) petroleum group                                                                                                                                                                                                                                          |                                                                  |                                                              |          | <10               | mg/kg |              | <10            | mg/kg | <0.001 %             |            | <LOD           |
|        |                                                                                     |                                                                                                                                                                                                                                                                          |                                                                  | TPH                                                          |          |                   |       |              |                |       |                      |            |                |
| 34     |                                                                                     | xylene                                                                                                                                                                                                                                                                   |                                                                  |                                                              |          | <0.001            | mg/kg |              | <0.001         | mg/kg | <0.0000001 %         |            | <LOD           |
|        |                                                                                     | 601-022-00-9                                                                                                                                                                                                                                                             | 202-422-2 [1]<br>203-396-5 [2]<br>203-576-3 [3]<br>215-535-7 [4] | 95-47-6 [1]<br>106-42-3 [2]<br>108-38-3 [3]<br>1330-20-7 [4] |          |                   |       |              |                |       |                      |            |                |
| 35     |  | zinc { zinc oxide }                                                                                                                                                                                                                                                      |                                                                  |                                                              |          | 66                | mg/kg | 1.245        | 82.151         | mg/kg | 0.00822 %            |            |                |
|        |                                                                                     | 030-013-00-7                                                                                                                                                                                                                                                             | 215-222-5                                                        | 1314-13-2                                                    |          |                   |       |              |                |       |                      |            |                |
| Total: |                                                                                     |                                                                                                                                                                                                                                                                          |                                                                  |                                                              |          |                   |       |              |                |       | 0.0277 %             |            |                |

Key

|                                                                                   |                                                                                                                                 |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
|  | User supplied data                                                                                                              |
|  | Determinand values ignored for classification, see column 'Conc. Not Used' for reason                                           |
|  | Determinand defined or amended by HazWasteOnline (see Appendix A)                                                               |
|  | Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration |
| <b>&lt;LOD</b>                                                                    | Below limit of detection                                                                                                        |
| <b>ND</b>                                                                         | Not detected                                                                                                                    |
| CLP: Note 1 Only the metal concentration has been used for classification         |                                                                                                                                 |

## Classification of sample: WS04

 **Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

|               |        |           |                                                                   |                                                                                           |
|---------------|--------|-----------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Sample Name:  | WS04   | LoW Code: | Chapter:                                                          | 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| Sample Depth: | 0.10 m | Entry:    | 17 05 04 (Soil and stones other than those mentioned in 17 05 03) |                                                                                           |

## Hazard properties

None identified

## Determinands

Moisture content: 0% No Moisture Correction applied (MC)

| #  | Determinand                                                              | CLP index number | EC Number | CAS Number                              | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------|------------------|-----------|-----------------------------------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
| 1  | acenaphthene                                                             |                  | 201-469-6 | 83-32-9                                 |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
| 2  | acenaphthylene                                                           |                  | 205-917-1 | 208-96-8                                |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
| 3  | anthracene                                                               |                  | 204-371-1 | 120-12-7                                |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
| 4  | arsenic { arsenic trioxide }                                             | 033-003-00-0     | 215-481-4 | 1327-53-3                               |          | 5.4 mg/kg         | 1.32         | 7.13 mg/kg     | 0.000713 %           |            |                |
| 5  | benzo[a]anthracene                                                       | 601-033-00-9     | 200-280-6 | 56-55-3                                 |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
| 6  | benzo[a]pyrene; benzo[def]chrysene                                       | 601-032-00-3     | 200-028-5 | 50-32-8                                 |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
| 7  | benzo[b]fluoranthene                                                     | 601-034-00-4     | 205-911-9 | 205-99-2                                |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
| 8  | benzo[ghi]perylene                                                       |                  | 205-883-8 | 191-24-2                                |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
| 9  | benzo[k]fluoranthene                                                     | 601-036-00-5     | 205-916-6 | 207-08-9                                |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %          |            | <LOD           |
| 10 | beryllium { beryllium oxide }                                            | 004-003-00-8     | 215-133-1 | 1304-56-9                               |          | 0.52 mg/kg        | 2.775        | 1.443 mg/kg    | 0.000144 %           |            |                |
| 11 | boron { boron tribromide/trichloride/trifluoride (combined) }            |                  |           | 10294-33-4,<br>10294-34-5,<br>7637-07-2 |          | 0.8 mg/kg         | 13.43        | 10.744 mg/kg   | 0.00107 %            |            |                |
| 12 | cadmium { cadmium sulfide }                                              | 048-010-00-4     | 215-147-8 | 1306-23-6                               | 1        | <0.2 mg/kg        | 1.285        | <0.257 mg/kg   | <0.00002 %           |            | <LOD           |
| 13 | chromium in chromium(III) compounds { chromium(III) oxide (worst case) } |                  | 215-160-9 | 1308-38-9                               |          | 20 mg/kg          | 1.462        | 29.231 mg/kg   | 0.00292 %            |            |                |
| 14 | chromium in chromium(VI) compounds { chromium(VI) oxide }                | 024-001-00-0     | 215-607-8 | 1333-82-0                               |          | <1.2 mg/kg        | 1.923        | <2.308 mg/kg   | <0.000231 %          |            | <LOD           |

| #      | Determinand                                                                                                                                                                            |                                |                                  | CLP Note | User entered data | Conv. Factor | Compound conc. |              | Classification value | MC Applied | Conc. Not Used |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------|----------|-------------------|--------------|----------------|--------------|----------------------|------------|----------------|
|        | CLP index number                                                                                                                                                                       | EC Number                      | CAS Number                       |          |                   |              |                |              |                      |            |                |
| 15     | chrysene                                                                                                                                                                               |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        | 601-048-00-0                                                                                                                                                                           | 205-923-4                      | 218-01-9                         |          |                   |              |                |              |                      |            |                |
| 16     | copper { dicopper oxide; copper (I) oxide }                                                                                                                                            |                                |                                  |          | 13 mg/kg          | 1.126        | 14.637 mg/kg   | 0.00146 %    |                      |            |                |
|        | 029-002-00-X                                                                                                                                                                           | 215-270-7                      | 1317-39-1                        |          |                   |              |                |              |                      |            |                |
| 17     | cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } |                                |                                  |          | <1 mg/kg          | 1.884        | <1.884 mg/kg   | <0.000188 %  |                      |            | <LOD           |
|        | 006-007-00-5                                                                                                                                                                           |                                |                                  |          |                   |              |                |              |                      |            |                |
| 18     | dibenz[a,h]anthracene                                                                                                                                                                  |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        | 601-041-00-2                                                                                                                                                                           | 200-181-8                      | 53-70-3                          |          |                   |              |                |              |                      |            |                |
| 19     | fluoranthene                                                                                                                                                                           |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        |                                                                                                                                                                                        | 205-912-4                      | 206-44-0                         |          |                   |              |                |              |                      |            |                |
| 20     | fluorene                                                                                                                                                                               |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        |                                                                                                                                                                                        | 201-695-5                      | 86-73-7                          |          |                   |              |                |              |                      |            |                |
| 21     | indeno[123-cd]pyrene                                                                                                                                                                   |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        |                                                                                                                                                                                        | 205-893-2                      | 193-39-5                         |          |                   |              |                |              |                      |            |                |
| 22     | lead { lead compounds with the exception of those specified elsewhere in this Annex }                                                                                                  |                                |                                  | 1        | 27 mg/kg          |              | 27 mg/kg       | 0.0027 %     |                      |            |                |
|        | 082-001-00-6                                                                                                                                                                           |                                |                                  |          |                   |              |                |              |                      |            |                |
| 23     | mercury { mercury dichloride }                                                                                                                                                         |                                |                                  |          | <0.3 mg/kg        | 1.353        | <0.406 mg/kg   | <0.0000406 % |                      |            | <LOD           |
|        | 080-010-00-X                                                                                                                                                                           | 231-299-8                      | 7487-94-7                        |          |                   |              |                |              |                      |            |                |
| 24     | naphthalene                                                                                                                                                                            |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        | 601-052-00-2                                                                                                                                                                           | 202-049-5                      | 91-20-3                          |          |                   |              |                |              |                      |            |                |
| 25     | nickel { nickel dihydroxide }                                                                                                                                                          |                                |                                  |          | 12 mg/kg          | 1.579        | 18.954 mg/kg   | 0.0019 %     |                      |            |                |
|        | 028-008-00-X                                                                                                                                                                           | 235-008-5 [1]<br>234-348-1 [2] | 12054-48-7 [1]<br>11113-74-9 [2] |          |                   |              |                |              |                      |            |                |
| 26     | pH                                                                                                                                                                                     |                                |                                  |          | 6.1 pH            |              | 6.1 pH         | 6.1 pH       |                      |            |                |
|        |                                                                                                                                                                                        |                                | PH                               |          |                   |              |                |              |                      |            |                |
| 27     | phenanthrene                                                                                                                                                                           |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        |                                                                                                                                                                                        | 201-581-5                      | 85-01-8                          |          |                   |              |                |              |                      |            |                |
| 28     | phenol                                                                                                                                                                                 |                                |                                  |          | <1 mg/kg          |              | <1 mg/kg       | <0.0001 %    |                      |            | <LOD           |
|        | 604-001-00-2                                                                                                                                                                           | 203-632-7                      | 108-95-2                         |          |                   |              |                |              |                      |            |                |
| 29     | pyrene                                                                                                                                                                                 |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        |                                                                                                                                                                                        | 204-927-3                      | 129-00-0                         |          |                   |              |                |              |                      |            |                |
| 30     | zinc { zinc oxide }                                                                                                                                                                    |                                |                                  |          | 55 mg/kg          | 1.245        | 68.459 mg/kg   | 0.00685 %    |                      |            |                |
|        | 030-013-00-7                                                                                                                                                                           | 215-222-5                      | 1314-13-2                        |          |                   |              |                |              |                      |            |                |
| Total: |                                                                                                                                                                                        |                                |                                  |          |                   |              |                |              | 0.0184 %             |            |                |

#### Key

|             |                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|
|             | User supplied data                                                                                                              |
|             | Determinand values ignored for classification, see column 'Conc. Not Used' for reason                                           |
|             | Determinand defined or amended by HazWasteOnline (see Appendix A)                                                               |
|             | Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration |
| <LOD        | Below limit of detection                                                                                                        |
| ND          | Not detected                                                                                                                    |
| CLP: Note 1 | Only the metal concentration has been used for classification                                                                   |

## Classification of sample: WS05

 **Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

|               |        |           |                                                                   |                                                                                           |
|---------------|--------|-----------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Sample Name:  | WS05   | LoW Code: | Chapter:                                                          | 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| Sample Depth: | 0.10 m | Entry:    | 17 05 04 (Soil and stones other than those mentioned in 17 05 03) |                                                                                           |

