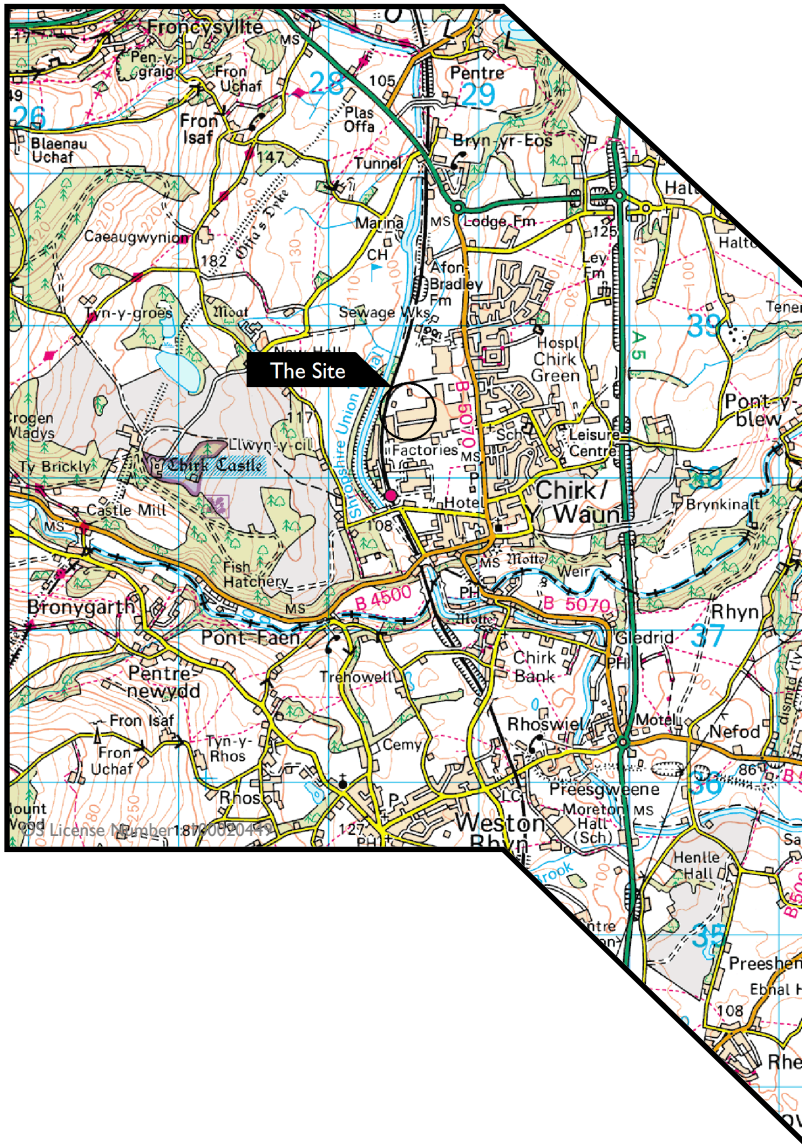


## Ground Investigation



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### KRONOSPAN STORAGE BUILDING

Factual Report

for  
Kronospan Limited

Engineer : Ramboll UK

Project Number PN173691

October 2017

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## 1.0 INTRODUCTION

A geotechnical and geo-environmental investigation was undertaken by Geotechnics Limited at the site of a proposed new storage building within the Kronospan factory complex at Chirk. The investigation was carried out to the instructions of the Engineer, Ramboll UK on behalf of the Client, Kronospan Limited. This report describes the work undertaken and presents the data obtained.

## 2.0 OBJECT AND SCOPE OF THE INVESTIGATION

The object of the investigation was to obtain information on the ground and groundwater conditions relating to the design of the proposed works within the limitations posed by trial hole numbers, locations, depths, methods adopted and the scope of approved in situ and laboratory testing. The investigation comprised cable percussive boreholes, in situ and laboratory testing and reporting. A Factual Report was also commissioned.

## 3.0 PRESENTATION

A description of the site and a summary of the procedures followed during the investigation process are presented in Sections 4 to 6. The factual data so obtained are presented in Appendices 2 to 5 of this report. Attention is drawn to the General Notes and Investigation Procedures presented in Appendix 6 to aid an understanding of the procedures followed and the context in which the report should be read.

In addition, data in electronic format in accordance with "The Electronic Transfer of Geotechnical Data from Ground Investigations" published by the AGS (the AGS Format) are presented separately on disk together with a copy of the report in electronic PDF format.

## 4.0 THE SITE

### 4.1 Location

The site is located within the Kronospan factory complex in Chirk, approximately 13km south-south-west of Wrexham. The approximate Ordnance Survey National Grid Reference for the centre of the site is SJ 285 385 and an extract from the relevant 1:50,000 Scale O.S. Map is included as Appendix I.

### 4.2 Description

The site comprises part of the existing factory building and western fringe of the external log yard and process plant areas within the existing Kronospan factory complex. The site is roughly L-shaped with maximum dimensions of approximately 360m (east to west) and 330m (north to south). The site surface is generally level.

A total of eleven (11 No.) boreholes were put down during this investigation. Three of these boreholes (BH08, BH10 and BH11) were within the existing factory building with the remainder of the boreholes being located in the external yard areas. The surface comprised reinforced concrete slabs at all of the borehole locations.

The site is bounded to the west by railway lines. To the north, south and east lie further factory buildings or yard areas of the Kronospan complex.

### 4.3 Site Geology

The 1:50,000 scale map of Wrexham published by the British Geological Survey, Sheet 121 dated 1994, shows the site to be underlain by superficial drift deposits of Glacial Sand and Gravel although Glacial Till is indicated close to the northern and eastern edges of the site. The underlying solid strata are indicated to comprise Carboniferous Productive Coal Measure rocks of the Bettisfield Formation (now part of the Pennine Lower Coal Measures Formation).

Made Ground is not noted on the geological map consulted but given the industrial setting, a thickness of Made Ground would be expected.

## 4.4 Hydrogeology

The BGS GeoIndex website, <http://mapapps2.bgs.ac.uk/geoindex/home.html>, accessed on 27<sup>th</sup> September 2017, shows the Pennine Lower Coal Measures Formation to be a moderately productive aquifer.

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## 5.0 PROCEDURE

---

### 5.1 Commissioning

The work was awarded following submission of a tender for work designed by the Engineer for ground investigation of the site in accordance with the Client's requirements.

### 5.2 General

The procedures followed in this site investigation are based on BS 5930: 2015 – *Code of Practice for Site Investigations* and BS 10175:2011 – *Investigation of Potentially Contaminated Sites*. The soils and rocks encountered have been described in accordance with BS5930:2015 and BS EN ISO 14688-1:2002+A1:2013 and BS EN ISO 14689-1:2003. The Cable Percussive Borehole Records are included in Appendix 2 and their positions are shown on the Exploratory Hole Location Plan in Appendix 5.

The Exploratory Hole locations were specified by the Engineer. The co-ordinates and levels shown on the Exploratory Hole Records were measured using a Leica GPS survey device for the external areas. For the boreholes located within the existing building, the locations were taped from fixed features and co-ordinates determined from the positions plotted on the survey drawing. The depths quoted on the exploratory hole records are in metres below ground level.

At each exploratory hole location an inspection pit was excavated using hand tools to a depth of 1.20m below ground level to check for the presence of underground services. Prior to and on completion of the excavation, the location was scanned using a cable avoidance tool (CAT). As concrete was present at ground level, 350mm diameter coring was used to advance the exploratory hole through the concrete and facilitate the excavation of the

inspection pit. Details of the concrete coring is included on the appropriate exploratory hole records.

### 5.3 Boreholes

Eleven (11 No.), boreholes (numbered BH01 to BH11) were sunk by Cable Percussion Tool techniques to depths varying between 14.10m and 25.00m below ground level. The boreholes were commenced with 200mm diameter casing and tools but where necessitated by the friction/adhesion on the casing, the boreholes were continued using 150mm diameter casing and tools. The work was carried out between 22<sup>nd</sup> August and 8<sup>th</sup> September 2017.

Representative disturbed (D and B) and driven open-tube thin-walled (UT) and thick-walled (U) samples of the soils encountered were obtained at regular intervals. Standard Penetration Tests (SPTs) were undertaken at the depths indicated on the borehole records in accordance with BS EN ISO 22476-3:2005+A1:2011 to obtain a measure of the engineering properties of the proved strata. In addition, environmental soil samples (ES) were recovered at the depths indicated on the Borehole Records.

On encountering groundwater, boring operations were suspended for 20 minutes in order to record any rise in water level. Full details of groundwater observations during site work are included on the Borehole Records. It should be noted that the addition of water to the borehole as part of the drilling process may have masked the presence of groundwater in the borehole. Where water was added it has been noted on the Borehole Records.

On completion, standpipes were installed in each of the boreholes (see Section 5.4).

### 5.4 Instrumentation and Monitoring

Long-term monitoring of the gas and groundwater levels was made possible by the installation of standpipes as follows:

| Exploratory Hole | Standpipe Slotted Pipe & Filter Zone (m) |
|------------------|------------------------------------------|
| BH01             | 2.00 to 5.00                             |
| BH02             | 3.00 to 6.00                             |
| BH03             | 6.00 to 11.00                            |
| BH04             | 7.00 to 9.00                             |

|      |                |
|------|----------------|
| BH05 | 6.00 to 9.00   |
| BH06 | 1.00 to 3.00   |
| BH07 | 3.00 to 6.00   |
| BH08 | 3.00 to 6.00   |
| BH09 | 17.00 to 21.00 |
| BH10 | 3.00 to 6.00   |
| BH11 | 2.50 to 5.50   |

Monitoring of the gas and groundwater levels at the site commenced on 18<sup>th</sup> September 2017 with further visits on 29<sup>th</sup> September, 5<sup>th</sup> October and 12<sup>th</sup> October 2017.

On each of the monitoring visits a record of the groundwater level in the standpipes was obtained. In addition to the groundwater levels, the following parameters were measured and recorded in each standpipe using a Gas Data Limited GFM436 Gas Analyser:-

- Concentrations (% Vol) of CH<sub>4</sub>, O<sub>2</sub>, CO<sub>2</sub>, along with (% LEL) CH<sub>4</sub> and (ppm) H<sub>2</sub>S, CO
- Flow Rate
- Barometric Pressure

The results of the monitoring are presented in Appendix 3.

## 6.0 LABORATORY TESTING

### 6.1 Geotechnical

The laboratory testing schedule was specified by the Engineer. Unless otherwise stated, the tests were carried out in Geotechnics Limited's UKAS accredited Laboratory (Testing No. 1365) and were undertaken in accordance with the appropriate Standards as indicated below and on the Laboratory Summary Sheets in Appendix 4. Any descriptions, opinions and interpretations are outside the scope of UKAS accreditation.

The tests undertaken can be summarised as follows:-

#### BS EN ISO 17892-1:2014

39 No. Water Content Determination

#### BS EN ISO 17892-2:2014

2 No. Bulk Density Determination

#### BS EN ISO 17892-4:2016

19 No. Particle Size Distribution Determination – Sieving Method

7 No. Particle Size Distribution Determination – Pipette Method

#### BS 1377:1990

**Test No. Test Description**

##### Part 2

4.3 & 5.3 28 No. Liquid and Plastic Limit Determination

##### Part 7

8 9 No. Shear Strength Measurement - 100mm diameter (Single Stage) Quick Undrained Triaxial Compression Test

9 5 No. Shear Strength Measurement - 100mm diameter (Multi-Stage) Quick Undrained Triaxial Compression Test.

The following testing was carried out at the laboratories of Professional Soils Laboratory Limited (UKAS Accredited Laboratory, Number 4043).

#### BS 1377:1990

**Test No. Test Description**

##### Part 2

3.2 18 No. Moisture Content Determination

4.3 & 5.3 18 No. Liquid and Plastic Limit Determination

The following testing was carried out at the laboratories of Derwentside Environmental Testing Services Limited (UKAS Accredited Laboratory, Number 2139).

#### BRE Special Digest I Suite

13 No. Suites comprising:-  
Soluble Sulphate  
pH

and

3 No. Soluble Chloride  
3 No. Soluble Nitrate

The results of these tests are also presented in Appendix 4.

## 6.2 Contamination

No contamination testing was commissioned by the Client.

Signed for and on behalf of Geotechnics Limited.

Prepared by: .....  
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**Principal Engineer**

Reviewed by: .....  
John Knowles BSc (Hons), PGCE, MSc, CGeol, FGS  
**Principal Engineer**

# **APPENDIX I**

## **Site Location Plan**

# SITE LOCATION PLAN



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Ground Investigation  
at  
KRONOSPAN STORAGE BUILDING  
for  
Kronospan Limited

**GEOTECHNICS**  
geotechnical and geoenvironmental specialists

## **APPENDIX 2**

### **Borehole Records**

# DATA SHEET - Symbols and Abbreviations used on Records



## Sample Types

|     |                                                                                                        |
|-----|--------------------------------------------------------------------------------------------------------|
| B   | Bulk disturbed sample                                                                                  |
| BLK | Block sample                                                                                           |
| C   | Core sample                                                                                            |
| D   | Small disturbed sample (tub/jar)                                                                       |
| E   | Environmental test sample                                                                              |
| ES  | Environmental soil sample                                                                              |
| EW  | Environmental water sample                                                                             |
| G   | Gas sample                                                                                             |
| L   | Liner sample                                                                                           |
| LB  | Large bulk disturbed sample                                                                            |
| P   | Piston sample (PF - failed P sample)                                                                   |
| TW  | Thin walled push in sample                                                                             |
| U   | Open Tube - 102mm diameter with blows to take sample. (UF - failed U sample)                           |
| UT  | Thin wall open drive tube sampler - 102mm diameter with blows to take sample. (UTF - failed UT sample) |
| V   | Vial sample                                                                                            |
| W   | Water sample                                                                                           |
| #   | Sample Not Recovered                                                                                   |

## Insitu Testing / Properties

|                                                       |                                            |
|-------------------------------------------------------|--------------------------------------------|
| CBRP                                                  | CBR using TRL probe                        |
| CHP                                                   | Constant Head Permeability Test            |
| COND                                                  | Electrical conductivity                    |
| TC                                                    | Thermal Conductivity                       |
| TR                                                    | Thermal Resistivity                        |
| HV                                                    | Strength from Hand Vane                    |
| ICBR                                                  | CBR Test                                   |
| IDEN                                                  | Density Test                               |
| IRES                                                  | Resistivity Test                           |
| MEX                                                   | CBR using Mexecon Probe Test               |
| PKR                                                   | Packer Permeability Test                   |
| PLT                                                   | Plate Load Test                            |
| PP                                                    | Strength from Pocket Penetrometer          |
| Temp                                                  | Temperature                                |
| VHP                                                   | Variable Head Permeability Test            |
| VN                                                    | Strength from Insitu Vane                  |
| w%                                                    | Water content                              |
| (All other strengths from undrained triaxial testing) |                                            |
| S                                                     | Standard Penetration Test (SPT)            |
| C                                                     | SPT with cone                              |
| N                                                     | SPT Result                                 |
| -/-                                                   | Blows/penetration (mm) after seating drive |
| -*/- (mm)                                             | Total blows/penetration                    |
| ( )                                                   | Extrapolated value                         |

## Groundwater

|                     |  |
|---------------------|--|
| Water Strike        |  |
| Depth Water Rose To |  |

## Instrumentation

Seal

Filter

Seal

## Strata

|                      |
|----------------------|
| Made Ground Granular |
| Made Ground Cohesive |
| Topsoil              |
| Cobbles and Boulders |
| Gravel               |
| Sand                 |
| Silt                 |
| Clay                 |
| Peat                 |

**Note: Composite soil types shown by combined symbols**

Chalk

Limestone

Sandstone

Coal

## Strata, Continued

Mudstone

Siltstone

## Metamorphic Rock

Fine Grained

Medium Grained

Coarse Grained

## Igneous Rock

Fine Grained

Medium Grained

Coarse Grained

## Backfill Materials

Arisings

Bentonite Seal

Concrete

Fine Gravel Filter

General Fill

Gravel Filter

Grout

Sand Filter

Tarmacadam

## Rotary Core

RQD Rock Quality Designation (% of intact core >100mm)

## FRACTURE INDEX

Fractures/metre

FRACTURE Maximum

SPACING (m) Minimum

NI Non-intact core

NR No core recovery

AZCL Assumed zone of core loss

(where core recovery is unknown it is assumed to be at the base of the run)