## Hazard properties

None identified

## Determinands

Moisture content: 0% No Moisture Correction applied (MC)

| #  | Determinand                                                              |              |                                   | CLP Note  | User entered data |       | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------|--------------|-----------------------------------|-----------|-------------------|-------|--------------|----------------|-------|----------------------|------------|----------------|
|    | CLP index number                                                         | EC Number    | CAS Number                        |           |                   |       |              |                |       |                      |            |                |
| 1  | acenaphthene                                                             | 201-469-6    | 83-32-9                           |           | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 2  | acenaphthylene                                                           | 205-917-1    | 208-96-8                          |           | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 3  | anthracene                                                               | 204-371-1    | 120-12-7                          |           | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 4  | arsenic { arsenic trioxide }                                             | 033-003-00-0 | 215-481-4                         | 1327-53-3 | 6.4               | mg/kg | 1.32         | 8.45           | mg/kg | 0.000845 %           |            |                |
| 5  | benzo[a]anthracene                                                       | 601-033-00-9 | 200-280-6                         | 56-55-3   | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 6  | benzo[a]pyrene; benzo[def]chrysene                                       | 601-032-00-3 | 200-028-5                         | 50-32-8   | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 7  | benzo[b]fluoranthene                                                     | 601-034-00-4 | 205-911-9                         | 205-99-2  | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 8  | benzo[ghi]perylene                                                       | 205-883-8    | 191-24-2                          |           | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 9  | benzo[k]fluoranthene                                                     | 601-036-00-5 | 205-916-6                         | 207-08-9  | <0.05             | mg/kg |              | <0.05          | mg/kg | <0.000005 %          |            | <LOD           |
| 10 | beryllium { beryllium oxide }                                            | 004-003-00-8 | 215-133-1                         | 1304-56-9 | 0.6               | mg/kg | 2.775        | 1.665          | mg/kg | 0.000167 %           |            |                |
| 11 | boron { boron tribromide/trichloride/trifluoride (combined) }            |              | 10294-33-4, 10294-34-5, 7637-07-2 |           | 1                 | mg/kg | 13.43        | 13.43          | mg/kg | 0.00134 %            |            |                |
| 12 | cadmium { cadmium sulfide }                                              | 048-010-00-4 | 215-147-8                         | 1306-23-6 | 0.2               | mg/kg | 1.285        | 0.257          | mg/kg | 0.00002 %            |            |                |
| 13 | chromium in chromium(III) compounds { chromium(III) oxide (worst case) } | 215-160-9    | 1308-38-9                         |           | 22                | mg/kg | 1.462        | 32.154         | mg/kg | 0.00322 %            |            |                |
| 14 | chromium in chromium(VI) compounds { chromium(VI) oxide }                | 024-001-00-0 | 215-607-8                         | 1333-82-0 | <1.2              | mg/kg | 1.923        | <2.308         | mg/kg | <0.000231 %          |            | <LOD           |

| #      | Determinand                                                                                                                                                                            |                                |                                  | CLP Note | User entered data | Conv. Factor | Compound conc. |              | Classification value | MC Applied | Conc. Not Used |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------|----------|-------------------|--------------|----------------|--------------|----------------------|------------|----------------|
|        | CLP index number                                                                                                                                                                       | EC Number                      | CAS Number                       |          |                   |              |                |              |                      |            |                |
| 15     | chrysene                                                                                                                                                                               |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        | 601-048-00-0                                                                                                                                                                           | 205-923-4                      | 218-01-9                         |          |                   |              |                |              |                      |            |                |
| 16     | copper { dicopper oxide; copper (I) oxide }                                                                                                                                            |                                |                                  |          | 11 mg/kg          | 1.126        | 12.385 mg/kg   | 0.00124 %    |                      |            |                |
|        | 029-002-00-X                                                                                                                                                                           | 215-270-7                      | 1317-39-1                        |          |                   |              |                |              |                      |            |                |
| 17     | cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } |                                |                                  |          | <1 mg/kg          | 1.884        | <1.884 mg/kg   | <0.000188 %  |                      |            | <LOD           |
|        | 006-007-00-5                                                                                                                                                                           |                                |                                  |          |                   |              |                |              |                      |            |                |
| 18     | dibenz[a,h]anthracene                                                                                                                                                                  |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        | 601-041-00-2                                                                                                                                                                           | 200-181-8                      | 53-70-3                          |          |                   |              |                |              |                      |            |                |
| 19     | fluoranthene                                                                                                                                                                           |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        |                                                                                                                                                                                        | 205-912-4                      | 206-44-0                         |          |                   |              |                |              |                      |            |                |
| 20     | fluorene                                                                                                                                                                               |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        |                                                                                                                                                                                        | 201-695-5                      | 86-73-7                          |          |                   |              |                |              |                      |            |                |
| 21     | indeno[123-cd]pyrene                                                                                                                                                                   |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        |                                                                                                                                                                                        | 205-893-2                      | 193-39-5                         |          |                   |              |                |              |                      |            |                |
| 22     | lead { lead compounds with the exception of those specified elsewhere in this Annex }                                                                                                  |                                |                                  | 1        | 24 mg/kg          |              | 24 mg/kg       | 0.0024 %     |                      |            |                |
|        | 082-001-00-6                                                                                                                                                                           |                                |                                  |          |                   |              |                |              |                      |            |                |
| 23     | mercury { mercury dichloride }                                                                                                                                                         |                                |                                  |          | <0.3 mg/kg        | 1.353        | <0.406 mg/kg   | <0.0000406 % |                      |            | <LOD           |
|        | 080-010-00-X                                                                                                                                                                           | 231-299-8                      | 7487-94-7                        |          |                   |              |                |              |                      |            |                |
| 24     | naphthalene                                                                                                                                                                            |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        | 601-052-00-2                                                                                                                                                                           | 202-049-5                      | 91-20-3                          |          |                   |              |                |              |                      |            |                |
| 25     | nickel { nickel dihydroxide }                                                                                                                                                          |                                |                                  |          | 13 mg/kg          | 1.579        | 20.533 mg/kg   | 0.00205 %    |                      |            |                |
|        | 028-008-00-X                                                                                                                                                                           | 235-008-5 [1]<br>234-348-1 [2] | 12054-48-7 [1]<br>11113-74-9 [2] |          |                   |              |                |              |                      |            |                |
| 26     | pH                                                                                                                                                                                     |                                |                                  |          | 7 pH              |              | 7 pH           | 7pH          |                      |            |                |
|        |                                                                                                                                                                                        |                                | PH                               |          |                   |              |                |              |                      |            |                |
| 27     | phenanthrene                                                                                                                                                                           |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        |                                                                                                                                                                                        | 201-581-5                      | 85-01-8                          |          |                   |              |                |              |                      |            |                |
| 28     | phenol                                                                                                                                                                                 |                                |                                  |          | <1 mg/kg          |              | <1 mg/kg       | <0.0001 %    |                      |            | <LOD           |
|        | 604-001-00-2                                                                                                                                                                           | 203-632-7                      | 108-95-2                         |          |                   |              |                |              |                      |            |                |
| 29     | pyrene                                                                                                                                                                                 |                                |                                  |          | <0.05 mg/kg       |              | <0.05 mg/kg    | <0.000005 %  |                      |            | <LOD           |
|        |                                                                                                                                                                                        | 204-927-3                      | 129-00-0                         |          |                   |              |                |              |                      |            |                |
| 30     | zinc { zinc oxide }                                                                                                                                                                    |                                |                                  |          | 46 mg/kg          | 1.245        | 57.257 mg/kg   | 0.00573 %    |                      |            |                |
|        | 030-013-00-7                                                                                                                                                                           | 215-222-5                      | 1314-13-2                        |          |                   |              |                |              |                      |            |                |
| Total: |                                                                                                                                                                                        |                                |                                  |          |                   |              |                |              | 0.0176 %             |            |                |

#### Key

|             |                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|
|             | User supplied data                                                                                                              |
|             | Determinand values ignored for classification, see column 'Conc. Not Used' for reason                                           |
|             | Determinand defined or amended by HazWasteOnline (see Appendix A)                                                               |
|             | Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration |
| <LOD        | Below limit of detection                                                                                                        |
| ND          | Not detected                                                                                                                    |
| CLP: Note 1 | Only the metal concentration has been used for classification                                                                   |

## Classification of sample: TP03



**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

|               |                                                                                           |
|---------------|-------------------------------------------------------------------------------------------|
| Sample Name:  | LoW Code:                                                                                 |
| <b>TP03</b>   | Chapter:                                                                                  |
| Sample Depth: | 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| <b>0.10 m</b> | Entry:                                                                                    |
|               | 17 05 04 (Soil and stones other than those mentioned in 17 05 03)                         |

## Hazard properties

None identified

## Determinands

Moisture content: 0% No Moisture Correction applied (MC)

| #      | Determinand                     |                                                                  |                                                              | CLP Note | User entered data | Conv. Factor | Compound conc. |  | Classification value | MC Applied | Conc. Not Used |
|--------|---------------------------------|------------------------------------------------------------------|--------------------------------------------------------------|----------|-------------------|--------------|----------------|--|----------------------|------------|----------------|
|        | CLP index number                | EC Number                                                        | CAS Number                                                   |          |                   |              |                |  |                      |            |                |
| 1      | benzene                         |                                                                  |                                                              |          | <0.001 mg/kg      |              | <0.001 mg/kg   |  | <0.0000001 %         |            | <LOD           |
|        | 601-020-00-8                    | 200-753-7                                                        | 71-43-2                                                      |          |                   |              |                |  |                      |            |                |
| 2      | ethylbenzene                    |                                                                  |                                                              |          | <0.001 mg/kg      |              | <0.001 mg/kg   |  | <0.0000001 %         |            | <LOD           |
|        | 601-023-00-4                    | 202-849-4                                                        | 100-41-4                                                     |          |                   |              |                |  |                      |            |                |
| 3      | toluene                         |                                                                  |                                                              |          | <0.001 mg/kg      |              | <0.001 mg/kg   |  | <0.0000001 %         |            | <LOD           |
|        | 601-021-00-3                    | 203-625-9                                                        | 108-88-3                                                     |          |                   |              |                |  |                      |            |                |
| 4      | TPH (C6 to C40) petroleum group |                                                                  |                                                              |          | <10 mg/kg         |              | <10 mg/kg      |  | <0.001 %             |            | <LOD           |
|        |                                 |                                                                  | TPH                                                          |          |                   |              |                |  |                      |            |                |
| 5      | xylene                          |                                                                  |                                                              |          | <0.001 mg/kg      |              | <0.001 mg/kg   |  | <0.0000001 %         |            | <LOD           |
|        | 601-022-00-9                    | 202-422-2 [1]<br>203-396-5 [2]<br>203-576-3 [3]<br>215-535-7 [4] | 95-47-6 [1]<br>106-42-3 [2]<br>108-38-3 [3]<br>1330-20-7 [4] |          |                   |              |                |  |                      |            |                |
| Total: |                                 |                                                                  |                                                              |          |                   |              |                |  | 0.001 %              |            |                |

## Key

|      |                                                                                       |
|------|---------------------------------------------------------------------------------------|
|      | User supplied data                                                                    |
|      | Determinand values ignored for classification, see column 'Conc. Not Used' for reason |
| •    | Determinand defined or amended by HazWasteOnline (see Appendix A)                     |
| <LOD | Below limit of detection                                                              |
| ND   | Not detected                                                                          |

## Appendix A: Classifier defined and non CLP determinands

### ■ **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Aquatic Chronic 2 H411

### ■ **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4 H302 , Acute Tox. 1 H330 , Acute Tox. 1 H310 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315

### ■ **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

### ■ **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 23 Jul 2015

Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

### ■ **boron tribromide/trichloride/trifluoride (combined)** (CAS Number: 10294-33-4, 10294-34-5, 7637-07-2)

Description/Comments: Combines the hazard statements and the average of the conversion factors for boron tribromide, boron trichloride and boron trifluoride

Data source: N/A

Data source date: 06 Aug 2015

Hazard Statements: EUH014 , Acute Tox. 2 H330 , Acute Tox. 2 H300 , Skin Corr. 1A H314 , Skin Corr. 1B H314

### ■ **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4 H332 , Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Resp. Sens. 1 H334 , Skin Sens. 1 H317 , Repr. 1B H360FD , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

### ■ **salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex**

CLP index number: 006-007-00-5

Description/Comments: Conversion factor based on a worst case compound: sodium cyanide

Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)

Additional Hazard Statement(s): EUH032 >= 0.2 %

Reason for additional Hazards Statement(s):

14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

### ■ **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Acute Tox. 4 H302 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

### ■ **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

■ **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 06 Aug 2015  
Hazard Statements: Carc. 2 H351

■ **lead compounds with the exception of those specified elsewhere in this Annex**

CLP index number: 082-001-00-6  
Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following CLP protocols, considers many simple lead compounds to be Carcinogenic category 2  
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)  
Additional Hazard Statement(s): Carc. 2 H351  
Reason for additional Hazards Statement(s):  
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium  
[www.reach-lead.eu/substanceinformation.html](http://www.reach-lead.eu/substanceinformation.html). Review date 29/09/2015

■ **pH** (CAS Number: PH)

Description/Comments: Appendix C4  
Data source: WM3 1st Edition 2015  
Data source date: 25 May 2015  
Hazard Statements: None.

■ **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 06 Aug 2015  
Hazard Statements: Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Carc. 2 H351 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Skin Irrit. 2 H315

■ **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 21 Aug 2015  
Hazard Statements: Skin Irrit. 2 H315 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

■ **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4  
Description/Comments:  
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)  
Additional Hazard Statement(s): Carc. 2 H351  
Reason for additional Hazards Statement(s):  
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

■ **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013  
Data source: WM3 1st Edition 2015  
Data source date: 25 May 2015  
Hazard Statements: Flam. Liq. 3 H226 , Asp. Tox. 1 H304 , STOT RE 2 H373 , Muta. 1B H340 , Carc. 1B H350 , Repr. 2 H361d , Aquatic Chronic 2 H411

## Appendix B: Rationale for selection of metal species

### arsenic {arsenic trioxide}

Worst case species based on hazard statements

### beryllium {beryllium oxide}

Worst case species based on hazard statements

### boron {boron tribromide/trichloride/trifluoride (combined)}

Worst case species based on hazard statements

### cadmium {cadmium sulfide}

Worst case species based on hazard statements

### chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Worst case species based on hazard statements

---

**chromium in chromium(VI) compounds {chromium(VI) oxide}**

Worst case species based on hazard statements

**copper {dicopper oxide; copper (I) oxide}**

Most likely common species

**cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}**

Worst case species

**lead {lead compounds with the exception of those specified elsewhere in this Annex}**

Worst case species based on hazard statements

**mercury {mercury dichloride}**

Worst case species based on hazard statements

**nickel {nickel dihydroxide}**

Worst case species based on hazard statements

**zinc {zinc oxide}**

Worst case species based on hazard statements

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## Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.1, May 2018**

HazWasteOnline Classification Engine Version: 2021.22.4616.8916 (22 Jan 2021)

HazWasteOnline Database: 2021.22.4616.8916 (22 Jan 2021)

This classification utilises the following guidance and legislation:

**WM3 v1.1 - Waste Classification** - 1st Edition v1.1 - May 2018

**CLP Regulation** - Regulation 1272/2008/EC of 16 December 2008

**1st ATP** - Regulation 790/2009/EC of 10 August 2009

**2nd ATP** - Regulation 286/2011/EC of 10 March 2011

**3rd ATP** - Regulation 618/2012/EU of 10 July 2012

**4th ATP** - Regulation 487/2013/EU of 8 May 2013

**Correction to 1st ATP** - Regulation 758/2013/EU of 7 August 2013

**5th ATP** - Regulation 944/2013/EU of 2 October 2013

**6th ATP** - Regulation 605/2014/EU of 5 June 2014

**WFD Annex III replacement** - Regulation 1357/2014/EU of 18 December 2014

**Revised List of Waste 2014** - Decision 2014/955/EU of 18 December 2014

**7th ATP** - Regulation 2015/1221/EU of 24 July 2015

**8th ATP** - Regulation (EU) 2016/918 of 19 May 2016

**9th ATP** - Regulation (EU) 2016/1179 of 19 July 2016

**10th ATP** - Regulation (EU) 2017/776 of 4 May 2017

**HP14 amendment** - Regulation (EU) 2017/997 of 8 June 2017

**13th ATP** - Regulation (EU) 2018/1480 of 4 October 2018

**14th ATP** - Regulation (EU) 2020/217 of 4 October 2019

**15th ATP** - Regulation (EU) 2020/1182 of 19 May 2020

**The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)**

**Regulations 2019** - UK: 2019 No. 720 of 27th March 2019

**The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)**

**Regulations 2020** - UK: 2020 No. 1567 of 16th December 2020

**The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020** - UK: 2020 No. 1540 of 16th December 2020

**POPs Regulation 2019** - Regulation (EU) 2019/1021 of 20 June 2019

## Statistical Analysis

## Assessment of Chemicals of Potential Concern to Plant Life



| All values in mg/kg unless otherwise stated                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |         |             |            |            |                        |     | Soil Type | MG    | MG    | MG   | MG   |  |  |  |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------|------------|------------|------------------------|-----|-----------|-------|-------|------|------|--|--|--|--|--|--|
| Location & Depth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |             |            |            |                        |     |           | WS01B | WS01B | SA01 | TP01 |  |  |  |  |  |  |
| Chemical of Potential Concern                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Lab. RL | No. Samples | Min. Value | Max. Value | No. Samples > or = GAC | GAC |           | 0.10  | 0.50  | 0.10 | 0.10 |  |  |  |  |  |  |
| Arsenic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1       | 4           | 7.6        | 14         | 0                      | 250 |           | 14    | 7.6   | 9.6  | 8    |  |  |  |  |  |  |
| Boron                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.2     | 4           | 0.6        | 2.1        | 0                      | 3   |           | 2.1   | 0.7   | 1    | 0.6  |  |  |  |  |  |  |
| Chromium (III)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1       | 4           | 18         | 25         | 0                      | 400 |           | 25    | 18    | 22   | 21   |  |  |  |  |  |  |
| Chromium (VI)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1.2     | 4           | 1.2        | 1.2        | 0                      | 25  |           | 1.2   | 1.2   | 1.2  | 1.2  |  |  |  |  |  |  |
| Copper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1       | 4           | 14         | 89         | 0                      | 135 |           | 25    | 17    | 14   | 89   |  |  |  |  |  |  |
| Nickel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1       | 4           | 12         | 16         | 0                      | 75  |           | 16    | 12    | 14   | 13   |  |  |  |  |  |  |
| Zinc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1       | 4           | 73         | 120        | 0                      | 300 |           | 82    | 110   | 73   | 120  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Mean    |             |            |            |                        |     |           |       |       |      |      |  |  |  |  |  |  |
| pH (su)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 8.2     |             |            |            |                        |     |           | 8.4   | 10.1  | 7    | 7.1  |  |  |  |  |  |  |
| <div> <b>Risk parameter:</b> Plant life pH 7<br/> <b>Data set:</b> Made Ground<br/> <b>Client:</b> Taylor Wimpey UK Ltd.<br/> <b>Site:</b> Fathoms Reach, Hayling Island<br/> <b>Job no.:</b> 16117-GELS<br/> <b>Lab. report no(s):</b> 20-38546-1 </div> <div> <b>Legend:</b> Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.<br/> Values in red are equal to, or greater than, the generic assessment criterion (GAC).<br/> MG denotes Made Ground<br/> NAT denotes natural ground </div> |         |             |            |            |                        |     |           |       |       |      |      |  |  |  |  |  |  |