Ground Level **99.09** m OD

| Sampling   |             |                          | Properties   |     |       | Strata                                                                                                                                                                                       |       | Scale 1:50 |            |  |  |
|------------|-------------|--------------------------|--------------|-----|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------|------------|--|--|
| Depth      | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N | Description                                                                                                                                                                                  | Depth | Legend     | Level m OD |  |  |
|            |             |                          |              |     |       | Grey reinforced CONCRETE.                                                                                                                                                                    | G.L.  |            | 99.09      |  |  |
| 0.30- 0.40 | B           |                          |              |     |       |                                                                                                                                                                                              | 0.30  |            | 98.79      |  |  |
| 0.30       | ES          |                          |              |     |       | MADE GROUND: Reddish brown and dark grey sandy clayey angular to subangular fine to coarse gravel including granite, limestone and occasional glass fragments.                               | 0.60  |            | 98.49      |  |  |
| 0.60- 0.75 | B           | 13.10                    |              |     |       |                                                                                                                                                                                              | 0.75  |            | 98.34      |  |  |
| 0.60       | ES          | (7.00)                   |              |     |       |                                                                                                                                                                                              |       |            |            |  |  |
| 0.75- 1.00 | B           |                          |              |     |       | MADE GROUND: Dark grey sandy slightly clayey subangular fine to coarse gravel including metaquartzite and limestone. High cobble content of metaquartzite and limestone. Some timber debris. |       |            |            |  |  |
| 1.00       | ES          |                          |              |     |       |                                                                                                                                                                                              |       |            |            |  |  |
| 1.20- 1.65 | B           |                          |              |     | S44   |                                                                                                                                                                                              |       |            |            |  |  |
| 1.20- 1.65 |             | 1.20 (DRY)               |              |     |       | Dense grey sandy very clayey subangular to rounded fine to coarse GRAVEL including siltstone, sandstone and quartzite. Below 1.20m, very sandy slightly clayey.                              | 1.85  |            | 97.24      |  |  |
| 1.85- 2.30 | B           |                          |              |     |       |                                                                                                                                                                                              |       |            |            |  |  |
| 2.00       | ES          |                          |              |     |       |                                                                                                                                                                                              |       |            |            |  |  |
| 2.30- 2.30 | UT28        | 2.30 (DRY)               |              |     |       | Stiff thinly laminated brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is subrounded to rounded fine to coarse including siltstone sand sandstone.                          | 2.50  |            | 96.59      |  |  |
| 2.75       | D           |                          |              |     |       |                                                                                                                                                                                              | 2.75  |            | 96.34      |  |  |
| 2.90- 3.35 | D           | 2.30 (2.65)              |              |     | S7    | Soft grey mottled light yellowish brown clayey SILT with occasional subrounded medium gravel of dark grey mudstone.                                                                          | 3.00  |            | 96.09      |  |  |
| 3.30       | D           |                          |              |     |       |                                                                                                                                                                                              |       |            |            |  |  |
| 3.50- 3.90 | B           |                          |              |     |       | Multicoloured very sandy slightly silty subrounded to rounded fine occasionally medium GRAVEL of various lithologies.                                                                        |       |            |            |  |  |
| 3.90- 4.35 | UT26        | 3.90 (3.05)              |              |     |       | Soft grey very clayey SILT.                                                                                                                                                                  |       |            |            |  |  |
| 4.35       | D           |                          |              |     |       |                                                                                                                                                                                              |       |            |            |  |  |
| 4.85       | D           |                          |              |     |       |                                                                                                                                                                                              |       |            |            |  |  |
| 5.05- 5.50 | D           | 5.05 (3.95)              |              |     | S6    | Soft thinly laminated grey CLAY with laminae of silt and occasional partings of fine sand.                                                                                                   | 5.00  |            | 94.09      |  |  |
| 5.85- 6.30 | B           |                          |              |     |       |                                                                                                                                                                                              |       |            |            |  |  |
| 6.45- 7.05 | UF          | 6.00 (5.05)              |              |     |       |                                                                                                                                                                                              |       |            |            |  |  |
| 7.05- 7.50 | UT20        | 6.00 (5.05)              | 47           | 30  |       |                                                                                                                                                                                              |       |            |            |  |  |
| 7.50       | D           |                          |              | 34  |       |                                                                                                                                                                                              |       |            |            |  |  |
| 8.00       | D           |                          |              |     |       |                                                                                                                                                                                              |       |            |            |  |  |
| 8.65- 9.03 | D           | 8.65 (4.50)              |              |     | S5    |                                                                                                                                                                                              |       |            |            |  |  |
| 9.25- 9.75 | B           |                          |              |     |       |                                                                                                                                                                                              |       |            |            |  |  |
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|            |             |                          |              |     |       |                                                                                                                                                                                              |       |            |            |  |  |
|            |             |                          |              |     |       |                                                                                                                                                                                              |       |            |            |  |  |
|            |             |                          |              |     |       |                                                                                                                                                                                              |       |            |            |  |  |
|            |             |                          |              |     |       |                                                                                                                                                                                              |       |            |            |  |  |

# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole Project No **BH01**  
**PN173691**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328524.5 E**  
**338672.6 N** Ground Level **99.09 m OD**

| Sampling    |             |                          | Properties   |     |         | Strata                                                                                                                                                                                                                        |       | Scale 1:50 |            |  |
|-------------|-------------|--------------------------|--------------|-----|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------|------------|--|
| Depth       | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N   | Description                                                                                                                                                                                                                   | Depth | Legend     | Level m OD |  |
| 10.10-10.55 | UT          | 10.10 (6.20)             |              |     |         | Below 11.00m, occasional subrounded to rounded fine gravel of various lithologies.                                                                                                                                            |       |            |            |  |
| 10.55       | D           |                          |              |     |         |                                                                                                                                                                                                                               |       |            |            |  |
| 11.00       | D           |                          |              |     |         |                                                                                                                                                                                                                               |       |            |            |  |
| 11.60-12.05 | D           | 11.60 (6.50)             |              |     | S7      |                                                                                                                                                                                                                               |       |            |            |  |
| 12.20-12.70 | B           |                          |              |     |         |                                                                                                                                                                                                                               |       |            |            |  |
| 13.10-13.55 | UT          |                          |              |     |         |                                                                                                                                                                                                                               |       |            |            |  |
| 13.55       | D           |                          |              |     |         |                                                                                                                                                                                                                               |       |            |            |  |
| 13.60-14.05 | B           |                          |              |     |         |                                                                                                                                                                                                                               |       |            |            |  |
| 14.05-14.50 | B           | 14.05 (14.50)            |              |     | C50/263 |                                                                                                                                                                                                                               |       |            |            |  |
| 14.50       | D           |                          |              |     |         |                                                                                                                                                                                                                               |       |            |            |  |
| 15.05-15.50 | B           |                          |              |     |         | Very stiff brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse including mudstone, siltstone and metaquartzite.                                                                       | 13.60 |            | 85.49      |  |
| 15.55-16.00 | B           | 15.55 (7.80)             |              |     | C50/277 | Dense greyish brown sandy slightly clayey subangular to rounded fine to coarse GRAVEL of various lithologies. Low cobble content of mudstone and siltstone.                                                                   | 14.05 |            | 85.04      |  |
| 15.55-15.98 |             |                          |              |     |         |                                                                                                                                                                                                                               | 14.80 |            | 84.29      |  |
| 16.05-16.50 | UF150       | 16.05 (8.00)             |              |     |         | Very stiff thinly laminated grey slightly sandy slightly gravelly CLAY with occasional laminae of light brown silty fine sand. Gravel is subangular to rounded fine to medium including mudstone and siltstone.               | 15.05 |            | 84.04      |  |
| 17.00       | D           |                          |              | 11  |         | Brownish grey sandy very clayey subangular to rounded fine to coarse GRAVEL of various lithologies. Medium cobble content of mudstone and siltstone. Occasional pockets of stiff brown slightly sandy slightly gravelly clay. | 15.55 |            | 83.54      |  |
| 17.60-18.05 | B           | 17.60 (9.45)             |              |     | C50/188 | Very stiff brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse including sandstone and metaquartzite.                                                                                 |       |            |            |  |
| 17.60-17.94 |             |                          |              |     |         |                                                                                                                                                                                                                               |       |            |            |  |
| 18.50       | D           |                          |              |     |         | Below 18.50m, in places grading to sandy silty clay.                                                                                                                                                                          |       |            |            |  |
| 19.05-19.50 | UT150       | 18.50 (DRY)              | 425          | 13  |         |                                                                                                                                                                                                                               |       |            |            |  |
| 19.75-20.20 | B           |                          |              |     |         | Stiff dark brown silty CLAY with occasional lenses of silt.                                                                                                                                                                   | 19.75 |            | 79.34      |  |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks  Chiselling: 14.40-14.60m for 30 minutes and 15.20-15.30m for 15 minutes.

Logged by **CJ**

Figure **2 of 3**  
06/10/2017

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres. Logged in accordance with BS5930:2015

**geotechnics**

# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole **BH01**  
 Project No **PN173691**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328524.5 E**  
**338672.6 N** Ground Level **99.09 m OD**

| Sampling        |             |                          | Properties   |     |         | Strata                                                                                                         | Scale 1:50  |        |            |
|-----------------|-------------|--------------------------|--------------|-----|---------|----------------------------------------------------------------------------------------------------------------|-------------|--------|------------|
| Depth           | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N   | Description                                                                                                    | Depth       | Legend | Level m OD |
| 20.25           | D           | 18.50 (DRY)              |              |     | C50/225 | Brown clayey SILT with occasional bands of clay.                                                               | 20.25       |        | 78.84      |
| 20.45           | D           |                          |              |     |         |                                                                                                                | 20.90       |        | 78.19      |
| 20.55-20.93     | D           |                          |              |     |         |                                                                                                                | 21.60       |        | 77.49      |
| 21.10           | D           |                          |              |     |         |                                                                                                                | 22.00       |        | 77.09      |
| 21.60           | D           | 18.50 (DRY)              |              |     | C50/221 | Stiff thinly laminated brown to dark brown silty CLAY with laminae of clayey silt.                             | 22.00       |        | 77.09      |
| 22.00           | D           |                          |              |     |         |                                                                                                                | 22.10-22.20 |        |            |
| 22.10-22.20     | UF75        |                          |              |     |         |                                                                                                                | 22.20-22.65 |        |            |
| 22.20-22.65     | B           |                          |              |     |         |                                                                                                                | 22.20-22.57 |        |            |
| 22.20-22.57     | B           | 18.50 (22.55)            |              |     | S50/241 | Stiff thinly laminated brown to dark brown silty CLAY with bands of clayey silt and occasional lenses of sand. | 22.95       |        |            |
| 22.95           | D           |                          |              |     |         |                                                                                                                | 23.10-23.55 |        |            |
| 23.10-23.55     | B           |                          |              |     |         |                                                                                                                | 23.75-24.35 |        |            |
| 23.75-24.35     | UF142       |                          |              |     |         |                                                                                                                | 24.35-24.74 |        |            |
| 24.35-24.74     | D           | 18.50 (22.55)            |              |     |         |                                                                                                                | 24.74       |        | 74.35      |
| End of Borehole |             |                          |              |     |         |                                                                                                                |             |        |            |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **CJ**

Figure **3 of 3**  
06/10/2017

# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole Project No **BH02**  
**PN173691**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328469.7 E**  
**338527.1 N** Ground Level **101.28 m OD**

| Sampling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                          | Properties   |               |             | Strata                                                                                                                                                                                                                        |              |        | Scale 1:50     |             |         |         |              |                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------|--------------|---------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------|----------------|-------------|---------|---------|--------------|------------------------|
| Depth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Sample Type  | Depth Cased & (to Water) | Strength kPa | w %           | SPT N       | Description                                                                                                                                                                                                                   | Depth        | Legend | Level m OD     |             |         |         |              |                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |                          |              |               |             | Grey reinforced CONCRETE with 8mm diameter rebar.                                                                                                                                                                             | G.L.         |        | 101.28         |             |         |         |              |                        |
| 0.40- 1.20<br>0.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | B<br>ES      |                          |              |               |             | MADE GROUND. Dark brown very sandy silty subangular to rounded fine to coarse gravel of various lithologies including mudstone and sandstone. Occasional timber fragments.                                                    | 0.37         |        | 100.91         |             |         |         |              |                        |
| 1.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ES           |                          |              |               |             |                                                                                                                                                                                                                               |              |        |                |             |         |         |              |                        |
| 1.20- 1.65                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D            |                          |              |               | S8          | MADE GROUND. Firm greyish brown mottled orangish brown slightly sandy slightly gravelly clay. Gravel is subangular to rounded fine to coarse of various lithologies.                                                          | 1.20         |        | 100.08         |             |         |         |              |                        |
| 1.70- 2.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | B            |                          |              |               |             |                                                                                                                                                                                                                               |              |        |                |             |         |         |              |                        |
| 2.00<br>2.00- 2.45                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ES<br>UT     | 1.50<br>(DRY)            |              | 9.7           |             | Firm to stiff greyish brown mottled orangish brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to rounded fine to coarse of various lithologies. Between 2.00-2.45m, grading to slightly sandy gravelly silt. | 1.80         |        | 99.48          |             |         |         |              |                        |
| 2.60                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | D            |                          |              |               |             |                                                                                                                                                                                                                               |              |        |                |             |         |         |              |                        |
| 3.00- 3.50<br>3.00- 3.45<br>3.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | B<br>D<br>ES | 2.80<br>(DRY)            |              | 28            | S7          | Firm thinly laminated greyish brown silty CLAY with occasional laminae (up to 8mm thick) of silty clay.                                                                                                                       | 3.00         |        | 98.28          |             |         |         |              |                        |
| 4.00- 4.50<br>4.00- 4.45                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | B<br>D       | 3.50<br>(DRY)            |              |               | S2          | Dark grey and dark yellowish brown very sandy clayey subrounded to rounded fine to medium GRAVEL of various lithologies.                                                                                                      | 3.80<br>4.00 |        | 97.48<br>97.28 |             |         |         |              |                        |
| 4.70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | D            |                          |              |               |             | Very soft thinly laminated grey slightly gravelly clayey SILT with many laminae of clay. Gravel is subrounded to rounded fine of mudstone.                                                                                    | 4.70         |        | 96.58          |             |         |         |              |                        |
| 5.00- 5.45                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | UT           | 4.50<br>(DRY)            | 24           | 34            |             | Firm thickly laminated grey silty CLAY with laminae of clayey silt.                                                                                                                                                           |              |        |                |             |         |         |              |                        |
| 5.45- 5.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D            |                          |              |               |             |                                                                                                                                                                                                                               |              |        |                |             |         |         |              |                        |
| 5.80                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | D            |                          |              |               |             |                                                                                                                                                                                                                               |              |        |                |             |         |         |              |                        |
| 6.50- 6.95                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D            | 6.00<br>(DRY)            |              |               | S2          | Very soft grey clayey SILT.                                                                                                                                                                                                   | 6.50         |        | 94.78          |             |         |         |              |                        |
| 7.00- 8.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | B            |                          |              | 32            |             |                                                                                                                                                                                                                               |              |        |                |             |         |         |              |                        |
| 8.00- 8.45<br>8.00- 8.30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | B            | 7.90<br>(5.10)           |              |               | C50/<br>150 | Very dense multicoloured sandy clayey subrounded to rounded fine to coarse GRAVEL of various lithologies. Low cobble content.                                                                                                 | 8.00         |        | 93.28          |             |         |         |              |                        |
| 8.50- 9.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | B            |                          |              |               |             | Very stiff to hard brown slightly gravelly sandy CLAY with a low cobble content. Gravel is subangular to rounded fine to coarse of various lithologies.                                                                       | 8.40         |        | 92.88          |             |         |         |              |                        |
| 9.00- 9.45<br>9.00- 9.28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | B            | 8.70<br>(3.50)           |              |               | C50/<br>125 | Very dense multicoloured sandy slightly clayey subrounded to rounded fine to coarse GRAVEL of various lithologies. Medium cobble content.                                                                                     | 9.00         |        | 92.28          |             |         |         |              |                        |
| 9.50-10.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D            |                          |              |               |             |                                                                                                                                                                                                                               |              |        |                |             |         |         |              |                        |
| Boring                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |              |                          | Progress     |               |             | Groundwater                                                                                                                                                                                                                   |              |        |                |             |         |         |              |                        |
| Depth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Hole Dia     | Technique                | Crew         | Depth of Hole | Depth Cased | Depth to Water                                                                                                                                                                                                                | Date         | Time   | Depth Struck   | Depth Cased | Rose to | In Mins | Depth Sealed | Remarks on Groundwater |
| 0.37                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.35         | Concrete Core            | AJ           | G.L.          |             | DRY                                                                                                                                                                                                                           | 23/08/17     | 08:00  | 8.00           | 7.50        |         |         |              | Overnight inflow       |
| 1.20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.35         | Inspection Pit           | PS/SA        | 8.00          | 7.50        | DRY                                                                                                                                                                                                                           | 23/08/17     | 18:00  |                |             |         |         |              | - rose to 5.10m.       |
| 10.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.15         | Cable Percussion         | PS/SA        | 8.00          | 7.50        | 5.10                                                                                                                                                                                                                          | 24/08/17     | 08:00  |                |             |         |         |              |                        |
| 20.40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.15         | Cable Percussion         | PS/SA        | 17.00         | 17.00       | DRY                                                                                                                                                                                                                           | 24/08/17     | 18:00  |                |             |         |         |              |                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |                          |              | 17.00         | 17.00       | DRY                                                                                                                                                                                                                           | 25/08/17     | 08:00  |                |             |         |         |              |                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |                          |              | 20.40         | 19.50       | DRY                                                                                                                                                                                                                           | 25/08/17     | 18:00  |                |             |         |         |              |                        |
| Remarks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                          |              |               |             |                                                                                                                                                                                                                               |              |        |                |             |         |         |              |                        |
| AGS Inspection pit hand excavated to 1.20m depth and no services were found.<br>ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jar.<br>The Borehole was terminated at a depth of 20.40m on the instruction of the Engineer.<br>A 50mm standpipe was installed to 6.00m with a geowrapped slotted section from 3.00m to 6.00m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 6.00m, gravel filter up to 3.00m, bentonite seal up to 0.35m, concrete up to ground level.<br>Chiselling: 8.10-8.40m for 60 minutes and 9.00-9.30m for 60 minutes. |              |                          |              |               |             |                                                                                                                                                                                                                               |              |        |                |             |         |         |              |                        |
| Symbols and abbreviations are explained on the accompanying key sheet.<br>All dimensions are in metres.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                          |              |               |             |                                                                                                                                                                                                                               |              |        |                |             |         |         |              |                        |
| Logged in accordance with BS5930:2015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              |                          |              |               |             |                                                                                                                                                                                                                               |              |        |                |             |         |         |              |                        |
| Logged by CJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |                          |              |               |             |                                                                                                                                                                                                                               |              |        |                |             |         |         |              |                        |
| Figure 1 of 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |                          |              |               |             |                                                                                                                                                                                                                               |              |        |                |             |         |         |              |                        |
| 06/10/2017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |                          |              |               |             |                                                                                                                                                                                                                               |              |        |                |             |         |         |              |                        |
| geotechnics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |              |                          |              |               |             |                                                                                                                                                                                                                               |              |        |                |             |         |         |              |                        |

# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole **BH02**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328469.7 E 338527.1 N** Project No **PN173691**  
 Ground Level **101.28 m OD**

| Sampling    |             |                          | Properties                                                                                                                             |       |         | Strata                                                                                                                                               |       | Scale 1:50                                                                            |            |  |
|-------------|-------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------|------------|--|
| Depth       | Sample Type | Depth Cased & (to Water) | Strength kPa                                                                                                                           | w %   | SPT N   | Description                                                                                                                                          | Depth | Legend                                                                                | Level m OD |  |
| 10.50       | D           |                          |                                                                                                                                        |       |         |                                                                                                                                                      |       |    |            |  |
| 11.00-11.45 | B           | 10.70 (9.00)             |                                                                                                                                        |       | C50/125 | Very stiff dark brown slightly gravelly sandy CLAY with a low cobble content. Gravel is subrounded to rounded fine to coarse of various lithologies. | 11.00 |    | 90.28      |  |
| 11.00-11.28 |             |                          |                                                                                                                                        |       |         |                                                                                                                                                      |       |                                                                                       |            |  |
| 11.70-12.50 | B           |                          | Very stiff to hard brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of various lithologies. | 11.70 |         | 89.58                                                                                                                                                |       |                                                                                       |            |  |
| 12.50-12.80 | D           | 12.40 (DRY)              |                                                                                                                                        | 11    | S50/151 |                                                                                                                                                      |       |                                                                                       |            |  |
| 13.00-13.50 | D           |                          |                                                                                                                                        |       |         |                                                                                                                                                      |       |    |            |  |
| 14.00-14.45 | UT          |                          | 9.0                                                                                                                                    |       |         |                                                                                                                                                      |       |    |            |  |
| 14.45-14.50 | D           |                          |                                                                                                                                        |       |         |                                                                                                                                                      |       |   |            |  |
| 15.00       | D           |                          |                                                                                                                                        |       |         |                                                                                                                                                      |       |  |            |  |
| 15.50-15.77 | D           | 15.50 (DRY)              |                                                                                                                                        |       | S50/115 |                                                                                                                                                      |       |  |            |  |
| 16.00-17.00 | B           |                          |                                                                                                                                        |       |         |                                                                                                                                                      |       |  |            |  |
| 17.00-17.50 | B           | 16.50 (DRY)              |                                                                                                                                        |       | S50     |                                                                                                                                                      |       |  |            |  |
| 17.00-17.45 | D           |                          |                                                                                                                                        |       |         |                                                                                                                                                      |       |  |            |  |
| 17.50-18.00 | D           |                          |                                                                                                                                        |       |         |                                                                                                                                                      |       |  |            |  |
| 18.50-18.90 | D           | 18.00 (DRY)              |                                                                                                                                        |       | S50/245 |                                                                                                                                                      |       |  |            |  |
| 19.00-20.00 | B           |                          |                                                                                                                                        |       |         |                                                                                                                                                      |       |  |            |  |
| 20.00-20.40 | D           | 19.50 (DRY)              |                                                                                                                                        |       | S50/245 |                                                                                                                                                      |       |  |            |  |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

|                                                                                                                                                                                                                                                                    |                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Remarks </p> <p>Symbols and abbreviations are explained on the accompanying key sheet.</p> <p>All dimensions are in metres.</p> <p>Logged in accordance with BS5930:2015</p> | <p>Logged by <b>CJ</b></p> <p>Figure <b>3 of 3</b></p> <p>06/10/2017</p> <p></p> |
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# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole **BH03**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328426.9 E 338513.7 N** Project No **PN173691**  
 Ground Level **101.35 m OD**

| Sampling   |             |                          | Properties   |     |         | Strata                                                                                                                                                                                | Scale 1:50 |        |            |
|------------|-------------|--------------------------|--------------|-----|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------|------------|
| Depth      | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N   | Description                                                                                                                                                                           | Depth      | Legend | Level m OD |
| 0.20- 0.40 | B           |                          |              |     |         | Grey reinforced CONCRETE with 8mm diameter rebar.                                                                                                                                     | G.L.       |        | 101.35     |
| 0.30       | ES          |                          |              |     |         | MADE GROUND: Light greyish brown sandy clayey angular to subangular gravel including limestone.                                                                                       | 0.22       |        | 101.13     |
| 0.40- 0.60 | B           |                          |              |     |         |                                                                                                                                                                                       | 0.40       |        | 100.95     |
| 0.50       | ES          |                          |              |     |         | POSSIBLE MADE GROUND: Medium dense light greyish brown very sandy clayey subangular to rounded fine to coarse GRAVEL of various lithologies. Occasional cobbles and timber fragments. |            |        |            |
| 0.90       | D           |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 1.00       | ES          |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 1.20- 1.65 | B           |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 1.20- 1.65 |             | 1.20 (DRY)               |              |     | S15     | Stiff orangish brown mottled grey with occasional dark brown speckling silty CLAY.                                                                                                    | 1.35       |        | 100.00     |
| 1.65       | D           |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 1.75       | D           |                          |              |     |         |                                                                                                                                                                                       | 1.75       |        | 99.60      |
| 1.90- 2.35 | UT27        | 1.50 (DRY)               |              |     |         | Firm dark yellowish brown and grey silty CLAY with occasional bands (up to 10mm thick) of clayey silt.                                                                                |            |        |            |
| 2.00       | ES          |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 2.35       | D           |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 2.50- 2.95 | B           |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
|            |             |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 2.95- 3.40 | D           | 2.70 (WET)               |              |     | S6      | Firm thinly laminated brown and brownish grey CLAY with laminae of silt.                                                                                                              | 2.90       |        | 98.45      |
| 3.30- 3.45 | B           |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 3.45- 4.00 | B           |                          |              |     |         | Loose dark grey very sandy slightly clayey subangular to rounded fine to coarse GRAVEL of various lithologies.                                                                        | 3.30       |        | 98.05      |
|            |             |                          |              |     |         |                                                                                                                                                                                       | 3.45       |        | 97.90      |
| 4.00- 4.45 | UT8         | 4.00 (DRY)               | 25           | 30  |         | Soft to firm grey silty CLAY with laminae of clayey silt.                                                                                                                             |            |        |            |
| 4.45       | D           |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 4.60- 5.15 | B           |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
|            |             |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 5.15- 5.60 | D           | 5.15 (4.80)              |              |     | S6      |                                                                                                                                                                                       |            |        |            |
|            |             |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 5.80       | D           |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 6.05- 6.65 | B           |                          |              |     |         | Soft to firm grey clayey SILT with occasional bands of silty clay.                                                                                                                    | 5.80       |        | 95.55      |
| 6.05- 6.65 | UTF 37      | 6.05 (5.40)              |              |     |         |                                                                                                                                                                                       |            |        |            |
|            |             |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 6.65- 7.10 | B           | 6.05 (5.40)              |              |     | C50/70  | Very dense multicoloured sandy slightly clayey subangular to rounded fine to coarse GRAVEL of various lithologies. Medium to high cobble content.                                     | 6.30       |        | 95.05      |
| 6.65- 6.85 |             |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 7.50       | D           |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
|            |             |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 8.00- 8.45 | B           | 8.00 (7.40)              |              |     | C50/150 | Below 8.15, occasional pockets of stiff slightly sandy slightly gravelly clay.                                                                                                        |            |        |            |
| 8.00- 8.30 |             |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
|            |             |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 9.00       | D           |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 9.10       | D           |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 9.20       | D           |                          |              |     |         | Below 9.20, abundant pockets of very stiff brown slightly sandy slightly gravelly clay.                                                                                               |            |        |            |
|            |             |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 9.45- 9.90 | B           | 9.45 (8.20)              |              |     | C50/87  |                                                                                                                                                                                       |            |        |            |
| 9.45- 9.64 |             |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
|            |             |                          |              |     |         |                                                                                                                                                                                       |            |        |            |
| 9.95-10.45 | B           |                          |              |     |         |                                                                                                                                                                                       | 9.95       |        | 91.40      |

| Boring |          |                  |      | Progress      |             |                |          |       | Groundwater  |             |         |         |              |                        |
|--------|----------|------------------|------|---------------|-------------|----------------|----------|-------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique        | Crew | Depth of Hole | Depth Cased | Depth to Water | Date     | Time  | Depth Struck | Depth Cased | Rose to | In Mins | Depth Sealed | Remarks on Groundwater |
| 0.22   | 0.35     | Concrete Core    | AJ   | G.L.          |             |                | 25/08/17 | 08:00 | 9.50         | 9.50        |         |         |              | Inflow                 |
| 1.20   | 0.35     | Inspection Pit   | KP   | 7.60          | 7.60        | 7.05           | 25/08/17 | 18:00 |              |             |         |         |              |                        |
| 10.45  | 0.20     | Cable Percussion | KP   | 7.60          | 7.60        | 7.00           | 29/08/17 | 08:00 |              |             |         |         |              |                        |
| 25.00  | 0.15     | Cable Percussion | KP   | 15.35         | 15.05       | 12.20          | 26/08/17 | 18:00 |              |             |         |         |              |                        |
|        |          |                  |      | 15.35         | 15.05       | 6.05           | 30/08/17 | 08:00 |              |             |         |         |              |                        |
|        |          |                  |      | 25.00         | 15.70       | 7.80           | 30/08/17 | 18:00 |              |             |         |         |              |                        |

Remarks **INS** Inspection pit hand excavated to 1.20m depth and no services were found.  
**ES** ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jar.  
 The Borehole was terminated at a depth of 25.00m on the instruction of the Engineer.  
 Water was added to assist boring between 0.20m and 7.60m and between 8.00m and 9.00m.  
 A 50mm standpipe was installed to 11.00m with a geowrapped slotted section from 6.00m to 11.00m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 11.00m, gravel filter up to 6.00m, bentonite seal up to 0.35m, concrete up to ground level.  
 Symbols and abbreviations are explained on the accompanying key sheet.  
 All dimensions are in metres.  
 Logged in accordance with BS5930:2015

Logged by **CJ**  
 Figure **1 of 3**  
 06/10/2017

**geotechnics**

# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole Project No **BH03**  
**PN173691**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328426.9 E**  
**338513.7 N** Ground Level **101.35 m OD**

| Sampling    |             |                          | Properties   |     |         | Strata                                                                                                                                 | Scale 1:50 |        |            |
|-------------|-------------|--------------------------|--------------|-----|---------|----------------------------------------------------------------------------------------------------------------------------------------|------------|--------|------------|
| Depth       | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N   | Description                                                                                                                            | Depth      | Legend | Level m OD |
| 10.45-10.78 | D           | 10.45 (9.20)             |              |     | S50/179 | Very stiff to hard brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of various lithologies. | 9.95       |        | 91.40      |
| 11.45       | D           |                          |              | 11  |         |                                                                                                                                        |            |        |            |
| 12.00-12.20 | B           | 12.00                    |              |     |         |                                                                                                                                        |            |        |            |
| 12.00-12.20 | UF100       | (11.40)                  |              |     |         |                                                                                                                                        |            |        |            |
| 12.20-12.65 | B           | 12.00                    |              |     | C50/170 |                                                                                                                                        |            |        |            |
| 12.20-12.52 |             | (11.40)                  |              |     |         |                                                                                                                                        |            |        |            |
| 13.20       | D           |                          |              |     |         |                                                                                                                                        |            |        |            |
| 13.65-14.10 | B           | 13.50                    |              |     | C50/174 |                                                                                                                                        |            |        |            |
| 13.65-13.97 |             | (11.50)                  |              |     |         |                                                                                                                                        |            |        |            |
| 14.55       | D           |                          |              |     |         |                                                                                                                                        |            |        |            |
| 15.05-15.50 | B           | 15.05                    |              |     | C50/158 | Below 18.00, occasional lenses of light brown silt.                                                                                    |            |        |            |
| 15.05-15.36 |             | (12.20)                  |              |     |         |                                                                                                                                        |            |        |            |
| 16.00       | D           |                          |              | 13  |         |                                                                                                                                        |            |        |            |
| 16.55-17.00 | B           | 15.70                    |              |     | C52/202 |                                                                                                                                        |            |        |            |
| 16.55-16.90 |             | (14.20)                  |              |     |         |                                                                                                                                        |            |        |            |
| 17.50       | D           |                          |              |     |         |                                                                                                                                        |            |        |            |
| 17.95-18.40 | UT          | 15.70 (8.40)             |              |     |         |                                                                                                                                        |            |        |            |
| 18.40       | D           |                          |              |     |         |                                                                                                                                        |            |        |            |
| 19.00       | D           |                          |              |     |         |                                                                                                                                        |            |        |            |
| 19.55-20.00 | B           | 15.70                    |              |     | C50/181 |                                                                                                                                        |            |        |            |
| 19.55-19.88 |             | (9.00)                   |              |     |         | Below 20.00, occasional bands of brown fine to coarse sand.                                                                            |            |        |            |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks **AB** Chiselling: 6.75-7.05m for 45 minutes and 7.40-7.60m for 45 minutes and 8.00-8.95m for 180 minutes and 12.90-13.15m for 30 minutes and 15.75-16.05m for 30 minutes and 17.20-17.40m for 45 minutes and 17.65-17.80m for 45 minutes. Logged by **CJ**  
 Symbols and abbreviations are explained on the accompanying key sheet. Figure **2 of 3**  
 All dimensions are in metres. Logged in accordance with BS5930:2015 06/10/2017

# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole **BH03**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328426.9 E 338513.7 N** Project No **PN173691**  
 Ground Level **101.35 m OD**

| Sampling    |             |                          | Properties   |     |         | Strata                                                                                                                                                                            |       | Scale 1:50 |            |  |
|-------------|-------------|--------------------------|--------------|-----|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------|------------|--|
| Depth       | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N   | Description                                                                                                                                                                       | Depth | Legend     | Level m OD |  |
| 20.55       | D           |                          |              |     |         | Very stiff thickly laminated clayey SILT with occasional bands of brown clay.                                                                                                     | 20.55 |            | 80.80      |  |
| 21.10-21.55 | UT119       | 15.70 (9.20)             |              |     |         |                                                                                                                                                                                   |       |            |            |  |
| 21.55       | D           |                          |              |     |         |                                                                                                                                                                                   |       |            |            |  |
| 22.00-22.70 | B           |                          |              |     |         | Very stiff thinly and thickly laminated brown slightly gravelly silty CLAY with bands of grey clayey silt. Gravel is subrounded to rounded fine to medium of various lithologies. | 22.00 |            | 79.35      |  |
| 22.70-23.07 | D           | 15.70 (8.30)             |              | 15  | S50/224 |                                                                                                                                                                                   |       |            |            |  |
| 23.50-24.40 | B           |                          |              |     |         |                                                                                                                                                                                   |       |            |            |  |
| 24.40-24.85 | UT124       | 15.70 (7.80)             |              |     |         | Below 24.50, occasional bands of brown clayey silt.                                                                                                                               |       |            |            |  |
| 24.85       | D           |                          |              |     |         |                                                                                                                                                                                   |       |            |            |  |
|             |             |                          |              |     |         | End of Borehole                                                                                                                                                                   | 25.00 |            | 76.35      |  |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **CJ**

Figure **3 of 3**  
06/10/2017

# BOREHOLE RECORD - Cable Percussion

|         |                            |                           |                          |                     |                  |
|---------|----------------------------|---------------------------|--------------------------|---------------------|------------------|
| Project | KRONOSPAN STORAGE BUILDING | Engineer                  | RAMBOLL UK               | Borehole Project No | BH04<br>PN173691 |
| Client  | KRONOSPAN LTD              | National Grid Coordinates | 328456.5 E<br>338507.1 N | Ground Level        | 101.37 m OD      |

| Sampling    |             |                          | Properties   |     |         | Strata                                                                                                                                                                                                                                   | Scale 1:50 |        |            |
|-------------|-------------|--------------------------|--------------|-----|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------|------------|
| Depth       | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N   | Description                                                                                                                                                                                                                              | Depth      | Legend | Level m OD |
|             |             |                          |              |     |         | Grey reinforced CONCRETE with 8mm diameter rebar.                                                                                                                                                                                        | G.L.       |        | 101.37     |
| 0.50- 1.20  | B           |                          |              |     |         | MADE GROUND: Brown very gravelly silty fine to coarse sand. Gravel is subangular to rounded fine to coarse of various lithologies. Occasional timber fragments. Between 0.50-1.20m, grading to very sandy silty gravel. At 1.20m, dense. | 0.36       |        | 101.01     |
| 0.50        | ES          |                          |              |     |         |                                                                                                                                                                                                                                          |            |        |            |
| 1.00        | ES          |                          |              |     |         |                                                                                                                                                                                                                                          |            |        |            |
| 1.20- 1.65  | B           | (DRY)                    |              |     | S34     |                                                                                                                                                                                                                                          |            |        |            |
| 1.20- 1.65  |             |                          |              |     |         |                                                                                                                                                                                                                                          |            |        |            |
| 1.80        | D           |                          |              |     |         | Very loose/loose dark greenish brown gravelly clayey fine to coarse SAND with occasional pockets of orangish brown sandy silt. Gravel is subangular to rounded fine to coarse including metaquartzite, mudstone and siltstone.           | 1.80       |        | 99.57      |
| 2.00- 2.45  | B           | 1.70 (DRY)               |              |     | S4      |                                                                                                                                                                                                                                          |            |        |            |
| 2.00- 2.45  | D           |                          |              |     |         |                                                                                                                                                                                                                                          | 2.40       |        | 98.97      |
| 2.00        | ES          |                          |              |     |         | Soft to firm thinly laminated brown CLAY with laminae of silt.                                                                                                                                                                           |            |        |            |
| 2.80        | D           |                          |              |     |         |                                                                                                                                                                                                                                          |            |        |            |
| 3.00- 3.45  | ES          | 3.00 (DRY)               | 24           | 29  |         |                                                                                                                                                                                                                                          |            |        |            |
| 3.00- 3.45  | UT19        |                          |              |     |         |                                                                                                                                                                                                                                          |            |        |            |
| 3.50        | D           |                          |              |     |         |                                                                                                                                                                                                                                          |            |        |            |
| 3.80        | D           |                          |              |     |         | Dark grey, orangish brown and light greenish grey very sandy slightly silty subrounded to rounded fine to medium GRAVEL of various lithologies.                                                                                          | 3.55       |        | 97.82      |
| 4.00- 4.45  | B           | 4.00 (DRY)               |              |     | S4      |                                                                                                                                                                                                                                          | 3.60       |        | 97.77      |
| 4.00- 4.45  | D           |                          |              |     |         | Soft thinly laminated grey CLAY with laminae of grey silt and occasional partings of fine sand.                                                                                                                                          |            |        |            |
| 4.80        | D           |                          |              |     |         |                                                                                                                                                                                                                                          |            |        |            |
| 5.00- 5.45  | UT16        | 4.50 (DRY)               |              | 32  |         |                                                                                                                                                                                                                                          |            |        |            |
| 5.50        | D           |                          |              |     |         |                                                                                                                                                                                                                                          |            |        |            |
| 5.80        | D           |                          |              |     |         | Soft thinly laminated grey SILT with laminae of grey clay.                                                                                                                                                                               | 5.80       |        | 95.57      |
| 6.00- 6.45  | B           | 6.00 (DRY)               |              |     | S5      |                                                                                                                                                                                                                                          |            |        |            |
| 6.00- 6.30  | D           |                          |              |     |         |                                                                                                                                                                                                                                          |            |        |            |
|             |             |                          |              |     |         |                                                                                                                                                                                                                                          |            |        |            |
| 6.80        | D           |                          |              |     |         |                                                                                                                                                                                                                                          |            |        |            |
| 7.00- 4.45  | UT9         | 7.00 (5.90)              |              |     |         |                                                                                                                                                                                                                                          |            |        |            |
| 7.50        | D           |                          |              |     |         |                                                                                                                                                                                                                                          |            |        |            |
| 7.80        | D           |                          |              |     |         | Soft brown slightly sandy slightly gravelly CLAY with a low cobble content of mudstone. Gravel is subrounded to rounded fine to coarse of various lithologies.                                                                           | 7.40       |        | 93.97      |
| 8.00- 8.45  | B           | 8.00 (6.20)              |              |     | S50/157 |                                                                                                                                                                                                                                          | 7.50       |        | 93.87      |
| 8.00- 8.31  |             |                          |              |     |         | Very dense multicoloured sandy slightly silty subrounded to rounded fine to coarse GRAVEL of various lithologies. Medium cobble content of sandstone. Between 8.00-8.45m, very sandy very silty.                                         |            |        |            |
| 8.80        | D           |                          |              |     |         |                                                                                                                                                                                                                                          |            |        |            |
| 9.00- 9.45  | B           | 9.00 (8.80)              |              |     | S50/108 |                                                                                                                                                                                                                                          | 9.00       |        | 92.37      |
| 9.00- 9.23  | D           |                          |              |     |         | Stiff to very stiff brownish grey slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to medium including limestone, mudstone and siltstone.                                                                     |            |        |            |
| 10.00-10.95 | B           |                          |              |     |         |                                                                                                                                                                                                                                          | 10.00      |        | 91.37      |

| Boring |          |                  |      | Progress      |             |                |          |       | Groundwater  |             |         |         |              |                        |
|--------|----------|------------------|------|---------------|-------------|----------------|----------|-------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique        | Crew | Depth of Hole | Depth Cased | Depth to Water | Date     | Time  | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
| 0.36   | 0.35     | Concrete Core    | AJ   | G.L.          |             | DRY            | 23/08/17 | 08:00 | 24.50        | 9.00        | 24.50   | 20      |              | Inflow - no rise.      |
| 1.20   | 0.35     | Inspection Pit   | SL   | 8.70          | 8.50        | 6.50           | 23/08/17 | 18:00 |              |             |         |         |              |                        |
| 25.00  | 0.20     | Cable Percussion | SL   | 8.70          | 8.50        | 7.00           | 24/08/17 | 08:00 |              |             |         |         |              |                        |
|        |          |                  |      | 13.95         | 9.00        | DRY            | 24/08/17 | 18:00 |              |             |         |         |              |                        |
|        |          |                  |      | 13.95         | 9.00        | 12.00          | 25/08/17 | 08:00 |              |             |         |         |              |                        |
|        |          |                  |      | 25.00         | 9.00        | 24.50          | 25/08/17 | 18:00 |              |             |         |         |              |                        |

Remarks Inspection pit hand excavated to 1.20m depth and no services were found.

ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jar.

The Borehole was terminated at a depth of 25.00m on the instruction of the Engineer.

Water was added to assist boring between 6.00m and 8.50m.

A 50mm standpipe was installed to 25.00m with a geowrapped slotted section from 7.00m to 9.00m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 9.00m, gravel filter up to 7.00m, bentonite seal up to 0.35m, concrete up to ground level.

Logged in accordance with BS5930:2015

Logged by CJ

Figure 1 of 3  
06/10/2017

geotechnics

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole **BH04**  
 Project No **PN173691**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328456.5 E**  
**338507.1 N** Ground Level **101.37 m OD**

| Sampling    |             |                          | Properties   |     |         | Strata                                                                                                                                                      |       | Scale 1:50 |            |  |
|-------------|-------------|--------------------------|--------------|-----|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------|------------|--|
| Depth       | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N   | Description                                                                                                                                                 | Depth | Legend     | Level m OD |  |
| 10.00       | D           |                          |              |     |         | Very stiff to hard brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to rounded fine to medium including mudstone, quartzite and sandstone. | 10.00 |            | 91.37      |  |
| 10.50-10.86 | D           | 9.00 (DRY)               |              |     | S50/213 |                                                                                                                                                             |       |            |            |  |
|             |             |                          |              |     |         |                                                                                                                                                             |       |            |            |  |
| 11.50       | D           |                          |              | 12  |         | Between 12.00-13.00, low cobble content of sandstone.                                                                                                       |       |            |            |  |
| 12.00-12.45 | B           | 9.00 (DRY)               |              |     | S50/83  |                                                                                                                                                             |       |            |            |  |
| 12.00-12.23 | D           |                          |              |     |         |                                                                                                                                                             |       |            |            |  |
| 12.40-12.60 | D           |                          |              |     |         |                                                                                                                                                             |       |            |            |  |
| 13.00       | D           |                          |              |     |         |                                                                                                                                                             |       |            |            |  |
| 13.50-13.95 | B           | 9.00 (DRY)               |              |     | S49     |                                                                                                                                                             |       |            |            |  |
| 13.50-13.95 | D           |                          |              |     |         |                                                                                                                                                             |       |            |            |  |
|             |             |                          |              |     |         |                                                                                                                                                             |       |            |            |  |
| 14.50       | D           |                          |              | 8.5 |         |                                                                                                                                                             |       |            |            |  |
| 15.00-15.45 | B           | 9.00 (DRY)               |              |     | S50/225 |                                                                                                                                                             |       |            |            |  |
| 15.00-15.38 | D           |                          |              |     |         |                                                                                                                                                             |       |            |            |  |
|             |             |                          |              |     |         |                                                                                                                                                             |       |            |            |  |
| 16.00-16.95 | B           | 9.00 (DRY)               |              |     | S50/177 |                                                                                                                                                             |       |            |            |  |
| 16.00       | D           |                          |              |     |         |                                                                                                                                                             |       |            |            |  |
|             |             |                          |              |     |         |                                                                                                                                                             |       |            |            |  |
| 16.50-16.83 | D           | 9.00 (DRY)               |              |     |         |                                                                                                                                                             |       |            |            |  |
|             |             |                          |              |     |         |                                                                                                                                                             |       |            |            |  |
|             |             |                          |              |     |         |                                                                                                                                                             |       |            |            |  |
| 17.50       | D           |                          |              |     |         |                                                                                                                                                             |       |            |            |  |
| 18.00-18.45 | B           | 9.00 (DRY)               |              |     | S50/225 |                                                                                                                                                             |       |            |            |  |
| 18.00-18.38 | D           |                          |              |     |         |                                                                                                                                                             |       |            |            |  |
|             |             |                          |              |     |         |                                                                                                                                                             |       |            |            |  |
| 19.00       | D           |                          |              |     |         |                                                                                                                                                             |       |            |            |  |
| 19.50-19.95 | B           | 9.00 (DRY)               |              |     | S50/243 |                                                                                                                                                             |       |            |            |  |
| 19.50-19.89 | D           |                          |              |     |         |                                                                                                                                                             |       |            |            |  |
|             |             |                          |              |     |         |                                                                                                                                                             |       |            |            |  |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks Chiselling: 8.50-8.70m for 60 minutes and 8.70-9.00m for 65 minutes and 12.40-12.60m for 60 minutes and 15.80-16.00m for 40 minutes.

Logged by **CJ**

Symbols and abbreviations are explained on the accompanying key sheet.

Figure **2 of 3**  
06/10/2017

**geotechnics**

All dimensions are in metres. Logged in accordance with BS5930:2015

# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole Project No **BH04**  
**PN173691**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328456.5 E**  
**338507.1 N** Ground Level **101.37 m OD**

| Sampling    |             |                          | Properties   |     |       | Strata      | Scale 1:50 |        |            |
|-------------|-------------|--------------------------|--------------|-----|-------|-------------|------------|--------|------------|
| Depth       | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N | Description | Depth      | Legend | Level m OD |
| 20.50       | D           | 9.00 (DRY)               |              |     | S45   |             | 20.50      |        | 80.87      |
| 21.00-21.45 | UT89        |                          |              |     |       |             |            |        |            |
| 21.50       | D           |                          |              |     |       |             |            |        |            |
| 22.00       | D           | 9.00 (DRY)               |              |     | S45   |             | 21.50      |        | 79.87      |
| 22.50-22.95 | B           |                          |              |     |       |             |            |        |            |
| 22.50-22.95 |             |                          |              |     |       |             |            |        |            |
| 23.50       | D           | 9.00 (DRY)               |              |     | S45   |             | 23.50      |        | 77.87      |
| 24.00-24.45 | UT89        |                          |              |     |       |             |            |        |            |
| 24.50       | D           |                          |              |     |       |             |            |        |            |
| 25.00       | D           | 9.00 (DRY)               |              |     | S45   |             | 23.90      |        | 77.47      |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             | 24.60      |        | 76.77      |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             | 25.00      |        | 76.37      |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             | 9.00 (DRY)               |              |     | S45   |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |
|             |             |                          |              |     |       |             |            |        |            |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **CJ**

Figure **3 of 3**  
06/10/2017

# BOREHOLE RECORD - Cable Percussion

Project KRONOSPAN STORAGE BUILDING

Engineer RAMBOLL UK

Borehole Project No BH05  
PN173691

Client KRONOSPAN LTD

National Grid Coordinates 328422.2 E  
338488.4 N

Ground Level 101.29 m OD

| Sampling   |             |                          | Properties   |     |         | Strata                                                                                                                                                                              |       | Scale 1:50                                                                            |            |  |
|------------|-------------|--------------------------|--------------|-----|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------|------------|--|
| Depth      | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N   | Description                                                                                                                                                                         | Depth | Legend                                                                                | Level m OD |  |
|            |             |                          |              |     |         | Grey reinforced CONCRETE with 8mm diameter rebar.                                                                                                                                   | G.L.  |    | 101.29     |  |
| 0.40- 0.60 | B           |                          |              |     |         | MADE GROUND: Greyish brown and dark brown very sandy clayey angular to subangular fine to coarse gravel including mudstone and limestone.                                           | 0.36  |    | 100.93     |  |
| 0.60- 1.20 | B           |                          |              |     |         |                                                                                                                                                                                     | 0.60  |    | 100.69     |  |
| 0.60       | ES          |                          |              |     |         |                                                                                                                                                                                     |       |                                                                                       |            |  |
| 1.00       | ES          |                          |              |     |         | Soft thinly to thickly laminated orangish brown mottled grey slightly gravelly silty CLAY with occasional bands of grey silty clay, grey clayey silt and dark grey silty fine sand. |       |    |            |  |
| 1.20- 1.65 | B           |                          |              |     |         |                                                                                                                                                                                     |       |    |            |  |
| 1.20- 1.65 | D           | (DRY)                    |              |     | S6      |                                                                                                                                                                                     |       |    |            |  |
|            |             |                          |              |     |         | Below 1.80m, greyish brown.                                                                                                                                                         |       |    |            |  |
| 1.80       | D           |                          |              |     |         |                                                                                                                                                                                     |       |    |            |  |
| 2.00       | ES          |                          |              |     |         |                                                                                                                                                                                     |       |    |            |  |
| 2.00- 2.45 | UT11        | 1.70 (DRY)               |              |     |         |                                                                                                                                                                                     |       |    |            |  |
| 2.50       | D           |                          |              |     |         | Multicoloured very sandy slightly clayey subrounded to rounded fine GRAVEL of various lithologies.                                                                                  | 2.50  |    | 98.79      |  |
|            |             |                          |              |     |         |                                                                                                                                                                                     | 2.60  |    | 98.69      |  |
| 2.80       | D           |                          |              |     |         |                                                                                                                                                                                     |       |    |            |  |
| 3.00- 3.45 | B           |                          |              |     |         | Soft thickly laminated grey silty CLAY with occasional thinly laminated bands of clay and silt and bands (up to 60mm thick) of clayey silt. Occasional thin laminae of grey clay.   |       |    |            |  |
| 3.00- 3.45 | D           | 3.00 (DRY)               |              |     | S4      |                                                                                                                                                                                     |       |    |            |  |
|            |             |                          |              |     |         |                                                                                                                                                                                     |       |    |            |  |
|            |             |                          |              |     |         |                                                                                                                                                                                     |       |    |            |  |
| 3.80       | D           |                          |              |     |         |                                                                                                                                                                                     |       |    |            |  |
| 4.00- 4.45 | UT14        | 4.00 (DRY)               | 69           | 28  |         |                                                                                                                                                                                     |       |    |            |  |
| 4.50       | D           |                          |              | 33  |         |                                                                                                                                                                                     |       |    |            |  |
|            |             |                          |              |     |         |                                                                                                                                                                                     |       |   |            |  |
| 4.80       | D           |                          |              |     |         |                                                                                                                                                                                     |       |  |            |  |
| 5.00- 5.45 | B           |                          |              |     |         |                                                                                                                                                                                     |       |  |            |  |
| 5.00- 5.38 | D           | 4.70 (DRY)               |              |     | S6      |                                                                                                                                                                                     |       |  |            |  |
|            |             |                          |              |     |         |                                                                                                                                                                                     |       |  |            |  |
| 6.00       | D           |                          |              |     |         |                                                                                                                                                                                     |       |  |            |  |
|            |             |                          |              |     |         |                                                                                                                                                                                     |       |  |            |  |
|            |             |                          |              |     |         |                                                                                                                                                                                     |       |  |            |  |
| 6.50- 6.95 | B           |                          |              |     |         | Medium dense multicoloured very sandy slightly clayey subangular to rounded fine to coarse GRAVEL of various lithologies. Low to medium cobble content.                             | 6.30  |  | 94.99      |  |
| 6.50- 6.95 | D           | 6.00 (DRY)               |              |     | S10     |                                                                                                                                                                                     |       |  |            |  |
|            |             |                          |              |     |         |                                                                                                                                                                                     |       |  |            |  |
|            |             |                          |              |     |         |                                                                                                                                                                                     |       |  |            |  |
| 7.50       | D           |                          |              |     |         |                                                                                                                                                                                     |       |  |            |  |
|            |             |                          |              |     |         |                                                                                                                                                                                     |       |  |            |  |
| 8.00- 8.45 | B           |                          |              |     |         | At 8.00m, very dense.                                                                                                                                                               |       |  |            |  |
| 8.00- 8.12 | B           | 8.00 (6.90)              |              |     | C50/18  |                                                                                                                                                                                     |       |  |            |  |
|            |             |                          |              |     |         |                                                                                                                                                                                     |       |  |            |  |
| 9.00       | D           |                          |              |     |         |                                                                                                                                                                                     |       |  |            |  |
|            |             |                          |              |     |         |                                                                                                                                                                                     |       |  |            |  |
|            |             |                          |              |     |         |                                                                                                                                                                                     |       |  |            |  |
| 9.50- 9.95 | B           |                          |              |     |         | Very stiff occasionally hard brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of various lithologies.                                    | 9.10  |  | 92.19      |  |
| 9.50- 9.84 | B           | 9.50 (8.30)              |              |     | C50/189 |                                                                                                                                                                                     |       |  |            |  |
|            |             |                          |              |     |         |                                                                                                                                                                                     |       |  |            |  |

| Boring |          |                  |      | Progress      |             |                |          |       | Groundwater  |             |         |         |              |                        |
|--------|----------|------------------|------|---------------|-------------|----------------|----------|-------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique        | Crew | Depth of Hole | Depth Cased | Depth to Water | Date     | Time  | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
| 0.36   | 0.35     | Concrete Core    | AJ   | G.L.          |             |                | 29/08/17 | 08:00 | 6.80         | 6.00        | 6.50    | 20      |              |                        |
| 1.20   | 0.35     | Inspection Pit   | SL   | 8.50          | 8.50        | 8.10           | 29/08/17 | 18:00 | 13.80        | 10.50       | 12.10   | 20      |              |                        |
| 10.50  | 0.20     | Cable Percussion | SL   | 8.50          | 8.50        | 8.20           | 30/08/17 | 08:00 |              |             |         |         |              |                        |
| 14.10  | 0.15     | Cable Percussion | SL   | 14.10         | 10.50       | 12.30          | 30/08/17 | 18:00 |              |             |         |         |              |                        |

Remarks Inspection pit hand excavated to 1.20m depth and no services were found.



ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jar.

The Borehole was terminated at a depth of 14.10m due to the presence of an obstruction. Water was added to assist boring between 6.30m and 9.10m.