# Assessment of Chemicals of Potential Concern to Human Health



| All values in mg/kg unless otherwise stated |         |             |            |            |                        |      | Soil Type | TS    | TS    | TS    | TS    |  |  |  |  |  |  |  |
|---------------------------------------------|---------|-------------|------------|------------|------------------------|------|-----------|-------|-------|-------|-------|--|--|--|--|--|--|--|
| Location & Depth                            |         |             |            |            |                        |      |           | WS03  | SA02  | WS04  | WS05  |  |  |  |  |  |  |  |
| Chemical of Potential Concern               | Lab. RL | No. Samples | Min. Value | Max. Value | No. Samples > or = GAC | GAC  |           | 0.10  | 0.10  | 0.10  | 0.10  |  |  |  |  |  |  |  |
| Arsenic                                     | 1       | 4           | 5.4        | 7.7        | 0                      | 37   |           | 7.2   | 7.7   | 5.4   | 6.4   |  |  |  |  |  |  |  |
| Beryllium                                   | 0.06    | 4           | 0.52       | 0.6        | 0                      | 73   |           | 0.54  | 0.58  | 0.52  | 0.6   |  |  |  |  |  |  |  |
| Boron                                       | 0.2     | 4           | 0.8        | 1.5        | 0                      | 300  |           | 0.8   | 1.5   | 0.8   | 1     |  |  |  |  |  |  |  |
| Cadmium                                     | 0.2     | 4           | 0.2        | 0.2        | 0                      | 14   |           | 0.2   | 0.2   | 0.2   | 0.2   |  |  |  |  |  |  |  |
| Chromium (III)                              | 1       | 4           | 19         | 22         | 0                      | 890  |           | 19    | 22    | 20    | 22    |  |  |  |  |  |  |  |
| Chromium (VI)                               | 1.2     | 4           | 1.2        | 1.2        | 0                      | 6.1  |           | 1.2   | 1.2   | 1.2   | 1.2   |  |  |  |  |  |  |  |
| Copper                                      | 1       | 4           | 11         | 15         | 0                      | 2500 |           | 15    | 13    | 13    | 11    |  |  |  |  |  |  |  |
| Lead                                        | 1       | 4           | 24         | 79         | 0                      | 200  |           | 28    | 79    | 27    | 24    |  |  |  |  |  |  |  |
| Mercury, inorganic                          | 0.3     | 4           | 0.3        | 0.3        | 0                      | 170  |           | 0.3   | 0.3   | 0.3   | 0.3   |  |  |  |  |  |  |  |
| Nickel                                      | 1       | 4           | 12         | 13         | 0                      | 130  |           | 12    | 13    | 12    | 13    |  |  |  |  |  |  |  |
| Selenium                                    | 1       | 4           | 1          | 1          | 0                      | 360  |           | 1     | 1     | 1     | 1     |  |  |  |  |  |  |  |
| Vanadium                                    | 1       | 4           | 27         | 31         | 0                      | 410  |           | 28    | 30    | 27    | 31    |  |  |  |  |  |  |  |
| Zinc                                        | 1       | 4           | 46         | 66         | 0                      | 3900 |           | 55    | 66    | 55    | 46    |  |  |  |  |  |  |  |
| Cyanide (free)                              | 1       | 4           | 1          | 1          | 0                      | 790  |           | 1     | 1     | 1     | 1     |  |  |  |  |  |  |  |
| Phenol (total)                              | 1       | 4           | 1          | 1          | 0                      | 560  |           | 1     | 1     | 1     | 1     |  |  |  |  |  |  |  |
| Acenaphthene                                | 0.05    | 4           | 0.05       | 0.05       | 0                      | 520  |           | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |
| Acenaphthylene                              | 0.05    | 4           | 0.05       | 0.05       | 0                      | 430  |           | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |
| Anthracene                                  | 0.05    | 4           | 0.05       | 0.05       | 0                      | 5500 |           | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |
| Benzo(a)anthracene                          | 0.05    | 4           | 0.05       | 0.05       | 0                      | 6.7  |           | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |
| Benzo(a)pyrene                              | 0.05    | 4           | 0.05       | 0.05       | 0                      | 1.5  |           | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |
| Benzo(b)fluoranthene                        | 0.05    | 4           | 0.05       | 0.05       | 0                      | 9.4  |           | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |
| Benzo(ghi)perylene                          | 0.05    | 4           | 0.05       | 0.05       | 0                      | 69   |           | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |
| Benzo(k)fluoranthene                        | 0.05    | 4           | 0.05       | 0.05       | 0                      | 14   |           | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |
| Chrysene                                    | 0.05    | 4           | 0.05       | 0.05       | 0                      | 11   |           | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |
| Dibenz(a,h)anthracene                       | 0.05    | 4           | 0.05       | 0.05       | 0                      | 1.3  |           | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |
| Fluoranthene                                | 0.05    | 4           | 0.05       | 0.05       | 0                      | 560  |           | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |
| Fluorene                                    | 0.05    | 4           | 0.05       | 0.05       | 0                      | 410  |           | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |
| Indeno(1,2,3,cd)pyrene                      | 0.05    | 4           | 0.05       | 0.05       | 0                      | 5.5  |           | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |
| Naphthalene                                 | 0.05    | 4           | 0.05       | 0.05       | 0                      | 5.2  |           | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |
| Phenanthrene                                | 0.05    | 4           | 0.05       | 0.05       | 0                      | 220  |           | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |
| Pyrene                                      | 0.05    | 4           | 0.05       | 0.05       | 0                      | 1200 |           | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |
| Asbestos identified                         | Y/N     |             |            |            |                        |      |           | N     | N     | N     | N     |  |  |  |  |  |  |  |
| FOC (dimensionless)                         | 0.0275  | (mean)      |            |            |                        |      |           | 0.026 | 0.025 | 0.033 | 0.026 |  |  |  |  |  |  |  |
| SOM (calculated)                            | 4.74%   | (mean)      |            |            |                        |      |           | 4.48% | 4.31% | 5.69% | 4.48% |  |  |  |  |  |  |  |
| pH (su)                                     | 6.6     | (mean)      |            |            |                        |      |           | 6.8   | 6.4   | 6.1   | 7     |  |  |  |  |  |  |  |

**Risk parameter:** Human health - residential with plant uptake (2.5%SOM)

**Data set:** Topsoil

**Client:** Taylor Wimpey UK Ltd.

**Site:** Fathoms Reach, Hayling Island

**Job no.:** 16117-GELS

**Lab. report no(s):** 20-38546-1

**Legend:** Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.

Values in red are equal to, or greater than, the generic assessment criterion (GAC).

MG denotes Made Ground

NAT denotes natural ground

## Assessment of Chemicals of Potential Concern to Plant Life



| All values in mg/kg unless otherwise stated                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |             |            |            |                        |     | Soil Type | TS   | TS   | TS   | TS   |  |  |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------|------------|------------|------------------------|-----|-----------|------|------|------|------|--|--|--|--|--|--|--|
| Location & Depth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |         |             |            |            |                        |     |           | WS03 | SA02 | WS04 | WS05 |  |  |  |  |  |  |  |
| Chemical of Potential Concern                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Lab. RL | No. Samples | Min. Value | Max. Value | No. Samples > or = GAC | GAC |           | 0.10 | 0.10 | 0.10 | 0.10 |  |  |  |  |  |  |  |
| Arsenic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1       | 4           | 5.4        | 7.7        | 0                      | 250 |           | 7.2  | 7.7  | 5.4  | 6.4  |  |  |  |  |  |  |  |
| Boron                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.2     | 4           | 0.8        | 1.5        | 0                      | 3   |           | 0.8  | 1.5  | 0.8  | 1    |  |  |  |  |  |  |  |
| Chromium (III)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1       | 4           | 19         | 22         | 0                      | 400 |           | 19   | 22   | 20   | 22   |  |  |  |  |  |  |  |
| Chromium (VI)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1.2     | 4           | 1.2        | 1.2        | 0                      | 25  |           | 1.2  | 1.2  | 1.2  | 1.2  |  |  |  |  |  |  |  |
| Copper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1       | 4           | 11         | 15         | 0                      | 135 |           | 15   | 13   | 13   | 11   |  |  |  |  |  |  |  |
| Nickel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1       | 4           | 12         | 13         | 0                      | 75  |           | 12   | 13   | 12   | 13   |  |  |  |  |  |  |  |
| Zinc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1       | 4           | 46         | 66         | 0                      | 300 |           | 55   | 66   | 55   | 46   |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Mean    |             |            |            |                        |     |           |      |      |      |      |  |  |  |  |  |  |  |
| pH (su)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 6.6     |             |            |            |                        |     |           | 6.8  | 6.4  | 6.1  | 7    |  |  |  |  |  |  |  |
| <div> <div> <b>Risk parameter:</b> Plant life pH 7<br/> <b>Data set:</b> Topsoil<br/> <b>Client:</b> Taylor Wimpey UK Ltd.<br/> <b>Site:</b> Fathoms Reach, Hayling Island<br/> <b>Job no.:</b> 16117-GELS<br/> <b>Lab. report no(s):</b> 20-38546-1 </div> <div> <b>Legend:</b> Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate. Values in red are equal to, or greater than, the generic assessment criterion (GAC).<br/> MG denotes Made Ground<br/> NAT denotes natural ground </div> </div> |         |             |            |            |                        |     |           |      |      |      |      |  |  |  |  |  |  |  |

## Assessment of Chemicals of Potential Concern to Human Health



| All values in mg/kg unless otherwise stated                                   |         |             |            |            |                        |       | Soil Type                                                                                                                                                                                                                                     | MG    | MG    | TS    | TS    |  |  |  |  |  |  |  |
|-------------------------------------------------------------------------------|---------|-------------|------------|------------|------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|-------|-------|--|--|--|--|--|--|--|
| Location & Depth                                                              |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | WS01B | TP01  | SA02  | TP03  |  |  |  |  |  |  |  |
| Chemical of Potential Concern                                                 | Lab. RL | No. Samples | Min. Value | Max. Value | No. Samples > or = GAC | GAC   |                                                                                                                                                                                                                                               | 0.50  | 0.10  | 0.10  | 0.10  |  |  |  |  |  |  |  |
| Aliphatics EC5-EC6                                                            | 0.001   | 4           | 0.001      | 0.001      | 0                      | 78    |                                                                                                                                                                                                                                               | 0.001 | 0.001 | 0.001 | 0.001 |  |  |  |  |  |  |  |
| Aliphatics >EC6-EC8                                                           | 0.001   | 4           | 0.001      | 0.001      | 0                      | 230   |                                                                                                                                                                                                                                               | 0.001 | 0.001 | 0.001 | 0.001 |  |  |  |  |  |  |  |
| Aliphatics >EC8-EC10                                                          | 0.001   | 4           | 0.001      | 0.001      | 0                      | 65    |                                                                                                                                                                                                                                               | 0.001 | 0.001 | 0.001 | 0.001 |  |  |  |  |  |  |  |
| Aliphatics >EC10-EC12                                                         | 1       | 4           | 1          | 1          | 0                      | 120   |                                                                                                                                                                                                                                               | 1     | 1     | 1     | 1     |  |  |  |  |  |  |  |
| Aliphatics >EC12-EC16                                                         | 2       | 4           | 2          | 2          | 0                      | 59    |                                                                                                                                                                                                                                               | 2     | 2     | 2     | 2     |  |  |  |  |  |  |  |
| Aliphatics >EC16-EC35                                                         | 10      | 0           | 0          | 0          | 0                      | 92000 |                                                                                                                                                                                                                                               | N/A   | N/A   | N/A   | N/A   |  |  |  |  |  |  |  |
| Aliphatics >EC35-EC44                                                         | 8.4     | 4           | 8.4        | 8.4        | 0                      | 92000 |                                                                                                                                                                                                                                               | 8.4   | 8.4   | 8.4   | 8.4   |  |  |  |  |  |  |  |
| Aromatics EC5-EC7                                                             | 0.001   | 4           | 0.001      | 0.001      | 0                      | 150   |                                                                                                                                                                                                                                               | 0.001 | 0.001 | 0.001 | 0.001 |  |  |  |  |  |  |  |
| Aromatics >EC7-EC8                                                            | 0.001   | 4           | 0.001      | 0.001      | 0                      | 300   |                                                                                                                                                                                                                                               | 0.001 | 0.001 | 0.001 | 0.001 |  |  |  |  |  |  |  |
| Aromatics >EC8-EC10                                                           | 0.001   | 4           | 0.001      | 0.001      | 0                      | 84    |                                                                                                                                                                                                                                               | 0.001 | 0.001 | 0.001 | 0.001 |  |  |  |  |  |  |  |
| Aromatics >EC10-EC12                                                          | 1       | 4           | 1          | 1          | 0                      | 180   |                                                                                                                                                                                                                                               | 1     | 1     | 1     | 1     |  |  |  |  |  |  |  |
| Aromatics >EC12-EC16                                                          | 2       | 4           | 2          | 2          | 0                      | 330   |                                                                                                                                                                                                                                               | 2     | 2     | 2     | 2     |  |  |  |  |  |  |  |
| Aromatics >EC16-EC21                                                          | 10      | 4           | 10         | 18         | 0                      | 550   |                                                                                                                                                                                                                                               | 10    | 18    | 10    | 10    |  |  |  |  |  |  |  |
| Aromatics >EC21-EC35                                                          | 10      | 4           | 10         | 56         | 0                      | 1500  |                                                                                                                                                                                                                                               | 32    | 56    | 10    | 10    |  |  |  |  |  |  |  |
| Aromatics >EC35-EC44                                                          | 8.4     | 4           | 8.4        | 65         | 0                      | 1500  |                                                                                                                                                                                                                                               | 43    | 65    | 8.4   | 8.4   |  |  |  |  |  |  |  |
| ADDITIVITY CHECK                                                              |         |             |            |            |                        |       | HAZARD QUOTIENTS FOR EACH FRACTION                                                                                                                                                                                                            |       |       |       |       |  |  |  |  |  |  |  |
| Aliphatics EC5-EC6                                                            |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | 0.000 | 0.000 | 0.000 | 0.000 |  |  |  |  |  |  |  |
| Aliphatics >EC6-EC8                                                           |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | 0.000 | 0.000 | 0.000 | 0.000 |  |  |  |  |  |  |  |
| Aliphatics >EC8-EC10                                                          |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | 0.000 | 0.000 | 0.000 | 0.000 |  |  |  |  |  |  |  |
| Aliphatics >EC10-EC12                                                         |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | 0.008 | 0.008 | 0.008 | 0.008 |  |  |  |  |  |  |  |
| Aliphatics >EC12-EC16                                                         |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | 0.034 | 0.034 | 0.034 | 0.034 |  |  |  |  |  |  |  |
| Aliphatics >EC16-EC35                                                         |         |             |            |            |                        |       |                                                                                                                                                                                                                                               |       |       |       |       |  |  |  |  |  |  |  |
| Aliphatics >EC35-EC44                                                         |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | 0.000 | 0.000 | 0.000 | 0.000 |  |  |  |  |  |  |  |
| Aromatics EC5-EC7                                                             |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | 0.000 | 0.000 | 0.000 | 0.000 |  |  |  |  |  |  |  |
| Aromatics >EC7-EC8                                                            |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | 0.000 | 0.000 | 0.000 | 0.000 |  |  |  |  |  |  |  |
| Aromatics >EC8-EC10                                                           |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | 0.000 | 0.000 | 0.000 | 0.000 |  |  |  |  |  |  |  |
| Aromatics >EC10-EC12                                                          |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | 0.006 | 0.006 | 0.006 | 0.006 |  |  |  |  |  |  |  |
| Aromatics >EC12-EC16                                                          |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | 0.006 | 0.006 | 0.006 | 0.006 |  |  |  |  |  |  |  |
| Aromatics >EC16-EC21                                                          |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | 0.018 | 0.033 | 0.018 | 0.018 |  |  |  |  |  |  |  |
| Aromatics >EC21-EC35                                                          |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | 0.021 | 0.037 | 0.007 | 0.007 |  |  |  |  |  |  |  |
| Aromatics >EC35-EC44                                                          |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | 0.029 | 0.043 | 0.006 | 0.006 |  |  |  |  |  |  |  |
| Hazard Index for ali>C8-C16                                                   |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | 0.042 | 0.042 | 0.042 | 0.042 |  |  |  |  |  |  |  |
| Hazard Index for aro>C8-C16                                                   |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | 0.012 | 0.012 | 0.012 | 0.012 |  |  |  |  |  |  |  |
| Hazard Index for aro>C16-C35                                                  |         |             |            |            |                        |       |                                                                                                                                                                                                                                               | 0.040 | 0.070 | 0.025 | 0.025 |  |  |  |  |  |  |  |
| Hazard Index table - HI or HQ greater than 1 highlighted with yellow shading. |         |             |            |            |                        |       |                                                                                                                                                                                                                                               |       |       |       |       |  |  |  |  |  |  |  |
| Risk parameter: Human health - residential with plant uptake (2.5%SOM)        |         |             |            |            |                        |       | Legend: Main table values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate. |       |       |       |       |  |  |  |  |  |  |  |
| Data set: Made Ground / Topsoil                                               |         |             |            |            |                        |       | Main table alues in red are equal to, or greater than, the generic assessment criterion (GAC).                                                                                                                                                |       |       |       |       |  |  |  |  |  |  |  |
| Client: Taylor Wimpey UK Ltd.                                                 |         |             |            |            |                        |       | MG denotes Made Ground                                                                                                                                                                                                                        |       |       |       |       |  |  |  |  |  |  |  |
| Site: Fathoms Reach, Hayling Island                                           |         |             |            |            |                        |       | NAT denotes natural ground                                                                                                                                                                                                                    |       |       |       |       |  |  |  |  |  |  |  |
| Job no.: 16117-GELS                                                           |         |             |            |            |                        |       | TS denotes Topsoil                                                                                                                                                                                                                            |       |       |       |       |  |  |  |  |  |  |  |
| Lab. report no(s).: 20-38546-1                                                |         |             |            |            |                        |       |                                                                                                                                                                                                                                               |       |       |       |       |  |  |  |  |  |  |  |

# Assessment of Chemicals of Potential Concern to Human Health



| Chemical of Potential Concern                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | All values in mg/kg unless otherwise stated |             |            |            |                        | Soil Type | MG    | MG    | MG    | MG    |  |  |  |  |  |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------|------------|------------|------------------------|-----------|-------|-------|-------|-------|--|--|--|--|--|--|--|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Location & Depth                            |             |            |            |                        |           | WS01B | WS01B | SA01  | TP01  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Lab. RL                                     | No. Samples | Min. Value | Max. Value | No. Samples > or = GAC | GAC       | 0.10  | 0.50  | 0.10  | 0.10  |  |  |  |  |  |  |  |  |
| Arsenic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1                                           | 4           | 7.6        | 14         | 0                      | 37        | 14    | 7.6   | 9.6   | 8     |  |  |  |  |  |  |  |  |
| Beryllium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.06                                        | 4           | 0.53       | 0.66       | 0                      | 73        | 0.66  | 0.53  | 0.61  | 0.56  |  |  |  |  |  |  |  |  |
| Boron                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.2                                         | 4           | 0.6        | 2.1        | 0                      | 300       | 2.1   | 0.7   | 1     | 0.6   |  |  |  |  |  |  |  |  |
| Cadmium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.2                                         | 4           | 0.2        | 0.4        | 0                      | 14        | 0.2   | 0.4   | 0.2   | 0.4   |  |  |  |  |  |  |  |  |
| Chromium (III)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                                           | 4           | 18         | 25         | 0                      | 890       | 25    | 18    | 22    | 21    |  |  |  |  |  |  |  |  |
| Chromium (VI)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1.2                                         | 4           | 1.2        | 1.2        | 0                      | 6.1       | 1.2   | 1.2   | 1.2   | 1.2   |  |  |  |  |  |  |  |  |
| Copper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                                           | 4           | 14         | 89         | 0                      | 2500      | 25    | 17    | 14    | 89    |  |  |  |  |  |  |  |  |
| Lead                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1                                           | 4           | 37         | 100        | 0                      | 200       | 51    | 39    | 37    | 100   |  |  |  |  |  |  |  |  |
| Mercury, inorganic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.3                                         | 4           | 0.3        | 0.3        | 0                      | 170       | 0.3   | 0.3   | 0.3   | 0.3   |  |  |  |  |  |  |  |  |
| Nickel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                                           | 4           | 12         | 16         | 0                      | 130       | 16    | 12    | 14    | 13    |  |  |  |  |  |  |  |  |
| Selenium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                                           | 4           | 1          | 1          | 0                      | 360       | 1     | 1     | 1     | 1     |  |  |  |  |  |  |  |  |
| Vanadium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                                           | 4           | 29         | 35         | 0                      | 410       | 35    | 29    | 34    | 29    |  |  |  |  |  |  |  |  |
| Zinc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1                                           | 4           | 73         | 120        | 0                      | 3900      | 82    | 110   | 73    | 120   |  |  |  |  |  |  |  |  |
| Cyanide (free)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                                           | 4           | 1          | 1          | 0                      | 790       | 1     | 1     | 1     | 1     |  |  |  |  |  |  |  |  |
| Phenol (total)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                                           | 4           | 1          | 1          | 0                      | 560       | 1     | 1     | 1     | 1     |  |  |  |  |  |  |  |  |
| Acenaphthene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.05                                        | 4           | 0.05       | 0.05       | 0                      | 520       | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |  |
| Acenaphthylene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.05                                        | 4           | 0.05       | 0.05       | 0                      | 430       | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |  |
| Anthracene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0.05                                        | 4           | 0.05       | 0.36       | 0                      | 5500      | 0.05  | 0.05  | 0.05  | 0.36  |  |  |  |  |  |  |  |  |
| Benz(a)anthracene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0.05                                        | 4           | 0.36       | 1.6        | 0                      | 6.7       | 0.89  | 0.65  | 0.36  | 1.6   |  |  |  |  |  |  |  |  |
| Benzo(a)pyrene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.05                                        | 4           | 0.55       | 1.3        | 0                      | 1.5       | 0.87  | 0.55  | 0.61  | 1.3   |  |  |  |  |  |  |  |  |
| Benzo(b)fluoranthene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.05                                        | 4           | 0.84       | 1.6        | 0                      | 9.4       | 1     | 0.85  | 0.84  | 1.6   |  |  |  |  |  |  |  |  |
| Benzo(ghi)perylene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.05                                        | 4           | 0.38       | 0.8        | 0                      | 69        | 0.53  | 0.38  | 0.54  | 0.8   |  |  |  |  |  |  |  |  |
| Benzo(k)fluoranthene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.05                                        | 4           | 0.23       | 0.74       | 0                      | 14        | 0.32  | 0.23  | 0.27  | 0.74  |  |  |  |  |  |  |  |  |
| Chrysene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.05                                        | 4           | 0.32       | 1.2        | 0                      | 11        | 0.63  | 0.46  | 0.32  | 1.2   |  |  |  |  |  |  |  |  |
| Dibenz(a,h)anthracene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.05                                        | 4           | 0.05       | 0.05       | 0                      | 1.3       | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |  |
| Fluoranthene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.05                                        | 4           | 0.47       | 2.9        | 0                      | 560       | 1.6   | 0.87  | 0.47  | 2.9   |  |  |  |  |  |  |  |  |
| Fluorene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.05                                        | 4           | 0.05       | 0.2        | 0                      | 410       | 0.05  | 0.05  | 0.05  | 0.2   |  |  |  |  |  |  |  |  |
| Indeno(1,2,3-cd)pyrene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.05                                        | 4           | 0.3        | 0.67       | 0                      | 5.5       | 0.46  | 0.3   | 0.45  | 0.67  |  |  |  |  |  |  |  |  |
| Naphthalene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.05                                        | 4           | 0.05       | 0.05       | 0                      | 5.2       | 0.05  | 0.05  | 0.05  | 0.05  |  |  |  |  |  |  |  |  |
| Phenanthrene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.05                                        | 4           | 0.22       | 2          | 0                      | 220       | 0.89  | 0.33  | 0.22  | 2     |  |  |  |  |  |  |  |  |
| Pyrene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.05                                        | 4           | 0.49       | 2.4        | 0                      | 1200      | 1.3   | 0.71  | 0.49  | 2.4   |  |  |  |  |  |  |  |  |
| Asbestos identified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Y/N                                         |             |            |            |                        |           | N     | Y     | N     | N     |  |  |  |  |  |  |  |  |
| FOC (dimensionless)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.01875                                     | (mean)      |            |            |                        |           | 0.027 | 0.011 | 0.015 | 0.022 |  |  |  |  |  |  |  |  |
| SOM (calculated)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3.23%                                       | (mean)      |            |            |                        |           | 4.65% | 1.90% | 2.59% | 3.79% |  |  |  |  |  |  |  |  |
| pH (su)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 8.2                                         | (mean)      |            |            |                        |           | 8.4   | 10.1  | 7     | 7.1   |  |  |  |  |  |  |  |  |
| <p><b>Risk parameter:</b> Human health - residential with plant uptake (2.5%SOM)</p> <p><b>Data set:</b> Made Ground</p> <p><b>Client:</b> Taylor Wimpey UK Ltd.</p> <p><b>Site:</b> Fathoms Reach, Hayling Island</p> <p><b>Job no.:</b> 16117-GELS</p> <p><b>Lab. report no(s).:</b> 20-38546-1</p> <p><b>Legend:</b> Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate. Values in red are equal to, or greater than, the generic assessment criterion (GAC).<br/>MG denotes Made Ground<br/>NAT denotes natural ground</p> |                                             |             |            |            |                        |           |       |       |       |       |  |  |  |  |  |  |  |  |

## Appendix H

### Preliminary Geotechnical Risk Register

## Geotechnical Hazard Identification – Desk Study Stage

Potential geotechnical hazards have been assessed in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and CD 622. The following pages set out the identified geotechnical risks and hazards which are associated with the proposed development and establish the approach which is to be taken to manage the risks including the geotechnical input and analysis.