A 50mm standpipe was installed to 9.00m with a geowrapped slotted section from 6.00m to 9.00m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 9.00m, gravel filter up to 6.00m, bentonite seal up to 0.30m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Figure

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geotechnics

# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole Project No **BH05**  
**PN173691**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328422.2 E**  
**338488.4 N** Ground Level **101.29 m OD**

| Sampling    |             |                          | Properties   |     |         | Strata                         | Scale 1:50 |        |            |
|-------------|-------------|--------------------------|--------------|-----|---------|--------------------------------|------------|--------|------------|
| Depth       | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N   | Description                    | Depth      | Legend | Level m OD |
| 10.50       | D           |                          |              |     |         |                                |            |        |            |
| 11.00-11.40 | B           | 10.50 (DRY)              |              | 9.9 | C50/246 |                                |            |        |            |
| 11.00-11.40 |             |                          |              |     |         |                                |            |        |            |
| 12.00       | D           |                          |              |     |         |                                |            |        |            |
| 12.50-12.95 | B           | 10.50 (DRY)              |              |     | C50/32  |                                |            |        |            |
| 12.50-12.68 |             |                          |              |     |         |                                |            |        |            |
| 13.50       | D           |                          |              |     |         |                                |            |        |            |
| 14.00       | B           | 10.50 (DRY)              |              |     | C50/21  | At 14.00m, cobble obstruction. | 14.10      |        | 87.19      |
| 14.00-14.10 |             |                          |              |     |         | End of Borehole                |            |        |            |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks **AGS** Chiselling: 8.00-8.50m for 115 minutes and 8.50-10.50m for 300 minutes and 13.90-14.00m for 70 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Figure

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06/10/2017

geotechnics

# BOREHOLE RECORD - Cable Percussion

|         |                            |                           |                          |                     |                  |
|---------|----------------------------|---------------------------|--------------------------|---------------------|------------------|
| Project | KRONOSPAN STORAGE BUILDING | Engineer                  | RAMBOLL UK               | Borehole Project No | BH06<br>PN173691 |
| Client  | KRONOSPAN LTD              | National Grid Coordinates | 328423.2 E<br>338444.6 N | Ground Level        | 101.40 m OD      |

| Sampling   |             |                          | Properties   |     |         | Strata                                                                                                                                                                                         | Scale 1:50 |        |            |
|------------|-------------|--------------------------|--------------|-----|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------|------------|
| Depth      | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N   | Description                                                                                                                                                                                    | Depth      | Legend | Level m OD |
| 0.35- 0.75 | B           |                          |              |     |         | Grey reinforced CONCRETE with 10mm diameter rebar.                                                                                                                                             | G.L.       |        | 101.40     |
| 0.35       | ES          |                          |              |     |         | MADE GROUND. Dark greyish brown sandy slightly clayey angular to subangular fine to coarse gravel of various lithologies. Occasional timber fragments.                                         | 0.35       |        | 101.05     |
| 0.50       | ES          |                          |              |     |         |                                                                                                                                                                                                |            |        |            |
| 0.75- 1.05 | B           |                          |              |     |         |                                                                                                                                                                                                |            |        |            |
| 1.00       | ES          |                          |              |     |         | MADE GROUND. Firm greenish grey mottled yellowish grey slightly sandy slightly gravelly clay. Gravel is angular to subrounded fine to coarse of various lithologies.                           | 1.05       |        | 100.35     |
| 1.05       | D           |                          |              |     |         |                                                                                                                                                                                                |            |        |            |
| 1.20- 1.65 | B           | 1.20 (DRY)               |              |     | C14     | Firm brown to greyish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to medium of mudstone and metaquartzite.                                               | 1.50       |        | 99.90      |
| 1.20- 1.65 |             |                          |              |     |         |                                                                                                                                                                                                |            |        |            |
| 1.75       | D           |                          |              |     |         |                                                                                                                                                                                                |            |        |            |
| 1.90- 2.50 | B           |                          |              |     |         |                                                                                                                                                                                                |            |        |            |
| 1.90- 2.50 | UTF         | 1.90 (DRY)               |              |     |         |                                                                                                                                                                                                |            |        |            |
| 2.05       | ES          |                          |              |     |         |                                                                                                                                                                                                |            |        |            |
| 2.50- 2.95 | UT12        | 1.90 (DRY)               |              |     |         |                                                                                                                                                                                                |            |        |            |
| 2.95       | D           |                          |              |     |         |                                                                                                                                                                                                |            |        |            |
| 3.00       | D           |                          |              |     |         | Dark grey clayey fine to coarse SAND with occasional thin and thick laminae of soft grey silty clay.                                                                                           | 3.00       |        | 98.40      |
| 3.10       | D           |                          |              |     |         |                                                                                                                                                                                                | 3.10       |        | 98.30      |
| 3.45- 3.90 | D           | 3.45 (3.00)              |              |     | S6      | Soft grey silty CLAY with bands of thin and thickly laminated silty clay and silt. Occasional subrounded to rounded fine to medium gravel of various lithologies. At 3.60m, very soft to soft. |            |        |            |
| 3.90       | D           |                          |              |     |         |                                                                                                                                                                                                |            |        |            |
| 4.45- 4.90 | UT13        | 4.45 (4.00)              | 20           | 32  |         |                                                                                                                                                                                                |            |        |            |
| 4.90       | D           |                          |              |     |         |                                                                                                                                                                                                |            |        |            |
| 5.20- 5.60 | B           |                          |              |     |         |                                                                                                                                                                                                |            |        |            |
| 5.60- 6.05 | D           | 5.60 (4.65)              |              |     | S4      |                                                                                                                                                                                                |            |        |            |
| 6.50       | D           |                          |              |     |         |                                                                                                                                                                                                |            |        |            |
| 6.90- 7.50 | B           |                          |              |     |         |                                                                                                                                                                                                |            |        |            |
| 6.90- 7.50 | UTF         | 6.90 (6.05)              |              |     |         |                                                                                                                                                                                                |            |        |            |
| 7.50- 7.95 | B           |                          |              |     |         |                                                                                                                                                                                                |            |        |            |
| 7.50- 7.83 |             | 6.90 (6.05)              |              |     | C50/179 | Very dense multicoloured sandy slightly clayey subangular to rounded fine to coarse GRAVEL of various lithologies. Low to medium cobble content.                                               | 7.30       |        | 94.10      |
| 8.50       | D           |                          |              |     |         |                                                                                                                                                                                                |            |        |            |
| 8.95- 9.40 | B           |                          |              |     |         |                                                                                                                                                                                                |            |        |            |
| 8.95- 9.17 |             | 8.95 (7.80)              |              |     | C50/90  |                                                                                                                                                                                                |            |        |            |
| 9.50-10.00 | B           |                          |              |     |         |                                                                                                                                                                                                |            |        |            |
| 9.50       | D           |                          |              |     |         |                                                                                                                                                                                                | 9.80       |        | 91.60      |

| Boring |          |                  |      | Progress      |             |                |          |       | Groundwater  |             |         |         |              |                        |
|--------|----------|------------------|------|---------------|-------------|----------------|----------|-------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique        | Crew | Depth of Hole | Depth Cased | Depth to Water | Date     | Time  | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
| 0.35   | 0.35     | Concrete Core    | AJ   | G.L.          |             |                | 31/08/17 | 08:00 | 0.75         |             |         |         | 1.20         | Seepage - no rise.     |
| 1.20   | 0.35     | Inspection Pit   | KP   | 5.05          | 4.45        | 4.00           | 31/08/17 | 18:00 |              |             |         |         |              |                        |
| 10.00  | 0.20     | Cable Percussion | KP   | 5.05          | 4.45        | 3.90           | 01/09/17 | 08:00 | 1.65         | 1.20        | 1.55    | 20      | 1.90         | Slow inflow.           |
| 25.00  | 0.35     | Cable Percussion | KP   | 10.00         | 10.00       | 9.40           | 01/09/17 | 18:00 |              |             |         |         |              |                        |
|        |          |                  |      | 10.00         | 10.00       | 6.55           | 04/09/17 | 08:00 |              |             |         |         |              |                        |
|        |          |                  |      | 25.00         | 13.00       | DRY            | 04/09/17 | 18:00 |              |             |         |         |              |                        |

Remarks: Inspection pit hand excavated to 1.20m depth and no services were found.  
 ES sample = 2 x 60ml glass vial, 2 x 258ml amber glass jar.  
 The Borehole was terminated at a depth of 25m on the instruction of the Engineer.  
 Water was added to assist boring between 2.50m and 4.45m and between 5.60m and 8.50m and between 11.50m and 24.40m.  
 A 50mm standpipe was installed to 3.00m with a geowrapped slotted section from 1.00m to 3.00m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 3.00m, gravel filter up to 1.00m, bentonite seal up to 0.40m, concrete up to 0.35m.  
 All dimensions are in metres.  
 Logged in accordance with BS5930:2015

Logged by CJ  
 Figure 1 of 3  
 06/10/2017

geotechnics

# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole **BH06**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328423.2 E 338444.6 N** Project No **PN173691**  
 Ground Level **101.40 m OD**

| Sampling                                  |                 |                            | Properties   |     |             | Strata                                                                                                                                 | Scale 1:50 |        |            |
|-------------------------------------------|-----------------|----------------------------|--------------|-----|-------------|----------------------------------------------------------------------------------------------------------------------------------------|------------|--------|------------|
| Depth                                     | Sample Type     | Depth Cased & (to Water)   | Strength kPa | w % | SPT N       | Description                                                                                                                            | Depth      | Legend | Level m OD |
| 10.40-10.55<br>10.40-10.55<br>10.55-10.81 | B<br>UTF<br>100 | 10.00 (WET)<br>10.00 (WET) |              |     | C50/<br>150 | Very stiff to hard brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of various lithologies. |            |        |            |
| 11.80<br>12.00-12.45<br>12.00-12.32       | D<br>B          | 11.50 (DRY)                |              | 9.5 | C50/<br>173 |                                                                                                                                        |            |        |            |
| 13.00                                     | D               |                            |              |     |             |                                                                                                                                        |            |        |            |
| 13.45-13.90<br>13.45-13.77                | B               | 13.00 (DRY)                |              |     | C50/<br>169 |                                                                                                                                        |            |        |            |
| 14.50                                     | D               |                            |              |     |             |                                                                                                                                        |            |        |            |
| 15.00-15.45<br>15.00-15.31                | B               | 13.00 (DRY)                |              |     | C50/<br>160 |                                                                                                                                        |            |        |            |
| 16.00                                     | D               |                            |              |     |             |                                                                                                                                        |            |        |            |
| 16.50-16.95<br>16.50-16.88                | B               | 13.00 (DRY)                |              |     | C50/<br>225 |                                                                                                                                        |            |        |            |
| 17.50                                     | D               |                            |              |     |             |                                                                                                                                        |            |        |            |
| 18.05-18.50<br>18.05-18.40                | B               | 13.00 (DRY)                |              |     | C50/<br>202 |                                                                                                                                        |            |        |            |
| 19.00                                     | D               |                            |              |     |             |                                                                                                                                        |            |        |            |
| 19.55-20.00<br>19.55-19.88                | B               | 13.00 (DRY)                |              |     | C50/<br>180 |                                                                                                                                        |            |        |            |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks **AB** ground level.  
 Chiselling: 7.80-8.05m for 45 minutes and 8.35-8.50m for 60 minutes and 8.95-9.25m for 45 minutes and 10.55-10.95m for 45 minutes and 17.20-17.30m for 15 minutes and 20.65-20.75m for 15 minutes.  
 Symbols and abbreviations are explained on the accompanying key sheet.  
 All dimensions are in metres. Logged in accordance with BS5930:2015  
 Logged by **CJ**  
 Figure **2 of 3**  
 06/10/2017  


# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole **BH06**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328423.2 E 338444.6 N** Project No **PN173691**  
 Ground Level **101.40 m OD**

| Sampling                   |             |                          | Properties   |     |         | Strata                                                                                | Scale 1:50     |        |                |
|----------------------------|-------------|--------------------------|--------------|-----|---------|---------------------------------------------------------------------------------------|----------------|--------|----------------|
| Depth                      | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N   | Description                                                                           | Depth          | Legend | Level m OD     |
| 20.50                      | D           |                          |              |     |         |                                                                                       |                |        |                |
| 21.10-21.55<br>21.10-21.41 | B           | 13.00 (DRY)              |              |     | C50/162 |                                                                                       |                |        |                |
| 22.10                      | D           |                          |              |     |         | Below 22.00m, occasional partings of light brown silt and slightly sandy silt.        |                |        |                |
| 22.70-23.15<br>22.70-23.02 | B           | 13.00 (DRY)              |              |     | C50/169 |                                                                                       |                |        |                |
| 23.75                      | D           |                          |              |     |         |                                                                                       |                |        |                |
| 24.25                      | D           |                          |              |     |         |                                                                                       | 24.25          |        | 77.15          |
| 24.40-24.85<br>24.55       | UT124<br>D  | 13.00 (DRY)              |              |     |         | Firm to stiff thinly laminated brown CLAY with occasional laminae of grey silty clay. |                |        |                |
|                            |             |                          |              |     |         | Brown interlaminated silty CLAY and sandy clayey SILT.                                | 24.85<br>25.00 | x x x  | 76.55<br>76.40 |
|                            |             |                          |              |     |         | End of Borehole                                                                       |                |        |                |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks 

Symbols and abbreviations are explained on the accompanying key sheet.

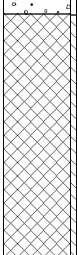
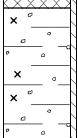
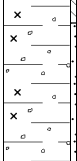
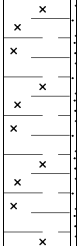
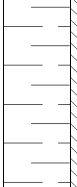
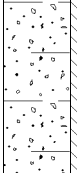
All dimensions are in metres. Logged in accordance with BS5930:2015

Logged by **CJ**  
 Figure **3 of 3**  
 06/10/2017



# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole Project No **BH07**  
**PN173691**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328416.9 E**  
**338405.7 N** Ground Level **101.42 m OD**

| Sampling                         |             |                          | Properties   |     |             | Strata                                                                                                                                                              |       | Scale 1:50                                                                            |            |  |
|----------------------------------|-------------|--------------------------|--------------|-----|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------|------------|--|
| Depth                            | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N       | Description                                                                                                                                                         | Depth | Legend                                                                                | Level m OD |  |
| 0.50- 1.20                       | B           |                          |              |     | C14         | Grey reinforced CONCRETE with 10mm diameter rebar.                                                                                                                  | G.L.  |    | 101.42     |  |
|                                  |             |                          |              |     |             | MADE GROUND: Dark greyish brown sandy slightly clayey subangular to rounded fine to coarse gravel of various lithologies. Frequent timber fragments.                | 0.37  |    | 101.05     |  |
| 1.20- 1.65<br>1.20- 1.65         | B           | (DRY)                    |              |     |             |                                                                                                                                                                     |       |                                                                                       |            |  |
| 2.00- 2.45<br>2.00<br>2.00- 2.45 | B<br>D<br>D | 1.50 (DRY)               |              |     | S2          | Very soft thinly laminated greyish brown slightly gravelly silty CLAY. Gravel is subrounded to rounded fine to coarse including mudstone.                           | 2.00  |    | 99.42      |  |
| 3.00<br>3.00- 3.45               | B<br>UT8    | 3.00 (DRY)               | 88           | 27  |             | Between 3.00-3.45m, grading to slightly gravelly clayey silt.                                                                                                       |       |    |            |  |
| 3.50                             | D           |                          |              |     |             |                                                                                                                                                                     |       |    |            |  |
| 4.00- 4.45<br>4.00<br>4.00- 4.45 | B<br>D<br>D | 4.00 (DRY)               |              |     | S1          | Very soft grey silty CLAY with occasional laminae and bands (up to 10mm thick) of silt.<br><br>Between 4.50 and 5.50, bands (up to 60mm thick) of grey clayey silt. | 4.00  |   | 97.42      |  |
| 5.00<br>5.00- 5.45               | B<br>UT9    | 5.00 (DRY)               |              |     |             |                                                                                                                                                                     |       |  |            |  |
| 5.50                             | D           |                          |              |     |             |                                                                                                                                                                     |       |  |            |  |
| 6.00- 6.45<br>6.00<br>6.00- 6.45 | B<br>D<br>D | 6.00 (DRY)               |              |     | S4          | Soft thinly laminated grey CLAY with laminae of silt.                                                                                                               | 6.00  |  | 95.42      |  |
| 7.00<br>7.00                     | B<br>D      |                          |              |     |             |                                                                                                                                                                     |       |  |            |  |
| 7.50- 7.95                       | UT14        | 7.50 (DRY)               |              |     |             |                                                                                                                                                                     |       |  |            |  |
| 8.00<br>8.00                     | B<br>D      |                          |              |     |             | Very dense multicoloured very sandy slightly clayey subangular to subrounded fine to coarse GRAVEL of various lithologies. Low to medium cobble content.            | 7.90  |  | 93.52      |  |
| 9.00- 9.45<br>9.00<br>9.00- 9.38 | B<br>D      | 9.00 (1.00)              |              |     | C50/<br>232 |                                                                                                                                                                     |       |  |            |  |
| 10.00                            | B           |                          |              |     |             |                                                                                                                                                                     | 9.80  |  | 91.62      |  |

| Boring |          |                  |      | Progress      |             |                |          |       | Groundwater  |             |         |         |              |                        |
|--------|----------|------------------|------|---------------|-------------|----------------|----------|-------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique        | Crew | Depth of Hole | Depth Cased | Depth to Water | Date     | Time  | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
| 0.37   | 0.35     | Concrete Core    | AJ   | G.L.          |             |                | 29/08/17 | 08:00 | 18.00        | 12.00       | 17.60   | 20      |              |                        |
| 1.20   | 0.35     | Inspection Pit   | CC   | 9.60          | 9.60        | 1.00           | 29/08/17 | 18:00 |              |             |         |         |              |                        |
| 10.50  | 0.20     | Cable Percussion | CC   | 9.60          | 9.60        | 8.00           | 30/08/17 | 08:00 |              |             |         |         |              |                        |
| 25.00  | 0.15     | Cable Percussion | CC   | 25.00         | 12.00       | 24.60          | 30/08/17 | 18:00 |              |             |         |         |              |                        |

Remarks **INS** Inspection pit hand excavated to 1.20m depth and no services were found.

ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jar.

The Borehole was terminated at a depth of 25m on the instruction of the Engineer.

Water was added to assist boring between 7.90m and 9.60m.

A 50mm standpipe was installed to 6.00m with a geowrapped slotted section from 3.00m to 6.00m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 6.00m, gravel filter up to 3.00m, bentonite seal up to 0.37m, concrete up to ground level.

All dimensions are in metres.

Logged in accordance with BS5930:2015

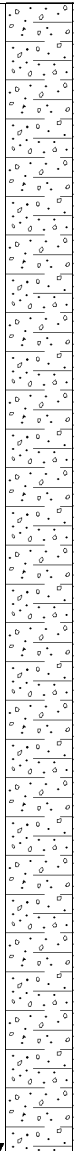
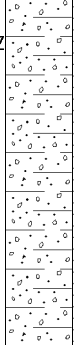
Logged by **CJ**

Figure **1 of 3**  
06/10/2017

**geotechnics**

# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole Project No **BH07**  
**PN173691**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328416.9 E**  
**338405.7 N** Ground Level **101.42 m OD**

| Sampling    |             |                          | Properties   |     |         | Strata                                                                                                                                 |       | Scale 1:50                                                                            |            |  |
|-------------|-------------|--------------------------|--------------|-----|---------|----------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------|------------|--|
| Depth       | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N   | Description                                                                                                                            | Depth | Legend                                                                                | Level m OD |  |
| 10.00       | D           |                          |              |     |         | Very stiff to hard brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of various lithologies. |       |   |            |  |
| 10.50-10.95 | D           | 10.50 (DRY)              |              |     | S46     |                                                                                                                                        |       |                                                                                       |            |  |
| 11.00       | B           |                          |              | 8.8 |         |                                                                                                                                        |       |                                                                                       |            |  |
| 11.00       | D           |                          |              |     |         |                                                                                                                                        |       |                                                                                       |            |  |
| 12.00-12.38 | D           | 12.00 (DRY)              |              |     | S50/229 |                                                                                                                                        |       |                                                                                       |            |  |
| 13.00       | B           |                          |              |     |         |                                                                                                                                        |       |                                                                                       |            |  |
| 13.00       | D           |                          |              |     |         |                                                                                                                                        |       |                                                                                       |            |  |
| 13.50-13.88 | D           | 12.00 (DRY)              |              |     | S50/232 |                                                                                                                                        |       |                                                                                       |            |  |
| 14.00       | B           |                          |              | 11  |         |                                                                                                                                        |       |                                                                                       |            |  |
| 14.00       | D           |                          |              |     |         |                                                                                                                                        |       |                                                                                       |            |  |
| 15.00       | B           |                          |              |     |         | At 18.00m, sand lens.                                                                                                                  |       |  |            |  |
| 15.00       | D           |                          |              |     |         |                                                                                                                                        |       |                                                                                       |            |  |
| 15.00-15.38 | D           | 12.00 (DRY)              |              |     | S50/228 |                                                                                                                                        |       |                                                                                       |            |  |
| 16.00       | B           |                          |              |     |         |                                                                                                                                        |       |                                                                                       |            |  |
| 16.00       | D           |                          |              |     |         |                                                                                                                                        |       |                                                                                       |            |  |
| 16.50-16.81 | D           | 12.00 (DRY)              |              |     | S50/160 |                                                                                                                                        |       |                                                                                       |            |  |
| 17.00       | B           |                          |              | 9.1 |         |                                                                                                                                        |       |                                                                                       |            |  |
| 17.00       | D           |                          |              |     |         |                                                                                                                                        |       |                                                                                       |            |  |
| 18.00       | B           |                          |              |     |         |                                                                                                                                        |       |                                                                                       |            |  |
| 18.00       | D           |                          |              |     |         |                                                                                                                                        |       |                                                                                       |            |  |
| 18.00-18.30 | D           | 12.00 (17.90)            |              |     | S50/154 |                                                                                                                                        |       |                                                                                       |            |  |
| 19.00       | B           |                          |              |     |         |                                                                                                                                        |       |                                                                                       |            |  |
| 19.00       | D           |                          |              |     |         |                                                                                                                                        |       |                                                                                       |            |  |
| 19.50-19.74 | D           | 12.00 (19.20)            |              |     | S50/156 |                                                                                                                                        |       |                                                                                       |            |  |
| 20.00       | B           |                          |              |     |         |                                                                                                                                        |       |                                                                                       |            |  |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks 

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **CJ**

Figure **2 of 3**  
06/10/2017



# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole Project No **BH07**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328416.9 E** **338405.7 N** Ground Level **101.42 m OD**  
 Scale **1:50**

| Sampling    |             |                          | Properties   |     |         | Strata                                                                                         |       | Scale 1:50 |            |       |
|-------------|-------------|--------------------------|--------------|-----|---------|------------------------------------------------------------------------------------------------|-------|------------|------------|-------|
| Depth       | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N   | Description                                                                                    | Depth | Legend     | Level m OD |       |
| 20.00       | D           |                          |              | 17  |         |                                                                                                |       |            |            |       |
| 21.00       | B           |                          |              |     |         |                                                                                                |       |            |            |       |
| 21.00       | D           |                          |              |     |         |                                                                                                |       |            |            |       |
| 21.00-21.24 | D           | 12.00 (20.80)            |              |     | S50/157 |                                                                                                |       |            |            |       |
| 22.00       | B           |                          |              |     |         |                                                                                                |       |            |            |       |
| 22.00       | D           |                          |              |     |         |                                                                                                |       |            |            |       |
| 22.50-22.75 | D           | 12.00 (22.00)            |              |     | S50/164 |                                                                                                |       |            |            |       |
| 23.00       | B           |                          |              |     |         |                                                                                                |       |            |            |       |
| 23.00       | D           |                          |              |     |         |                                                                                                |       |            |            |       |
| 24.00       | B           |                          |              |     |         |                                                                                                |       |            |            |       |
| 24.00       | D           |                          |              |     |         |                                                                                                |       |            |            |       |
| 24.50-24.82 | D           | 12.00 (23.70)            |              |     | S50/226 | Very stiff thinly to thickly laminated brown clayey SILT with occasional pockets of fine sand. | 24.00 |            |            | 77.42 |
| 25.00       | B           |                          |              |     |         |                                                                                                |       |            |            |       |
| 25.00       | D           |                          |              |     |         | End of Borehole                                                                                | 25.00 |            |            | 76.42 |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks 

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **CJ**

Figure **3 of 3**  
06/10/2017



# BOREHOLE RECORD - Cable Percussion

|         |                            |                           |                          |                     |                  |
|---------|----------------------------|---------------------------|--------------------------|---------------------|------------------|
| Project | KRONOSPAN STORAGE BUILDING | Engineer                  | RAMBOLL UK               | Borehole Project No | BH08<br>PN173691 |
| Client  | KRONOSPAN LTD              | National Grid Coordinates | 328656.9 E<br>338395.9 N | Ground Level        | 101.13 m OD      |

| Sampling                                   |                         |                          | Properties   |     |       | Strata                                                                                                                                                                     | Scale 1:50 |        |            |
|--------------------------------------------|-------------------------|--------------------------|--------------|-----|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------|------------|
| Depth                                      | Sample Type             | Depth Cased & (to Water) | Strength kPa | w % | SPT N | Description                                                                                                                                                                | Depth      | Legend | Level m OD |
| 0.20- 0.70<br>0.20                         | B<br>D                  |                          |              |     |       | Grey CONCRETE with 10mm diameter rebar.                                                                                                                                    | G.L.       |        | 101.13     |
| 0.70- 1.20<br>0.70                         | B<br>D                  |                          |              |     |       | MADE GROUND: Orangish brown sandy slightly clayey angular to subangular fine to coarse gravel of various lithologies including limestone and metaquartzite.                | 0.20       |        | 100.93     |
| 1.20- 1.65<br>1.20- 1.65                   | B<br>D                  | (DRY)                    |              |     | S44   | POSSIBLE MADE GROUND: Very stiff grey mottled orangish brown slightly sandy slightly gravelly clay. Gravel is subangular to rounded fine to coarse of various lithologies. | 0.70       |        | 100.43     |
| 2.00- 2.45<br>2.00- 2.45                   | B<br>D                  | 2.00 (DRY)               |              |     | S9    | At 2.00m, firm.                                                                                                                                                            |            |        |            |
| 3.00- 3.45<br>3.00<br>3.30<br>3.30<br>3.50 | B<br>D<br>U18<br>D<br>D | 3.00 (DRY)               |              | 19  |       | Soft brown slightly sandy slightly gravelly CLAY, in places grading to gravelly clayey silt. Gravel is subangular to rounded fine to coarse of various lithologies.        | 3.30       |        | 97.83      |
| 4.00- 4.45<br>4.00- 4.45                   | B<br>D                  | 4.00 (DRY)               |              | S6  |       |                                                                                                                                                                            |            |        |            |
| 4.30<br>4.30                               | B<br>D                  |                          |              |     |       | Loose becoming medium dense multicoloured very sandy slightly clayey to clayey subangular to rounded fine to coarse GRAVEL of various lithologies.                         | 4.30       |        | 96.83      |
| 5.00- 5.45<br>5.00- 5.45                   | B<br>D                  | 5.00 (3.40)              |              | C13 |       |                                                                                                                                                                            |            |        |            |
| 5.50<br>5.50                               | B<br>D                  |                          |              |     |       | Very soft becoming soft thinly and thickly laminated grey silty CLAY, in places grading to clayey silt.                                                                    | 5.50       |        | 95.63      |
| 6.50- 6.95<br>6.50- 6.95                   | B<br>D                  | 6.50 (WET)               |              | S4  |       |                                                                                                                                                                            |            |        |            |
| 8.00- 8.45                                 | UF16                    | 8.00 (WET)               |              |     |       |                                                                                                                                                                            |            |        |            |
| 8.50- 8.95<br>8.50- 8.95                   | B<br>D                  | 8.00 (WET)               |              | S6  |       |                                                                                                                                                                            |            |        |            |
| 9.50- 9.95<br>9.50- 9.95                   | B<br>D                  | 9.00 (6.80)              |              | S6  |       |                                                                                                                                                                            |            |        |            |

| Boring |          |                  |      | Progress      |             |                |          |       | Groundwater  |             |         |         |              |                        |
|--------|----------|------------------|------|---------------|-------------|----------------|----------|-------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique        | Crew | Depth of Hole | Depth Cased | Depth to Water | Date     | Time  | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
| 0.20   | 0.35     | Concrete Core    | AJ   | G.L.          |             |                | 04/09/17 | 08:00 | 4.30         | 4.00        | 3.40    | 20      | 6.00         | Fast inflow.           |
| 1.20   | 0.35     | Inspection Pit   | DC   | 9.00          | 9.00        | WET            | 04/09/17 | 18:00 |              |             |         |         |              |                        |
| 9.00   | 0.20     | Cable Percussion | DC   | 9.00          | 9.00        | 4.70           | 05/09/17 | 08:00 |              |             |         |         |              |                        |
| 25.00  | 0.15     | Cable Percussion | DC   | 23.00         | 21.00       | DRY            | 05/09/17 | 18:00 |              |             |         |         |              |                        |
|        |          |                  |      | 23.00         | 21.00       | 20.20          | 06/09/17 | 08:00 |              |             |         |         |              |                        |
|        |          |                  |      | 25.00         | 22.50       | DRY            | 06/09/17 | 18:00 |              |             |         |         |              |                        |

Remarks Inspection pit hand excavated to 1.20m depth and no services were found.

ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jar.

The Borehole was terminated at a depth of 25.00m on the instruction of the Engineer.

Water was added to assist boring between 12.00m and 20.30m.

A 50mm standpipe was installed to 6.00m with a geowrapped slotted section from 3.00m to 6.00m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 6.00m, gravel filter up to 3.00m, bentonite seal up to 0.20m, concrete up to ground level.

Logged in accordance with BS5930:2015

Logged by CJ

Figure 1 of 3  
06/10/2017

geotechnics

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole **BH08**  
 Project No **PN173691**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328656.9 E**  
**338395.9 N** Ground Level **101.13 m OD**

| Sampling                                  |                    |                          | Properties   |     |       | Strata                                                                                                             |       |        | Scale 1:50 |  |       |
|-------------------------------------------|--------------------|--------------------------|--------------|-----|-------|--------------------------------------------------------------------------------------------------------------------|-------|--------|------------|--|-------|
| Depth                                     | Sample Type        | Depth Cased & (to Water) | Strength kPa | w % | SPT N | Description                                                                                                        | Depth | Legend | Level m OD |  |       |
| 11.00-11.45<br>11.00-11.45<br>11.00-11.45 | B<br>D<br>UF17     | 11.00<br>(7.20)          |              |     |       |                                                                                                                    |       |        |            |  |       |
| 12.50-12.95<br>12.50-12.95                | B<br>D             | 12.50<br>(3.50)          |              |     | S6    |                                                                                                                    |       |        |            |  |       |
| 13.00<br>13.00                            | B<br>D             |                          |              |     |       |                                                                                                                    |       |        |            |  |       |
| 14.00<br>14.00<br>14.00-14.45<br>14.50    | B<br>D<br>U20<br>D | 14.00<br>(4.10)          |              |     |       |                                                                                                                    |       |        |            |  |       |
| 15.50-15.95<br>15.50-15.95                | B<br>D             | 15.50<br>(5.50)          |              |     | S10   |                                                                                                                    |       |        |            |  |       |
| 17.00-17.45                               | U36                | 17.00<br>(5.50)          |              |     |       |                                                                                                                    |       |        |            |  |       |
| 17.50-18.00<br>17.50<br>17.50-18.00       | B<br>D<br>D        |                          |              |     |       | Dense multicoloured very sandy slightly clayey subangular to rounded fine to coarse GRAVEL of various lithologies. | 17.40 |        |            |  | 83.73 |
| 18.00-18.45<br>18.00-18.45                | D                  | 18.00<br>(6.10)          |              |     | C38   |                                                                                                                    |       |        |            |  |       |
| 19.50-19.95<br>19.50-19.95                | B<br>D             | 19.50<br>(3.20)          |              |     | C43   |                                                                                                                    |       |        |            |  |       |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks **Chiselling: 1.30-1.70m for 45 minutes and 21.30-21.60m for 45 minutes and 23.40-23.60m for 30 minutes and 24.50-25.00m for 45 minutes.**

Logged by **CJ**

Figure **2 of 3**  
06/10/2017

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres. Logged in accordance with BS5930:2015

**geotechnics**

# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole Project No **BH08**  
**PN173691**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328656.9 E**  
**338395.9 N** Ground Level **101.13 m OD**

| Sampling                   |             |                          | Properties   |     |         | Strata                                                                                                                         | Scale 1:50 |        |            |
|----------------------------|-------------|--------------------------|--------------|-----|---------|--------------------------------------------------------------------------------------------------------------------------------|------------|--------|------------|
| Depth                      | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N   | Description                                                                                                                    | Depth      | Legend | Level m OD |
| 21.00-21.45<br>21.00-21.44 | B<br>D      | 21.00 (DRY)              |              |     | S50/285 | Very stiff brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of various lithologies. | 20.30      |        | 80.83      |
| 22.50-22.95<br>22.50-22.89 | B<br>D      | 22.50 (DRY)              |              |     | S50/235 |                                                                                                                                |            |        |            |
| 24.00-24.45<br>24.00-24.31 | B<br>D      | 22.50 (DRY)              |              |     | S50/155 |                                                                                                                                |            |        |            |
| 25.00                      | D           |                          |              |     |         | End of Borehole                                                                                                                | 25.00      |        | 76.13      |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

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Figure **3 of 3**  
06/10/2017

# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole **BH09**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328671.2 E 338374.9 N** Project No **PN173691**  
 Ground Level **100.83 m OD**

| Sampling   |             |                          | Properties   |     |       | Strata                                                                                                                                                      |       |        | Scale 1:50 |  |  |
|------------|-------------|--------------------------|--------------|-----|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------|------------|--|--|
| Depth      | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N | Description                                                                                                                                                 | Depth | Legend | Level m OD |  |  |
| 0.30- 0.60 | B           |                          |              |     |       | Grey CONCRETE with 10mm diameter rebar.                                                                                                                     | G.L.  |        | 100.83     |  |  |
| 0.50       | ES          |                          |              |     |       |                                                                                                                                                             | 0.30  |        | 100.53     |  |  |
| 0.60- 1.20 | B           |                          |              |     |       | MADE GROUND: Orangish brown sandy slightly clayey angular to subangular fine to coarse gravel of various lithologies including limestone and metaquartzite. | 0.60  |        | 100.23     |  |  |
| 1.00       | ES          |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 1.20- 1.65 | B           | (DRY)                    |              |     | C27   | POSSIBLE MADE GROUND: Light yellowish brown sandy very clayey subangular to rounded fine to coarse gravel of various lithologies.                           |       |        |            |  |  |
| 1.20- 1.65 |             |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 1.80       | D           |                          |              |     |       |                                                                                                                                                             | 2.10  |        | 98.73      |  |  |
| 2.00- 2.45 | B           |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 2.00- 2.45 | ES          | 1.70 (DRY)               |              |     | C8    | Soft to firm thinly laminated brown slightly gravelly silty CLAY with occasional laminae of grey silt. Gravel is subrounded to rounded fine of mudstone.    |       |        |            |  |  |
| 2.00- 2.45 |             |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 2.80       | D           |                          |              | 28  |       |                                                                                                                                                             |       |        |            |  |  |
| 3.00- 3.45 | B           |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 3.00- 3.45 | D           | 3.00 (DRY)               |              |     | S8    |                                                                                                                                                             |       |        |            |  |  |
| 3.00- 3.45 |             |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 3.80       | D           |                          |              |     |       |                                                                                                                                                             | 4.00  |        | 96.83      |  |  |
| 4.00- 4.45 | B           |                          |              |     |       | Medium dense multicoloured very sandy clayey subrounded to rounded fine to coarse GRAVEL of various lithologies.                                            |       |        |            |  |  |
| 4.00- 4.45 | D           | 4.00 (2.20)              |              |     | S14   |                                                                                                                                                             |       |        |            |  |  |
| 4.00- 4.45 |             |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 4.80       | D           |                          |              |     |       |                                                                                                                                                             | 5.20  |        | 95.63      |  |  |
| 5.00- 5.45 | B           |                          |              |     |       | Soft laminated grey slightly gravelly silty CLAY, in places grading to clayey silt. Gravel is subrounded fine of mudstone.                                  |       |        |            |  |  |
| 5.00- 5.45 |             | 4.70 (2.60)              |              |     | C17   |                                                                                                                                                             |       |        |            |  |  |
| 5.00- 5.45 |             |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 6.00       | D           |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 6.50- 6.95 | UT12        | 6.20 (5.30)              | 104          | 27  |       |                                                                                                                                                             |       |        |            |  |  |
| 6.50- 6.95 |             |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 7.00       | D           |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 7.00       |             |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 7.50       | D           |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 7.50       |             |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 8.00- 8.45 | B           |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 8.00- 8.45 | D           | 7.70 (6.20)              |              |     | S6    |                                                                                                                                                             |       |        |            |  |  |
| 8.00- 8.45 |             |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 9.00       | D           |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 9.00       |             |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 9.50- 9.95 | UT21        | 9.20 (8.30)              |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 9.50- 9.95 |             |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |
| 10.00      | D           |                          |              |     |       |                                                                                                                                                             |       |        |            |  |  |

| Boring |          |                  |      | Progress      |             |                |          |       | Groundwater  |             |         |         |              |                        |
|--------|----------|------------------|------|---------------|-------------|----------------|----------|-------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique        | Crew | Depth of Hole | Depth Cased | Depth to Water | Date     | Time  | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
| 0.30   | 0.35     | Concrete Core    | AJ   | G.L.          | 15.00       | 12.30          | 04/09/17 | 08:00 | 4.00         | 4.00        | 2.20    | 20      | 21.00        | Fast inflow.           |
| 1.20   | 0.35     | Inspection Pit   | SL   | 15.00         | 15.00       | 10.90          | 04/09/17 | 18:00 | 17.80        | 17.50       | 7.20    | 20      | 21.00        | Fast inflow.           |
| 13.00  | 0.20     | Cable Percussion | SL   | 15.00         | 15.00       | 10.90          | 05/09/17 | 08:00 | 21.50        | 21.00       | 12.80   | 20      | 12.80        | Fast inflow.           |
| 25.00  | 0.15     | Cable Percussion | SL   | 25.00         | 22.00       | DRY            | 05/09/17 | 18:00 |              |             |         |         |              |                        |

Remarks **INS** Inspection pit hand excavated to 1.20m depth and no services were found.  
**ES** sample = 1 x 60ml glass vial, 2 x 258ml amber glass jar.  
 The Borehole was terminated at a depth of 25.00m on the instruction of the Engineer.  
 Water was added to assist boring between 4.00m and 15.00m.  
 A 50mm standpipe was installed to 21.00m with a geowrapped slotted section from 17.00m to 21.00m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 21.00m, gravel filter up to 17.00m, bentonite seal up to 0.20m, concrete up to ground level.