Table J.1 is a preliminary assessment of possible geotechnical hazards at the site at Desk Study stage. This information is used to assist with ground investigation design.

Table J.1: Possible geotechnical hazards

| Hazard                                                                         | Comment                                                                                                                                                                                                                                       | Hazard status based on desk study                      |                                           |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------|
|                                                                                |                                                                                                                                                                                                                                               | Could be present and / or affect site (i.e. Plausible) | Unlikely to be present and/or affect site |
| Uncontrolled Made Ground (variable strength and compressibility).              | Made Ground may be present due to historical construction activities.                                                                                                                                                                         | ✓                                                      | -                                         |
| Soft / loose compressible ground (low strength and high settlement potential). | Superficial River Terrace Deposits are recorded across the site. This material is typically variable in nature and low strength ground is possible. In addition, where Made Ground is encountered this can be variable and Poor/low strength. | ✓                                                      | -                                         |
| Shrink swell of the clay fraction of soils under the influence of vegetation.  | The clays of the River Terrace Deposits and London Clay Formation may be susceptible to shrink/swell behaviour. Mature trees are present in the East, North and West boundaries and sporadically across the site.                             | ✓                                                      | -                                         |
| Variable lateral and vertical changes in ground conditions.                    | The site is generally level; however, underlying geology, both natural and Made Ground, may be variable in composition and thickness and this may pose implications to foundation design.                                                     | ✓                                                      | -                                         |
| High sulphates present in the soils.                                           | Sulphates may be present in soils at the site.                                                                                                                                                                                                | ✓                                                      | -                                         |
| Adverse chemical ground conditions, (e.g. expansive slag).                     | No significant industrial activities have been recorded at the site.                                                                                                                                                                          | -                                                      | ✓                                         |

| Hazard                                                                                                    | Comment                                                                                                                                                                                                                  | Hazard status based on desk study                      |                                           |
|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------|
|                                                                                                           |                                                                                                                                                                                                                          | Could be present and / or affect site (i.e. Plausible) | Unlikely to be present and/or affect site |
| Obstructions.                                                                                             | Underground obstructions may be present in the vicinity of the west and south boundaries where residential developments are; however, these are unlikely to be significant.                                              | ✓                                                      | -                                         |
| Shallow groundwater.                                                                                      | Groundwater was encountered as seepages during the investigation between 2.00m and 2.75m bgl during the ground investigation. Monitoring data from October 2020 shows shallow groundwater from 0.67m bgl.                | ✓                                                      | -                                         |
| Changing groundwater conditions.                                                                          | Changing groundwater conditions are considered likely at the site.                                                                                                                                                       | ✓                                                      | -                                         |
| Risk from erosion.                                                                                        | A significant risk of erosion is considered unlikely at the site.                                                                                                                                                        | -                                                      | ✓                                         |
| Risk from flooding.                                                                                       | The site is within a medium risk of surface water flooding.                                                                                                                                                              | ✓                                                      | -                                         |
| Running sands and/or loose Made Ground, leading to difficulty with excavation and collapse of side walls. | Running sands from River Terrace Deposits and Made Ground may be present at the site. This in conjunction with the possibility of shallow groundwater means any excavations may be unstable and susceptible to collapse. | ✓                                                      | -                                         |
| Slope stability issues – general slopes.                                                                  | The site is generally level with no significant slopes.                                                                                                                                                                  | -                                                      | ✓                                         |
| Slope stability issues – retaining walls.                                                                 | The site is generally level with no significant slopes. Retaining walls are unlikely to be incorporated into the development layout.                                                                                     | -                                                      | ✓                                         |
| Earthworks – settlement (due to placement of fill on soft / loose ground).                                | The site is generally level. The need for significant earthworks is unlikely.                                                                                                                                            | -                                                      | ✓                                         |
| Earthworks – poor bearing capacity of new fill.                                                           |                                                                                                                                                                                                                          |                                                        |                                           |
| Earthworks – unsuitability of site won material to be reused as fill.                                     |                                                                                                                                                                                                                          |                                                        |                                           |

| Hazard                                                         | Comment                                                                                | Hazard status based on desk study                      |                                           |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------|
|                                                                |                                                                                        | Could be present and / or affect site (i.e. Plausible) | Unlikely to be present and/or affect site |
| Solution features in Chalk.                                    | Chalk geology is not recorded at the site.                                             | -                                                      | ✓                                         |
| Cavities in the Superficial Deposits due to solution features. | Cavities are unlikely to be present within the River Terrace Deposits.                 | -                                                      | ✓                                         |
| Dissolution (associated with “wet rock head”).                 | Local geology is unlikely to suffer from dissolution.                                  | -                                                      | ✓                                         |
| Brine extraction.                                              | Unlikely. Brine extraction is not recorded at the site.                                | -                                                      | ✓                                         |
| Mining.                                                        | Unlikely. No historical mining processes, or mining features are recorded at the site. | -                                                      | ✓                                         |
| Mineral Extraction.                                            | Mineral extraction processes, or features, are not recorded on site                    | -                                                      | ✓                                         |
| Relict Slip Surfaces.                                          | Unlikely. No significant slopes are recorded at the site.                              | -                                                      | ✓                                         |
| Solifluction.                                                  | Unlikely. No significant slopes are recorded at the site.                              | -                                                      | ✓                                         |

## Geotechnical Hazard Identification – Following Ground Investigation

The preliminary Geotechnical Risk Register following Ground Investigation is set out in Table J.3.

The probability and impact of a hazard have been judged on a qualitative scale as set out in Table J.2. The degree of risk (R) is determined by combining an assessment of the probability (P) of the hazard occurring with an assessment of the impact (I) of the hazard and associated mitigation it will require if it occurs ( $R = P \times I$ ).

Table J.2: Qualitative assessment of hazards and risks

| P = Probability |                    | I = Impact |           | R = Risk Rating (P x I) |                   |
|-----------------|--------------------|------------|-----------|-------------------------|-------------------|
| 1               | Very unlikely (VU) | 1          | Very Low  | 1 – 4                   | None / negligible |
| 2               | Unlikely (U)       | 2          | Low       | 5 – 9                   | Minor             |
| 3               | Plausible (P)      | 3          | Medium    | 10 – 14                 | Moderate          |
| 4               | Likely (Lk)        | 4          | High      | 15 – 19                 | Substantial       |
| 5               | Very Likely (VLk)  | 5          | Very High | 20 – 25                 | Severe            |

Table J.3: Preliminary geotechnical risk register

| Hazard                                                            | Comments                                                                                                                                      | Who is at Risk                                    | Consequence                                                                                   | Risk Before Mitigation |   |    | Actions Required                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------|---|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                   |                                                                                                                                               |                                                   |                                                                                               | P                      | I | R  |                                                                                                                                                                                                                                                                              |
| Uncontrolled Made Ground (variable strength and compressibility). | There is Made Ground due to historical construction activity at the South and West area of the site.<br>The Made Ground is up to 0.80m thick. | Residential Dwellings.                            | Bearing capacity failure, settlement (total and differential).                                | 3                      | 4 | 12 | Design foundations to found below Made Ground or on Made Ground which has been improved.                                                                                                                                                                                     |
|                                                                   |                                                                                                                                               |                                                   | Floor slab failure.                                                                           | 3                      | 4 | 12 | Design floor slabs as suspended.                                                                                                                                                                                                                                             |
|                                                                   |                                                                                                                                               | Roads and Pavements.                              | Settlement (total and differential) of roads and pavements.                                   | 3                      | 2 | 6  | Design roads and pavements using suitable geotechnical parameters and increase the sub-base and use geo-grids as appropriate.                                                                                                                                                |
|                                                                   |                                                                                                                                               | Services.                                         | Settlement (differential), causing damage to services.                                        | 3                      | 2 | 6  | Anticipated settlements are significant with regard to services. There is a requirement to improve the Made Ground prior to installation of services.<br>It is also advisable to steepen falls in drainage to prevent back fall and use rocker boxes and flexible couplings. |
|                                                                   |                                                                                                                                               | Gardens.                                          | Settlement (differential), in gardens.                                                        | 3                      | 2 | 6  | It is unlikely that settlements will be significant with regard to gardens.                                                                                                                                                                                                  |
|                                                                   |                                                                                                                                               | Construction staff, vehicles and plant operators. | Trafficking of the site in temporary conditions.<br>Overturning of plant during construction. | 3                      | 3 | 9  | Where soft spots encountered, over-excavation and replacement with suitable fill.<br>Outline design of working platform to include geo-grid.<br>Site inspection and watching brief by Contractor to review working platform frequently and regularly.                        |

| Hazard                                                            | Comments                                                                                                                                                                                                                                      | Who is at Risk                                    | Consequence                                                                                   | Risk Before Mitigation |   |    | Actions Required                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------|---|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                   |                                                                                                                                                                                                                                               |                                                   |                                                                                               | P                      | I | R  |                                                                                                                                                                                                                                                                                                                        |
| Soft / loose ground (low strength and high settlement potential). | Superficial River Terrace Deposits are recorded across the site. This material is typically variable in nature and low strength ground is possible. In addition, where Made Ground is encountered this can be variable and Poor/low strength. | Residential Dwellings.                            | Foundation bearing capacity failure, settlement (total and differential).                     | 3                      | 4 | 12 | Design foundations to found below any loose relative density sand and gravel or soft clay, or improve the River Terrace Deposits prior to founding.                                                                                                                                                                    |
|                                                                   |                                                                                                                                                                                                                                               |                                                   | Floor slab failure.                                                                           | 3                      | 4 | 12 | Design floor slab as suspended.                                                                                                                                                                                                                                                                                        |
|                                                                   |                                                                                                                                                                                                                                               | Roads and Pavements.                              | Settlement (total and differential), of roads and pavements.                                  | 3                      | 3 | 9  | Design roads and pavements using suitable geotechnical parameters and increase the sub-base and use geo-grids as appropriate.<br>If anticipated settlements are significant, and cannot be mitigated by design, over-excavate and replace soft soils.                                                                  |
|                                                                   |                                                                                                                                                                                                                                               | Services.                                         | Settlement (differential), causing damage to services.                                        | 3                      | 3 | 9  | Ground levels are remaining at approximately current levels. Settlements are not anticipated to be significant.<br>No additional design requirements envisaged.                                                                                                                                                        |
|                                                                   |                                                                                                                                                                                                                                               | Gardens.                                          | Settlement (differential), in gardens.                                                        | 3                      | 3 | 9  |                                                                                                                                                                                                                                                                                                                        |
|                                                                   |                                                                                                                                                                                                                                               | Construction staff, vehicles and plant operators. | Trafficking of the site in temporary conditions.<br>Overturning of plant during construction. | 3                      | 3 | 9  | Where soft spots encountered, over-excavate and replace with suitable fill.<br>Design working platform to suit the ground conditions.<br>Outline design of working platform to include geo-grid if necessary.<br>Site inspection and watching brief by Contractor to review working platform frequently and regularly. |

| Hazard                                                                                | Comments                                                                                                                                                                                           | Who is at Risk                                    | Consequence                                                                                   | Risk Before Mitigation |   |    | Actions Required                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------|---|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                       |                                                                                                                                                                                                    |                                                   |                                                                                               | P                      | I | R  |                                                                                                                                                                                                                                                                                                                     |
| Shrinkage / swelling of the clay fraction of soils under the influence of vegetation. | River Terrace Deposits and London Clay Formation may be susceptible to shrink/swell behaviour. Mature trees are present in the East, North and West boundaries and sporadically.                   | Foundations.                                      | Shrinkage or heave of soils and associated damage to foundations.                             | 4                      | 3 | 12 | Design foundations in accordance with NHBC standards.<br>Deepen foundations due to trees as appropriate.                                                                                                                                                                                                            |
|                                                                                       |                                                                                                                                                                                                    | Floor slabs.                                      | Floor slab failure.                                                                           | 4                      | 4 | 16 | Design floor slabs in accordance with NHBC standards.<br>Design floor slab as suspended with a void, unless the warranty provider is satisfied the soil is not desiccated, or slabs are constructed when soils are not seasonally desiccated (i.e. during winter and spring).                                       |
| Variable lateral and vertical changes in ground conditions.                           | The site is generally level; however, underlying geology, both Made Ground and River Terrace Deposits (variable proportions of clay, sand and gravel), may pose implications to foundation design. | Residential Dwellings.                            | Foundation bearing capacity failure, settlement (total and differential).                     | 3                      | 4 | 12 | Design foundations to found below Made Ground.<br>Design foundations to found below any loose sand and gravel or soft clay, or improve the River Terrace Deposits prior to founding.                                                                                                                                |
|                                                                                       |                                                                                                                                                                                                    |                                                   | Floor slab failure.                                                                           | 3                      | 4 | 12 | Design floor slab as suspended.                                                                                                                                                                                                                                                                                     |
|                                                                                       |                                                                                                                                                                                                    | Roads and Pavements.                              | Settlement (total and differential), of roads and pavements.                                  | 3                      | 3 | 9  | Design roads and pavements using suitable geotechnical parameters and increase the sub-base and use geo-grids as appropriate.<br>If anticipated settlements are significant, and cannot be mitigated by design, over-excavate and replace unsuitable soils.                                                         |
|                                                                                       |                                                                                                                                                                                                    | Services.                                         | Settlement (differential), causing damage to services.                                        | 2                      | 3 | 6  | Settlements are not anticipated to be significant with regard to services.<br>No additional design requirements envisaged.                                                                                                                                                                                          |
|                                                                                       |                                                                                                                                                                                                    | Gardens.                                          | Settlement (differential), in gardens.                                                        | 2                      | 3 | 6  | It is unlikely that settlements will be significant with respect to gardens.                                                                                                                                                                                                                                        |
|                                                                                       |                                                                                                                                                                                                    | Construction staff, vehicles and plant operators. | Trafficking of the site in temporary conditions.<br>Overturning of plant during construction. | 3                      | 3 | 9  | Where soft spots encountered, over-excavate and replace with suitable fill. Design working platform to suit the ground conditions.<br>Outline design of working platform to include geo-grid if necessary.<br>Site inspection and watching brief by Contractor to review working platform frequently and regularly. |

| Hazard                         | Comments                                                                                                                     | Who is at Risk                                    | Consequence                                                    | Risk Before Mitigation |   |    | Actions Required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|----------------------------------------------------------------|------------------------|---|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                |                                                                                                                              |                                                   |                                                                | P                      | I | R  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Sulfates present in the soils. | Sulphates may be present in soils at the site.                                                                               | Attack of buried concrete.                        | Damage to concrete and reduction in strength.                  | 1                      | 4 | 4  | Attack of buried concrete is considered unlikely. BRE SD1 testing has been completed, returning results indicative of non-aggressive ground conditions. However, these results relate to the River Terrace Deposits only. The underlying London Clay Formation has not been tested and is associated with more aggressive conditions.                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                |                                                                                                                              | Earthworks.                                       | Sulfate heave following the use of hydraulic binders.          | 1                      | 4 | 4  | Supplementary sulfate testing in accordance with BRE guidelines to be undertaken during earthworks.<br>Before the use of hydraulic binders is approved, comprehensive testing and design will need to be completed by a Specialist Contractor to satisfy both themselves and the Engineer of the suitability of the soils for treatment, and confirm that the requisite end-performance of the material is achievable.<br>The use of modification / stabilisation to be restricted to suitable materials following laboratory trials.<br>In all instances where improvement by the inclusion of binders is considered, a mix design is required and as part of this design, samples should be checked for swelling, even where very low sulfate values are recorded. |
| Obstructions.                  | Obstruction was proven at South East side of the site. There is a potential for additional obstructions to be present due to | Construction staff, vehicles and plant operators. | Risk of collapse of excavation as obstructions are pulled out. | 4                      | 3 | 12 | Allow for a breaker to be present during construction and remove obstructions where encountered during construction.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                |                                                                                                                              | Roads and Pavements.                              | Hard spots in externals and roads / pavements.                 | 4                      | 2 | 8  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

| Hazard                           | Comments                                                                                                                      | Who is at Risk                                    | Consequence                                                                                                                                | Risk Before Mitigation |   |    | Actions Required                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                  |                                                                                                                               |                                                   |                                                                                                                                            | P                      | I | R  |                                                                                                                                                                                                                                                                                                                                                     |
|                                  | historical construction activity, or unknown fill in Made Ground.                                                             | Residential Dwellings.                            | Impact on piling / VSC, resulting in additional piles / columns and re-design of foundations.                                              | 4                      | 3 | 12 |                                                                                                                                                                                                                                                                                                                                                     |
| Shallow groundwater.             | Groundwater was encountered as seepages during the investigation between 2.00m and 2.75m bgl during the ground investigation. | Construction staff, vehicles and plant operators. | Difficulty with excavation.                                                                                                                | 4                      | 2 | 8  | Contractor to appoint competent Temporary Works Designer to design temporary works, in accordance with BS 5975:2008+A1:2011.<br>Temporary Works Designer to consider in their analysis the impact of, and requirements for, de-watering of excavations.<br>Any water that collects at the base of excavations to be removed as soon as practicable. |
|                                  |                                                                                                                               |                                                   | Limit state failure, excessive deformation, trafficking of site plant, inability to place and compact fill.                                |                        |   |    |                                                                                                                                                                                                                                                                                                                                                     |
|                                  | Monitoring data from October 2020 shows shallow groundwater from 0.67m bgl.                                                   | Slopes and Retaining.                             | Serviceability issues.                                                                                                                     | 4                      | 2 | 8  | Contractor to appoint competent Temporary Works Designer to design temporary works, as required in accordance with BS 5975:2008+A1:2011.<br>The shallow groundwater is to be taken into account during geotechnical design of the permanent works.                                                                                                  |
| Changing groundwater conditions. | Ground conditions are such that groundwater may be variable by season or climate.                                             | Construction staff, vehicles and plant operators. | Difficulty with excavation.<br>Limit state failure, excessive deformation, trafficking of site plant, inability to place and compact fill. | 4                      | 2 | 8  | Contractor to appoint competent Temporary Works Designer to design temporary works as required, in accordance with BS 5975:2008+A1:2011.<br>Temporary Works Designer to consider in their analysis the impact of a variable water table.                                                                                                            |

| Hazard                                                                                                      | Comments                                                                                                                                                                                                                 | Who is at Risk                                                              | Consequence                                         | Risk Before Mitigation |   |    | Actions Required                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------|------------------------|---|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                             |                                                                                                                                                                                                                          |                                                                             |                                                     | P                      | I | R  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                                                                             |                                                                                                                                                                                                                          | Slopes and Retaining.                                                       | Serviceability issues.                              | 4                      | 2 | 8  | Contractor to appoint competent Temporary Works Designer to design temporary works, as required in accordance with BS 5975:2008+A1:2011.<br>Design drainage for retaining walls to account for fluctuating groundwater levels.<br>The shallow groundwater is to be taken into account during geotechnical design of the permanent works.                                                                                                                                             |
| Subject to risk from flooding.                                                                              | The site is within a medium risk of surface water flooding.                                                                                                                                                              | The entire development.                                                     | Damage to houses, gardens roads and services.       | 3                      | 4 | 12 | The planning of the site needs to take into account the risk of flooding.<br>Existing flood defences should be inspected and if necessary updated or replaced.                                                                                                                                                                                                                                                                                                                       |
| Running sands and / or loose Made Ground, leading to difficulty with excavation and collapse of side walls. | Running sands from River Terrace Deposits and Made Ground may be present at the site. This in conjunction with the possibility of shallow groundwater means any excavations may be unstable and susceptible to collapse. | Construction staff, vehicles and plant operators.                           | Ground failure, instability of plant and machinery. | 3                      | 4 | 12 | Whilst trial pits were noted to generally remain stable throughout, granular deposits are noted on the site and these have potential to collapse, particularly where these may influenced by water within the soils.<br>Contractor to appoint competent Temporary Works Designer to design temporary works, in accordance with BS 5975:2008+A1:2011.<br>Temporary Works Design to include recommendations for inspection of excavations. No person entry to unsupported excavations. |
|                                                                                                             |                                                                                                                                                                                                                          |                                                                             | Risk of collapse of excavation.                     | 3                      | 3 | 9  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                                                                             |                                                                                                                                                                                                                          | Pavement construction and long-term durability highways and external areas. | Serviceability issues.                              | 2                      | 2 | 4  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                                                                             |                                                                                                                                                                                                                          | Gardens.                                                                    | Serviceability issues.                              | 2                      | 2 | 4  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

Whilst the probability and impact of the hazard occurring can be reduced to a minimum by geotechnical design, the impact cannot be reduced below very low. The risk register will need to be up-dated, as necessary, to reflect design, additional information, data and experience as it is gained through the construction process.

Impacts of the design with regard to health and Safety considerations will need to be included by the designer at design stage.

## Appendix I

# Plausible Source-Pathway-Receptor Contaminant Linkages

## Summary of Potential Contaminant Linkages

Table K.2 lists the plausible contaminant linkages which have been identified. These are considered as potentially unacceptable risks in line with guidelines published in LCRM (2019) and additional risk assessment is required.

Source – Pathway – Receptor Linkages have been assessed in general accordance with guidance in CIRIA Report C552 (Rudland et al 2001) but modified to add a ‘no linkage’ category and to remove low/moderate risk (See Table K.1). Further information is given in the relevant Hydrock methodology, referenced in Appendix J, including descriptions of typical examples of probability and consequences.

It should be noted that whilst the risk assessment process undertaken in this report may identify potential risks to site demolition and redevelopment workers, consideration of occupational health and safety issues is beyond the scope of this report and need to be considered separately in the Construction Phase Health and Safety Plan.

Table K.1: Consequence versus probability assessment.

|             |                 | Consequence    |               |               |               |
|-------------|-----------------|----------------|---------------|---------------|---------------|
| Probability |                 | Severe         | Medium        | Mild          | Minor         |
|             | High Likelihood | Very high risk | High risk     | Moderate risk | Low risk      |
|             | Likely          | High risk      | Moderate risk | Low risk      | Very low risk |
|             | Low Likelihood  | Moderate risk  | Low risk      | Low risk      | Very low risk |
|             | Unlikely        | Low risk       | Very low risk | Very low risk | Very low risk |
|             | No Linkage      | No risk        |               |               |               |

Table K.2: Exposure model – final source-pathway-receptor contaminant linkages

| Sources                                                                                                                                                                                                                                         | Possible Pathways                            | Receptors                | Probability    | Consequence | Risk Level | Comments                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------|----------------|-------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Made Ground, associated with historical construction activities and imported fill, possibly including elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials (ACM), PAH and petroleum hydrocarbons. (S1) | Ingestion, inhalation or direct contact (P1) | Site users (R1)          | Low likelihood | Medium      | Low        | Limited Made Ground is anticipated at the site, based on evidence from OS mapping and the site being open field. Therefore, the risk to site users is considered low.                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                                 | Inhalation of fugitive dust (P1)             | Neighbours (R1)          | Low likelihood | Medium      | Low        | The risk of significant generation of dust is likely only during site development process and can therefore be controlled.                                                                                                                                                                                                                                                 |
|                                                                                                                                                                                                                                                 | Leaching through unsaturated zone (P8)       | Groundwater (R3)         | Unlikely       | Medium      | Very Low   | Limited Made Ground is anticipated at the site, based on evidence from OS mapping and the site being open field. Therefore, the risk to water bodies as well as aquatic ecosystems is considered low. Furthermore, the laboratory testing has not identified elevated contaminants within the soils on site and leaching of contaminants is therefore considered unlikely. |
|                                                                                                                                                                                                                                                 | Surface run-off (P5)                         | Aquatic ecosystems (R5)  | Likely         | Mild        | Low        |                                                                                                                                                                                                                                                                                                                                                                            |
|                                                                                                                                                                                                                                                 | Base flow from contaminated groundwater (P7) | Surface water (R4)       | Low likelihood | Medium      | Low        |                                                                                                                                                                                                                                                                                                                                                                            |
|                                                                                                                                                                                                                                                 | Root uptake (P4)                             | Plant life (R6)          | Likely         | Minor       | Very Low   | There was no sign of detriment to plant life was observed during the walkover. Therefore, the risk to plant life is considered to be very low                                                                                                                                                                                                                              |
|                                                                                                                                                                                                                                                 | Direct contact (P2)                          | Development end use (R2) | Low likelihood | Minor       | Very Low   | The potential for significant contamination to degrade building materials is considered to be low.                                                                                                                                                                                                                                                                         |

| Sources                                                                                                                         | Possible Pathways                              | Receptors                | Probability    | Consequence      | Risk Level | Comments                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|--------------------------|----------------|------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Made Ground, potentially containing asbestos fibres and Asbestos Containing Materials from demolition of former structures (S2) | Inhalation of fugitive dust. (P1)              | Site users (R1)          | Low            | Severe           | Moderate   | Asbestos may be present in existing buildings.<br>A pre-demolition survey is required of existing structures prior to their removal.<br>Careful removal will be required from buildings during demolition. However, removal under controlled conditions should limit release of fibres to the air and the ground. |
|                                                                                                                                 |                                                | Neighbours. (R1)         | Unlikely       | Severe           | Low        | Asbestos fibres have been identified within the Made Ground on site and mitigation in the form removal of Made Ground soils or implementation of a cover system will be required.                                                                                                                                 |
| Ground gases (carbon dioxide and methane) from organic materials in the Made Ground (S3)                                        | Migration (P3), build up and asphyxiation (P1) | Site users (R1)          | Unlikely       | Medium to Severe | Low        | Made Ground was encountered with an average thickness of 0.30m and was not noted to contain significant putrescible materials. Significant volumes of ground gas are considered unlikely.                                                                                                                         |
|                                                                                                                                 |                                                | Neighbours (R1)          | Unlikely       | Medium to severe | Low        |                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                 | Migration (P3), build up and explosion         | Development end use (R2) | Unlikely       | Medium           | Very Low   |                                                                                                                                                                                                                                                                                                                   |
| Residual organic contaminants in shallow soils from                                                                             | Ingestion or direct contact (P1)               | Site users (R1)          | Low likelihood | Medium           | Low        | Pesticides and herbicides are not considered to be present on site as a result of migration from cultivation of crops from neighbouring sites.                                                                                                                                                                    |

| Sources                                                                                                                                                                                                                                                                                                                                                              | Possible Pathways               | Receptors       | Probability    | Consequence | Risk Level | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------|----------------|-------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| pesticides and herbicides used during cultivation of crops in the field located at the east of the site.                                                                                                                                                                                                                                                             | Root uptake (P4)                | Plant life (R6) | Low likelihood | Minor       | Very Low   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Residual heavy metal and other contaminants from high explosive bombs from WWII at the south west and east of the site, including: Lead, Zinc, Brass, Copper, Steel, Mercury, Silver and Aluminium. Other chemical Compounds including; Trinitrophenol, Trinitrotolulene, Trimethylene Trinitramine, Ammonium, Sodium Nitrate, Nitro-glycerine and White Phosphorus. | Direct contact - Explosion (P2) | Site users (R1) | Unlikely       | Severe      | Low        | <p>As the site is located within Moderate risk of Unexploded Bomb area, the risk is considered high. However, according to the specialist UXO assessment, the risk are considered low enough that they can be controlled by taking the following mitigation measures:</p> <ol style="list-style-type: none"> <li>1. Communicate the risk levels to all stakeholders and draw up and include an UXO Safety Plan with the overall project safety planning.</li> <li>2. UXO Safety Induction Training should be provided to everyone working or visiting the site, provided by a competent individual (preferably a trained EOD Engineer) and delivered as a separate module of the Site Safety Induction Course or as a Toolbox Talk.</li> <li>3. All drilling and sampling activities should be checked for UXO by an EOD Engineer equipped with specialist magnetometers ahead of the drilling/sampling bits.</li> </ol> <p>For more details of Preliminary UXO Risk Assessment see Appendix D.</p> <p>Furthermore laboratory testing of soil samples obtained from the site do not indicate the presence of significantly elevated metal concentrations.</p> |
|                                                                                                                                                                                                                                                                                                                                                                      |                                 | Neighbours (R1) | Unlikely       | Severe      | Low        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                                                                                                                                                                                                                                                                                                                                      |                                 | Buildings (R2)  | Unlikely       | Severe      | Low        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## Appendix J

# Hydrock Methodologies

This report uses Hydrock Desk Study and Ground Investigation template V47.1.

This appendix provides additional background information on certain approaches and methods used by Hydrock Consultants Limited in the preparation of this report.

The following Hydrock Methodologies apply to this report. These are not included, but are available on request by quoting the methodology reference, revision and date.

| Reference | Name                                                                                      | Revision | Date       |
|-----------|-------------------------------------------------------------------------------------------|----------|------------|
| 001       | Desk Study                                                                                | 001      | 30/07/2018 |
| 002       | Ground Investigation                                                                      | 001      | 30/07/2018 |
| 003       | Preliminary Geo-environmental Risk Assessment Rationale                                   | 001      | 30/07/2018 |
| 004       | Preliminary geotechnical Risk Register                                                    | 001      | 30/07/2018 |
| 005       | Generic Risk Assessment for Human Health (Soils)                                          | 001      | 30/07/2018 |
| 006       | Generic Risk Assessment for Pollution of Controlled Waters                                | 001      | 30/07/2018 |
| 007       | Detailed Quantitative Risk Assessment for Risk to Controlled Waters                       | 001      | 30/07/2018 |
| 008       | Generic Risk Assessment for Risk to Plants                                                | 001      | 30/07/2018 |
| 009       | Generic Risk Assessment for Water Supply Pipes                                            | 001      | 30/07/2018 |
| 010       | Generic Ground Gas Risk Assessment                                                        | 001      | 30/07/2018 |
| 011       | Determination of Contaminated Land Under Part 2A of the Environmental Protection Act 1990 | 001      | 30/07/2018 |
| 012       | Waste Management                                                                          | 001      | 30/07/2018 |
| 013       | Materials Management                                                                      | 001      | 30/07/2018 |
| 014       | Asbestos in Soils                                                                         | 001      | 30/07/2018 |
| 015       | Remediation and Mitigation (New Methodology)                                              | 001      | 30/07/2018 |
| 016       | Geotechnical Categorization and Characteristic Design Values                              | 001      | 30/07/2018 |
| 017       | Foundation and Floor Slab Recommendations - Residential                                   | 001      | 30/07/2018 |
| 018       | Foundation and Floor Slab Recommendations – Commercial / Distribution                     | 001      | 30/07/2018 |
| 019       | Earthworks Suitability Recommendations                                                    | 001      | 30/07/2018 |
| 020       | Pavements and Pavement Foundations                                                        | 001      | 30/07/2018 |
| 021       | Slope Stability Recommendations                                                           | 001      | 30/07/2018 |
| 022       | Retaining Recommendations                                                                 | 001      | 30/07/2018 |
| 023       | Sulphate Recommendations                                                                  | 001      | 30/07/2018 |
| 024       | Basement Recommendations                                                                  | 001      | 30/07/2018 |
| 025       | Settlement Assessment                                                                     | 001      | 30/07/2018 |
| 026       | CPT assessment                                                                            | 001      | 30/07/2018 |