Logged in accordance with BS5930:2015

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 Figure **1 of 3**  
 06/10/2017

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# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole **BH09**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328671.2 E 338374.9 N** Project No **PN173691**  
 Ground Level **100.83 m OD**

| Sampling    |             |                          | Properties   |     |       | Strata                                                                                                                                                                                                                     | Scale 1:50 |        |            |
|-------------|-------------|--------------------------|--------------|-----|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------|------------|
| Depth       | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N | Description                                                                                                                                                                                                                | Depth      | Legend | Level m OD |
| 10.50       | D           |                          |              |     |       |                                                                                                                                                                                                                            |            |        |            |
| 11.00-11.45 | B           |                          |              |     |       |                                                                                                                                                                                                                            |            |        |            |
| 11.00-11.45 | D           | 10.70 (5.30)             |              |     | S8    |                                                                                                                                                                                                                            |            |        |            |
| 12.00       | D           |                          |              |     |       |                                                                                                                                                                                                                            |            |        |            |
| 12.50-12.95 | UT16        | 12.00 (9.30)             | 21           | 34  |       |                                                                                                                                                                                                                            |            |        |            |
| 13.00       | D           |                          |              |     |       |                                                                                                                                                                                                                            |            |        |            |
| 13.50       | D           |                          |              |     |       |                                                                                                                                                                                                                            |            |        |            |
| 14.00-14.45 | B           |                          |              |     |       |                                                                                                                                                                                                                            |            |        |            |
| 14.00-14.45 | D           | 13.70 (12.00)            |              |     | S7    |                                                                                                                                                                                                                            |            |        |            |
| 15.00       | D           |                          |              |     |       |                                                                                                                                                                                                                            |            |        |            |
| 15.50-15.95 | B           |                          |              |     |       |                                                                                                                                                                                                                            |            |        |            |
| 15.50-15.95 | D           | 15.00 (11.20)            |              |     | S8    |                                                                                                                                                                                                                            |            |        |            |
| 16.50       | D           |                          |              |     |       |                                                                                                                                                                                                                            |            |        |            |
| 17.00-17.45 | U29         | 16.70 (11.90)            |              |     |       | Below 16.80m, occasional bands of black sandy subangular to subrounded fine to medium gravel.                                                                                                                              |            |        |            |
| 17.50       | D           |                          |              |     |       |                                                                                                                                                                                                                            |            |        |            |
| 18.00       | D           |                          |              |     |       | Medium dense black subangular to subrounded fine to coarse GRAVEL of coal grading to dark grey gravelly very silty fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of coal, mudstone and quartzite. | 17.80      |        | 83.03      |
| 18.50-18.95 | B           |                          |              |     |       |                                                                                                                                                                                                                            |            |        |            |
| 18.50-18.95 | D           | 18.00 (13.10)            |              |     | S16   |                                                                                                                                                                                                                            |            |        |            |
| 19.50       | D           |                          |              |     |       |                                                                                                                                                                                                                            |            |        |            |
| 20.00-20.45 | B           |                          |              |     |       | Very dense multicoloured very sandy slightly silty subangular to rounded fine to coarse GRAVEL of various lithologies. Low cobble content.                                                                                 | 19.50      |        | 81.33      |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks 

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **CJ**

Figure **2 of 3**  
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# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole **BH09**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328671.2 E 338374.9 N** Project No **PN173691**  
 Ground Level **100.83 m OD**

| Sampling    |             |                          | Properties   |     |         | Strata                                                                                                                                                                             | Scale 1:50 |                                                                                      |            |
|-------------|-------------|--------------------------|--------------|-----|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------------------------------------------------------------------|------------|
| Depth       | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N   | Description                                                                                                                                                                        | Depth      | Legend                                                                               | Level m OD |
| 20.00-20.40 |             | 19.80 (15.20)            |              |     | C50/252 |                                                                                                                                                                                    |            |   |            |
| 21.00       | D           |                          |              |     |         | Very stiff dark brown slightly gravelly sandy CLAY with bands of dark grey very clayey fine to coarse sand. Gravel is subangular to rounded fine to coarse of various lithologies. | 20.60      |                                                                                      | 80.23      |
| 21.30       | D           |                          |              |     |         |                                                                                                                                                                                    | 21.30      |   | 79.53      |
| 21.50-21.95 | UT100       | 21.00 (12.80)            |              | 20  |         | Very stiff thinly and thickly laminated brown CLAY with occasional laminae of light brown silt.                                                                                    |            |   |            |
| 22.00       | D           |                          |              |     |         | Below 22.00m, silty.                                                                                                                                                               |            |   |            |
| 22.50       | D           |                          |              |     |         |                                                                                                                                                                                    | 22.50      |   | 78.33      |
| 23.00-23.45 | B           |                          |              |     | S50/193 | Very stiff brown slightly sandy slightly gravelly CLAY with occasional laminae of light brown silt. Gravel is subangular to rounded fine to coarse of various lithologies.         |            |   |            |
| 23.00-23.34 | D           | 22.00 (DRY)              |              |     |         |                                                                                                                                                                                    |            |   |            |
| 24.00       | D           |                          |              |     |         |                                                                                                                                                                                    |            |   |            |
| 24.50-24.95 | UT100       | 22.00 (DRY)              |              |     |         |                                                                                                                                                                                    |            |   |            |
| 25.00       | D           |                          |              |     |         | End of Borehole                                                                                                                                                                    | 25.00      |  | 75.83      |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks 

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

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Figure **3 of 3**  
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| Sampling                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          | Properties   |               |             | Strata                                  |                    | Scale 1:50  |                                                      |             |             |                                                                                       |              |                        |        |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------|---------------|-------------|-----------------------------------------|--------------------|-------------|------------------------------------------------------|-------------|-------------|---------------------------------------------------------------------------------------|--------------|------------------------|--------|
| Depth                                                                  | Sample Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Depth Cased & (to Water) | Strength kPa | w %           | SPT N       | Description                             | Depth              | Legend      | Level m OD                                           |             |             |                                                                                       |              |                        |        |
| 0.20- 0.70<br>0.20- 0.70                                               | B<br>D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (DRY)                    |              |               | C30         | Grey CONCRETE with 10mm diameter rebar. | G.L.               |             | 101.12                                               |             |             |                                                                                       |              |                        |        |
|                                                                        | MADE GROUND: Orangish brown sandy slightly clayey angular to subangular fine to coarse gravel of various lithologies.                                                                                                                                                                                                                                                                                                                                                                                                                        |                          |              |               |             | 0.20                                    | 100.92             |             |                                                      |             |             |                                                                                       |              |                        |        |
| 0.70- 1.20<br>0.70- 1.20                                               | B<br>D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |              |               |             | 0.70                                    | 100.42             |             |                                                      |             |             |                                                                                       |              |                        |        |
| 1.20- 1.65<br>1.20- 1.65                                               | B<br>D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |              |               |             | C14                                     | Below 2.00m, firm. |             | 4.10                                                 | 97.02       |             |                                                                                       |              |                        |        |
| 2.00- 2.45<br>2.00- 2.45                                               | B<br>D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |              |               |             |                                         |                    |             |                                                      |             | 2.00 (DRY)  |                                                                                       |              |                        |        |
| 3.00- 3.45<br>3.00- 3.45                                               | B<br>D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |              |               |             |                                         |                    |             |                                                      |             | 3.00 (DRY)  | Between 3.00-3.45m, grading to slightly sandy gravelly silt.                          |              |                        |        |
| 4.00- 4.45<br>4.00- 4.45                                               | B<br>D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |              |               |             |                                         |                    |             |                                                      |             | 4.00 (2.50) | Loose slightly sandy angular to rounded fine to medium GRAVEL of various lithologies. |              |                        |        |
| 5.00- 5.45<br>5.00- 5.45                                               | B<br>D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |              |               |             | 5.00 (2.50)                             | C6                 |             | Soft dark grey silty CLAY with bands of clayey silt. | 5.20        | 95.92       |                                                                                       |              |                        |        |
| 6.50- 6.95<br>7.00                                                     | UT17<br>D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |              |               |             | 6.00 (3.50)                             |                    |             |                                                      | 146         | 19          |                                                                                       |              |                        |        |
| 7.50- 8.00<br>7.50- 8.00                                               | B<br>D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |              |               |             | S7                                      |                    |             |                                                      |             |             |                                                                                       |              |                        |        |
| 8.00- 8.45<br>8.00- 8.45                                               | B<br>D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 8.00 (1.90)              |              |               |             |                                         |                    |             |                                                      |             |             |                                                                                       |              |                        |        |
| 8.50- 9.00<br>8.50- 9.00                                               | B<br>D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |              |               |             |                                         |                    |             |                                                      |             |             |                                                                                       |              |                        |        |
| 9.50- 9.95<br>10.00-10.50                                              | UT23<br>B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 9.00 (2.10)              |              |               |             |                                         |                    |             |                                                      |             |             |                                                                                       |              |                        |        |
| Boring                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          | Progress     |               |             |                                         |                    | Groundwater |                                                      |             |             |                                                                                       |              |                        |        |
| Depth                                                                  | Hole Dia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Technique                | Crew         | Depth of Hole | Depth Cased | Depth to Water                          | Date               | Time        | Depth Struck                                         | Depth Cased | Rose to     | in Mins                                                                               | Depth Sealed | Remarks on Groundwater |        |
| 0.20                                                                   | 0.35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Concrete Core            | AJ           | G.L.          |             |                                         | 06/09/17           | 08:00       | 4.00                                                 | 4.00        | 2.50        | 20                                                                                    |              | Fast inflow            |        |
| 1.20                                                                   | 0.40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Inspection Pit           | DC           | 6.00          | 6.00        | 2.50                                    | 06/09/17           | 18:00       |                                                      |             |             |                                                                                       |              |                        |        |
| 9.00                                                                   | 0.20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Cable Percussion         | DC           | 6.00          | 6.00        | 3.60                                    | 07/09/17           | 08:00       |                                                      |             |             |                                                                                       |              |                        |        |
| 20.25                                                                  | 0.15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Cable Percussion         | DC           | 19.00         | 19.00       | 4.60                                    | 07/09/17           | 18:00       |                                                      |             |             |                                                                                       |              |                        |        |
|                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |              | 17.40         | 19.00       | 9.90                                    | 08/09/17           | 08:00       |                                                      |             |             |                                                                                       |              |                        |        |
|                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |              | 20.25         | 19.50       | 14.80                                   | 08/09/17           | 18:00       |                                                      |             |             |                                                                                       |              |                        |        |
| Remarks                                                                | Inspection pit hand excavated to 1.20m depth and no services were found. Overnight, gravel had "blown" inside casing from 19.00m up to 17.40m. Re-drilling from 17.40m to 19.00m took 30 minutes. The Borehole was terminated at a depth of 20.25m due to the presence of a cobble obstruction. Water was added to assist boring between 6.00m and 19.00m. A 50mm standpipe was installed to 6.00m with a geowrapped slotted section from 3.00m to 6.00m with flush lockable protective cover. Backfill details from base of hole: bentonite |                          |              |               |             |                                         |                    |             |                                                      |             |             |                                                                                       |              | Logged by              | AF     |
| Symbols and abbreviations are explained on the accompanying key sheet. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |              |               |             |                                         |                    |             |                                                      |             |             |                                                                                       |              | Figure                 | 1 of 3 |
| All dimensions are in metres.                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |              |               |             |                                         |                    |             |                                                      |             |             |                                                                                       |              | 06/10/2017             |        |
| Logged in accordance with BS5930:2015                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |              |               |             |                                         |                    |             |                                                      |             |             |                                                                                       |              | geotechnics            |        |

# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole **BH10**  
 Project No **PN173691**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328724.3 E**  
**338405.7 N** Ground Level **101.12 m OD**

| Sampling                            |             |                          | Properties   |     |             | Strata                                                                                                                     |       | Scale 1:50                                                                            |            |  |
|-------------------------------------|-------------|--------------------------|--------------|-----|-------------|----------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------|------------|--|
| Depth                               | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N       | Description                                                                                                                | Depth | Legend                                                                                | Level m OD |  |
| 10.00<br>10.00-10.50                | D<br>D      | 10.50<br>(3.60)          | 32           | 31  | S11         | Below 11.00m, firm.                                                                                                        | 15.90 |    | 85.22      |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |    |            |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |    |            |  |
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|                                     |             |                          |              |     |             |                                                                                                                            |       |    |            |  |
| 11.00-11.45<br>11.00-11.45          | B<br>D      |                          |              |     |             |                                                                                                                            |       |    |            |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |    |            |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |    |            |  |
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|                                     |             |                          |              |     |             |                                                                                                                            |       |    |            |  |
| 12.00-12.50<br>12.00-12.50          | B<br>D      |                          |              |     |             |                                                                                                                            |       |    |            |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |    |            |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |    |            |  |
| 12.50-12.95                         | UT20        | 12.50<br>(4.10)          |              |     |             |                                                                                                                            |       |    |            |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |    |            |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |    |            |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |   |            |  |
| 13.00-13.50<br>13.00<br>13.00-13.50 | B<br>D<br>D |                          |              |     |             |                                                                                                                            |       |  |            |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |  |            |  |
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| 14.00-14.45<br>14.00-14.45          | B<br>D      | 14.00                    |              |     | S11         |                                                                                                                            |       |  |            |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |  |            |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |  |            |  |
| 14.50-15.00<br>14.50-15.00          | B<br>D      |                          |              |     |             |                                                                                                                            |       |  |            |  |
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|                                     |             |                          |              |     |             |                                                                                                                            |       |  |            |  |
| 15.50-15.95                         | UT46        | 15.00<br>(3.50)          |              |     |             |                                                                                                                            |       |  |            |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |  |            |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |  |            |  |
| 16.00-16.50<br>16.00<br>16.00-16.50 | B<br>D<br>D |                          |              |     |             | Very dense grey sandy subangular to rounded fine to coarse GRAVEL of various lithologies including mudstone and siltstone. | 15.90 |  |            |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |  |            |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |  |            |  |
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| 17.00-17.45<br>17.00-17.33          | B<br>D      | 17.00<br>(4.80)          |              |     | C50/<br>180 | Between 17.00-17.45m, high cobble content.                                                                                 |       |  |            |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |  |            |  |
|                                     |             |                          |              |     |             |                                                                                                                            |       |  |            |  |
| 17.50-18.00<br>17.50-18.00          | B<br>D      |                          |              |     |             |                                                                                                                            |       |  |            |  |
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|                                     |             |                          |              |     |             |                                                                                                                            |       |                                                                                       |            |  |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks seal up to 6.00m, gravel filter up to 3.00m, bentonite seal up to 0.20m, concrete up to ground level.  
 Chiselling: 1.60-1.80m for 30 minutes and 16.20-16.30m for 30 minutes and 16.90-17.50m for 90 minutes and 19.30-19.50m for 30 minutes and 20.00m for 60 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.  
 All dimensions are in metres. Logged in accordance with BS5930:2015

Logged by **AF**  
 Figure **2 of 3**  
 06/10/2017

**geotechnics**

# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole Project No **BH10**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328724.3 E** **338405.7 N** Ground Level **101.12 m OD**

| Sampling |             |                          | Properties   |     |       | Strata          |       |                                                                                     | Scale 1:50 |  |  |
|----------|-------------|--------------------------|--------------|-----|-------|-----------------|-------|-------------------------------------------------------------------------------------|------------|--|--|
| Depth    | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N | Description     | Depth | Legend                                                                              | Level m OD |  |  |
|          |             |                          |              |     |       | End of Borehole | 20.25 |  | 80.87      |  |  |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks 

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres. Logged in accordance with BS5930:2015

Logged by **AF**

Figure **3 of 3**  
06/10/2017



# BOREHOLE RECORD - Cable Percussion

|         |                            |                           |                          |                     |                  |
|---------|----------------------------|---------------------------|--------------------------|---------------------|------------------|
| Project | KRONOSPAN STORAGE BUILDING | Engineer                  | RAMBOLL UK               | Borehole Project No | BH11<br>PN173691 |
| Client  | KRONOSPAN LTD              | National Grid Coordinates | 328778.5 E<br>338414.2 N | Ground Level        | 101.06 m OD      |

| Sampling    |             |                          | Properties   |     |       | Strata                                                                                                                                                                             | Scale 1:50 |        |            |
|-------------|-------------|--------------------------|--------------|-----|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------|------------|
| Depth       | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N | Description                                                                                                                                                                        | Depth      | Legend | Level m OD |
| 0.25- 0.60  | B           |                          |              |     |       | Grey reinforced CONCRETE with 10mm diameter rebar.                                                                                                                                 | G.L.       |        | 101.06     |
| 0.60- 1.20  | B           |                          |              |     |       | MADE GROUND: Dark orangish brown sandy slightly clayey angular to subrounded fine to coarse gravel including limestone and metaquartzite.                                          | 0.25       |        | 100.81     |
| 1.20- 1.65  | B           |                          |              |     |       | MADE GROUND: Dark greyish brown very sandy slightly clayey angular to subrounded fine to coarse gravel of various lithologies.                                                     | 0.60       |        | 100.46     |
| 1.20- 1.65  | D           | (DRY)                    |              |     | S28   |                                                                                                                                                                                    | 1.30       |        | 99.76      |
| 1.80- 2.45  | B           |                          |              |     |       | PROBABLE MADE GROUND: Very stiff friable grey mottled orangish brown slightly sandy slightly gravelly clay. Gravel is subangular to rounded fine to coarse of various lithologies. | 2.40       |        | 98.66      |
| 2.00- 2.45  | D           | 1.70 (DRY)               |              |     | S39   | Below 2.00m, grey.                                                                                                                                                                 | 3.00       |        | 98.06      |
| 2.80- 3.45  | B           |                          |              |     |       | Grey sandy very clayey subrounded to rounded fine to coarse GRAVEL of various lithologies.                                                                                         | 5.30       |        | 95.76      |
| 3.00- 3.45  | D           | 3.00 (DRY)               |              |     | C11   | Medium dense dark grey and black very gravelly slightly clayey fine to coarse SAND. Gravel is subangular to rounded fine to coarse of various lithologies.                         | 8.50       |        | 92.56      |
| 3.80- 4.45  | B           |                          |              |     |       |                                                                                                                                                                                    |            |        |            |
| 4.00- 4.45  | D           | 4.00 (2.30)              |              |     | C23   |                                                                                                                                                                                    |            |        |            |
| 4.80- 5.45  | B           |                          |              |     |       |                                                                                                                                                                                    |            |        |            |
| 5.00- 5.45  | D           | 4.80 (2.40)              |              |     | S10   |                                                                                                                                                                                    |            |        |            |
| 6.00- 6.95  | B           |                          |              |     |       | Soft to firm grey clayey SILT with occasional laminae of silty clay.                                                                                                               |            |        |            |
| 6.50- 6.95  | UTF         | 6.00 (4.90)              |              |     |       |                                                                                                                                                                                    |            |        |            |
| 7.00- 7.45  | B           |                          |              |     |       |                                                                                                                                                                                    |            |        |            |
| 7.00- 7.45  | UTF         | 7.00 (6.10)              |              |     |       |                                                                                                                                                                                    |            |        |            |
| 7.50- 7.95  | B           |                          |              |     |       |                                                                                                                                                                                    |            |        |            |
| 7.50- 7.95  | D           | 7.50 (6.60)              |              |     | S9    |                                                                                                                                                                                    |            |        |            |
| 8.50- 9.45  | UT33        | 9.00 (6.90)              | 29           | 28  |       | Soft becoming firm thinly and thickly laminated grey silty CLAY with occasional bands (up to 50mm thick) of clayey silt and frequent laminae of silt.                              |            |        |            |
| 9.50- 10.00 | D           |                          |              |     |       |                                                                                                                                                                                    |            |        |            |

| Boring |          |                  |      | Progress      |             |                |          |       | Groundwater  |             |         |         |              |                        |
|--------|----------|------------------|------|---------------|-------------|----------------|----------|-------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique        | Crew | Depth of Hole | Depth Cased | Depth to Water | Date     | Time  | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
| 0.25   | 0.35     | Concrete Core    | AJ   | G.L.          |             |                | 06/09/17 | 08:00 | 3.30         | 3.00        | 2.30    | 20      |              | Fast inflow.           |
| 1.20   | 0.40     | Inspection Pit   | SL   | 9.50          | 9.00        | 7.20           | 06/09/17 | 18:00 |              |             |         |         |              |                        |
| 9.00   | 0.20     | Cable Percussion | SL   | 9.50          | 9.00        | 4.70           | 07/09/17 | 08:00 |              |             |         |         |              |                        |
| 25.00  | 0.15     | Cable Percussion | SL   | 25.00         | 21.00       | 14.20          | 07/09/17 | 18:00 |              |             |         |         |              |                        |

Remarks Inspection pit hand excavated to 1.20m depth and no services were found.

ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jar.  
The Borehole was terminated at a depth of 25.00m on the instruction of the Engineer.

Water was added to assist boring between 2.40m and 20.00m.  
A 50mm standpipe was installed to 5.50m with a geowrapped slotted section from 2.50m to 5.50m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 5.50m, gravel filter up to 2.50m, bentonite seal up to 0.30m, concrete up to ground level.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by CJ

Figure 1 of 3  
06/10/2017

geotechnics

# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole Project No **BH11**  
**PN173691**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328778.5 E**  
**338414.2 N** Ground Level **101.06 m OD**

| Sampling                   |             |                          | Properties   |     |                                                                                                                                                       | Strata      |       | Scale 1:50 |            |  |
|----------------------------|-------------|--------------------------|--------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------|------------|------------|--|
| Depth                      | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N                                                                                                                                                 | Description | Depth | Legend     | Level m OD |  |
| 10.50-10.95<br>10.50-10.95 | B<br>D      | 10.50<br>(3.20)          | 51           | 31  | S8                                                                                                                                                    |             |       |            |            |  |
| 11.50                      | D           |                          |              |     |                                                                                                                                                       |             |       |            |            |  |
| 12.00-12.45                | UT22        | 12.00<br>(4.90)          |              |     |                                                                                                                                                       |             |       |            |            |  |
| 12.50                      | D           |                          |              |     |                                                                                                                                                       |             |       |            |            |  |
| 13.00                      | D           |                          |              |     |                                                                                                                                                       |             |       |            |            |  |
| 13.50-13.95<br>13.50-13.95 | B<br>D      | 13.50<br>(3.50)          |              |     |                                                                                                                                                       |             |       |            |            |  |
| 14.50                      | D           |                          |              |     |                                                                                                                                                       |             |       |            |            |  |
| 15.00-15.45                | UT24        | 15.00<br>(3.00)          |              |     |                                                                                                                                                       |             |       |            |            |  |
| 15.50                      | D           |                          |              |     |                                                                                                                                                       |             |       |            |            |  |
| 16.00                      | D           |                          |              |     |                                                                                                                                                       |             |       |            |            |  |
| 16.50-16.95<br>16.50-16.90 | B           | 16.50<br>(4.60)          | C50/<br>247  |     | Very dense multicoloured very sandy slightly clayey subangular to rounded fine to coarse GRAVEL of various lithologies. Low to medium cobble content. |             |       | 85.06      |            |  |
| 17.50                      | D           |                          |              |     |                                                                                                                                                       |             |       |            |            |  |
| 18.00-18.45<br>18.00-18.45 | B<br>D      | 18.00<br>(9.80)          |              |     |                                                                                                                                                       |             |       |            |            |  |
| 18.00-18.45<br>18.00-18.45 | B<br>D      | 18.00<br>(9.80)          | S34          |     | Dense brown gravelly slightly silty fine to coarse SAND. Gravel is subrounded to rounded fine to medium of various lithologies.                       | 17.80       |       | 83.26      |            |  |
| 18.00-18.45<br>18.00-18.45 | B<br>D      | 18.00<br>(9.80)          |              |     | Medium dense brown very silty fine to medium SAND.                                                                                                    | 18.40       |       | 82.66      |            |  |
| 19.00                      | D           |                          | S19          |     |                                                                                                                                                       |             |       |            |            |  |
| 19.50-19.95<br>19.50-19.95 | B           | 19.50<br>(10.50)         |              |     |                                                                                                                                                       |             |       |            |            |  |
| 20.00                      |             |                          |              |     |                                                                                                                                                       |             |       |            |            |  |
| 20.00                      |             |                          |              |     |                                                                                                                                                       |             |       | 81.06      |            |  |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks 

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **CJ**

Figure **2 of 3**  
06/10/2017



# BOREHOLE RECORD - Cable Percussion

Project **KRONOSPAN STORAGE BUILDING** Engineer **RAMBOLL UK** Borehole **BH11**  
 Project No **PN173691**  
 Client **KRONOSPAN LTD** National Grid Coordinates **328778.5 E**  
**338414.2 N** Ground Level **101.06 m OD**

| Sampling    |             |                          | Properties   |     |         | Strata                                                                                                                                 |       | Scale 1:50 |            |  |
|-------------|-------------|--------------------------|--------------|-----|---------|----------------------------------------------------------------------------------------------------------------------------------------|-------|------------|------------|--|
| Depth       | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N   | Description                                                                                                                            | Depth | Legend     | Level m OD |  |
| 20.50       | D           |                          |              |     |         | Stiff brown clayey SILT with frequent bands of thinly laminated silty clay.                                                            | 20.00 | x          | 81.06      |  |
| 21.00-21.45 | UT100       | 21.00 (11.10)            |              |     |         |                                                                                                                                        |       | x          |            |  |
| 21.50       | D           |                          |              |     |         | Very stiff to hard brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of various lithologies. | 21.50 | x          | 79.56      |  |
| 22.00       | D           |                          |              |     |         |                                                                                                                                        |       | x          |            |  |
| 22.50-22.95 | B           |                          |              |     |         |                                                                                                                                        |       | x          |            |  |
| 22.50-22.87 | D           | 21.00 (11.70)            |              |     | S50/217 |                                                                                                                                        |       | x          |            |  |
| 23.50       | D           |                          |              |     |         |                                                                                                                                        |       | x          |            |  |
| 24.00-24.45 | UT100       | 21.00 (13.90)            |              |     |         |                                                                                                                                        |       | x          |            |  |
| 24.50       | D           |                          |              |     |         |                                                                                                                                        |       | x          |            |  |
| 25.00       | D           |                          |              |     |         |                                                                                                                                        |       | x          |            |  |
|             |             |                          |              |     |         | End of Borehole                                                                                                                        | 25.00 |            | 76.06      |  |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

Remarks 

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **CJ**

Figure **3 of 3**

06/10/2017



# Fieldwork Results - SPT Results Summary

**Project** KRONOSPAN STORAGE BUILDING

**Project No** PN173691

**Client** KRONOSPAN LTD

| Hole                 | Depth<br>m bgl | Level<br>m OD | Type            | SWP<br>(mm) | Seating Drive |                | Test Drive                                                                                          |                |                 |                 | SPT 'N'<br>Value | Uncorrected SPT<br>'N' |    |    |    |    |   |
|----------------------|----------------|---------------|-----------------|-------------|---------------|----------------|-----------------------------------------------------------------------------------------------------|----------------|-----------------|-----------------|------------------|------------------------|----|----|----|----|---|
|                      |                |               |                 |             | 0-75<br>(mm)  | 75-150<br>(mm) | 0-75<br>(mm)                                                                                        | 75-150<br>(mm) | 150-225<br>(mm) | 225-300<br>(mm) |                  | 10                     | 20 | 30 | 40 | 50 |   |
| BH01                 | 1.20           | 97.89         | S               | -           | 4             | 10             | 10                                                                                                  | 10             | 12              | 12              | 44               |                        |    |    |    | *  |   |
| BH01                 | 2.90           | 96.19         | S               | -           | 1             | 1              | 1                                                                                                   | 2              | 2               | 2               | 7                | *                      |    |    |    |    |   |
| BH01                 | 5.05           | 94.04         | S               | -           | 1             | 1              | 2                                                                                                   | 1              | 1               | 2               | 6                | *                      |    |    |    |    |   |
| BH01                 | 8.65           | 90.44         | S               | -           | 1             |                | 1                                                                                                   | 1              | 1               | 2               | 5                | *                      |    |    |    |    |   |
| BH01                 | 11.60          | 87.49         | S               | -           | 1             | 1              | 1                                                                                                   | 1              | 2               | 3               | 7                | *                      |    |    |    |    |   |
| BH01                 | 14.05          | 85.04         | C               | -           | 2             | 8              | 10                                                                                                  | 12             | 16              | 12/38           | 50/263           |                        |    |    |    |    | > |
| BH01                 | 15.55          | 83.54         | C               | -           | 4             | 8              | 11                                                                                                  | 13             | 15              | 11/52           | 50/277           |                        |    |    |    |    | > |
| BH01                 | 17.60          | 81.49         | C               | -           | 7             | 11             | 16                                                                                                  | 20             | 14/38           |                 | 50/188           |                        |    |    |    |    | > |
| BH01                 | 20.55          | 78.54         | C               | -           | 2             | 9              | 11                                                                                                  | 15             | 24              |                 | 50/225           |                        |    |    |    |    | > |
| BH01                 | 22.20          | 76.89         | C               | -           | 2             | 6              | 13                                                                                                  | 19             | 18/71           |                 | 50/221           |                        |    |    |    |    | > |
| BH01                 | 24.35          | 74.74         | S               | -           | 2             | 7              | 10                                                                                                  | 12             | 19              | 9/16            | 50/241           |                        |    |    |    |    | > |
|                      |                |               |                 |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Driller              |                |               | Keith Pemberton |             |               |                | Remarks<br>Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005 |                |                 |                 |                  |                        |    |    |    |    |   |
| Hammer No.           |                |               | NWY MALE        |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Energy Ratio, Er (%) |                |               | 63.00           |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Calibration Date     |                |               | 08/11/2016      |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
|                      |                |               |                 |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |

-/- Blows/penetration (mm) after seating

-\*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

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# Fieldwork Results - SPT Results Summary

**Project** KRONOSPAN STORAGE BUILDING

**Project No** PN173691

**Client** KRONOSPAN LTD

| Hole                 | Depth<br>m bgl | Level<br>m OD | Type          | SWP<br>(mm) | Seating Drive |                | Test Drive                                                                                          |                |                 |                 | SPT 'N'<br>Value | Uncorrected SPT<br>'N' |    |    |    |    |
|----------------------|----------------|---------------|---------------|-------------|---------------|----------------|-----------------------------------------------------------------------------------------------------|----------------|-----------------|-----------------|------------------|------------------------|----|----|----|----|
|                      |                |               |               |             | 0-75<br>(mm)  | 75-150<br>(mm) | 0-75<br>(mm)                                                                                        | 75-150<br>(mm) | 150-225<br>(mm) | 225-300<br>(mm) |                  | 10                     | 20 | 30 | 40 | 50 |
| BH02                 | 1.20           | 100.08        | S             | -           | 1             | 2              | 2                                                                                                   | 2              | 2               | 2               | 8                | *                      |    |    |    |    |
| BH02                 | 3.00           | 98.28         | S             | -           | 1             | 1              | 2                                                                                                   | 1              | 2               | 2               | 7                | *                      |    |    |    |    |
| BH02                 | 4.00           | 97.28         | S             | -           | 1             | -              | -                                                                                                   | 1              | 1               | -               | 2                | *                      |    |    |    |    |
| BH02                 | 6.50           | 94.78         | S             | -           | -             | 1              | 1                                                                                                   | -              | -               | 1               | 2                | *                      |    |    |    |    |
| BH02                 | 8.00           | 93.28         | C             | -           | 5             | 9              | 26                                                                                                  | 24             |                 |                 | 50/150           |                        |    |    |    | >  |
| BH02                 | 9.00           | 92.28         | C             | -           | 17            | 8              | 22                                                                                                  | 28/50          |                 |                 | 50/125           |                        |    |    |    | >  |
| BH02                 | 11.00          | 90.28         | C             | -           | 19            | 6              | 24                                                                                                  | 26/50          |                 |                 | 50/125           |                        |    |    |    | >  |
| BH02                 | 12.50          | 88.78         | S             | -           | 7             | 10             | 20                                                                                                  | 28             | 2/1             |                 | 50/151           |                        |    |    |    | >  |
| BH02                 | 15.50          | 85.78         | S             | -           | 8             | 11             | 24                                                                                                  | 26/40          |                 |                 | 50/115           |                        |    |    |    | >  |
| BH02                 | 17.00          | 84.28         | S             | 0           | 6             | 9              | 10                                                                                                  | 15             | 18              | 7               | 50               |                        |    |    |    | *  |
| BH02                 | 18.50          | 82.78         | S             | -           | 7             | 12             | 12                                                                                                  | 12             | 15              | 11/20           | 50/245           |                        |    |    |    | >  |
| BH02                 | 20.00          | 81.28         | S             | -           | 6             | 10             | 13                                                                                                  | 14             | 17              | 6/20            | 50/245           |                        |    |    |    | >  |
|                      |                |               |               |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |
| Driller              |                |               | Chris Cameron |             |               |                | Remarks<br>Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005 |                |                 |                 |                  |                        |    |    |    |    |
| Hammer No.           |                |               | VC01          |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |
| Energy Ratio, Er (%) |                |               | 60.00         |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |
| Calibration Date     |                |               | 17/03/2017    |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |
|                      |                |               |               |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |

-/- Blows/penetration (mm) after seating

-\*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

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# Fieldwork Results - SPT Results Summary

**Project** KRONOSPAN STORAGE BUILDING

**Project No** PN173691

**Client** KRONOSPAN LTD

| Hole                 | Depth<br>m bgl | Level<br>m OD | Type            | SWP<br>(mm) | Seating Drive |                | Test Drive                                                                                          |                |                 |                 | SPT 'N'<br>Value | Uncorrected SPT<br>'N' |    |    |    |    |   |
|----------------------|----------------|---------------|-----------------|-------------|---------------|----------------|-----------------------------------------------------------------------------------------------------|----------------|-----------------|-----------------|------------------|------------------------|----|----|----|----|---|
|                      |                |               |                 |             | 0-75<br>(mm)  | 75-150<br>(mm) | 0-75<br>(mm)                                                                                        | 75-150<br>(mm) | 150-225<br>(mm) | 225-300<br>(mm) |                  | 10                     | 20 | 30 | 40 | 50 |   |
| BH03                 | 1.20           | 100.15        | S               | -           | 2             | 5              | 5                                                                                                   | 4              | 3               | 3               | 15               |                        | *  |    |    |    |   |
| BH03                 | 2.95           | 98.40         | S               | -           | 1             | -              | -                                                                                                   | 1              | 1               | 4               | 6                | *                      |    |    |    |    |   |
| BH03                 | 5.15           | 96.20         | S               | -           | 1             | -              | 1                                                                                                   | 1              | 2               | 2               | 6                | *                      |    |    |    |    |   |
| BH03                 | 6.65           | 94.70         | C               | -           | 8             | 17/53          | 50/70                                                                                               |                |                 |                 | 50/70            |                        |    |    |    |    | > |
| BH03                 | 8.00           | 93.35         | C               | -           | 6             | 16             | 22                                                                                                  | 28             |                 |                 | 50/150           |                        |    |    |    |    | > |
| BH03                 | 9.45           | 91.90         | C               | -           | 14            | 11/32          | 40                                                                                                  | 10/12          |                 |                 | 50/87            |                        |    |    |    |    | > |
| BH03                 | 10.45          | 90.90         | S               | -           | 3             | 10             | 15                                                                                                  | 21             | 14/29           |                 | 50/179           |                        |    |    |    |    | > |
| BH03                 | 12.20          | 89.15         | C               | -           | 4             | 11             | 16                                                                                                  | 22             | 12/20           |                 | 50/170           |                        |    |    |    |    | > |
| BH03                 | 13.65          | 87.70         | C               | -           | 5             | 11             | 16                                                                                                  | 24             | 10/24           |                 | 50/174           |                        |    |    |    |    | > |
| BH03                 | 15.05          | 86.30         | C               | -           | 7             | 14             | 22                                                                                                  | 24             | 4/8             |                 | 50/158           |                        |    |    |    |    | > |
| BH03                 | 16.55          | 84.80         | C               | -           | 3             | 10             | 19                                                                                                  | 19             | 14/52           |                 | 52/202           |                        |    |    |    |    | > |
| BH03                 | 19.55          | 81.80         | C               | -           | 2             | 11             | 19                                                                                                  | 19             | 12/31           |                 | 50/181           |                        |    |    |    |    | > |
| BH03                 | 22.70          | 78.65         | S               | -           | 2             | 9              | 11                                                                                                  | 16             | 23/74           |                 | 50/224           |                        |    |    |    |    | > |
|                      |                |               |                 |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Driller              |                |               | Keith Pemberton |             |               |                | Remarks<br>Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005 |                |                 |                 |                  |                        |    |    |    |    |   |
| Hammer No.           |                |               | NWY MALE        |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Energy Ratio, Er (%) |                |               | 63.00           |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Calibration Date     |                |               | 08/11/2016      |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
|                      |                |               |                 |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |

-/- Blows/penetration (mm) after seating

-\*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

**GEOTECHNICS**  
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# Fieldwork Results - SPT Results Summary

**Project** KRONOSPAN STORAGE BUILDING

**Project No** PN173691

**Client** KRONOSPAN LTD

| Hole                 | Depth<br>m bgl | Level<br>m OD | Type         | SWP<br>(mm) | Seating Drive |                | Test Drive                                                                                          |                |                 |                 | SPT 'N'<br>Value | Uncorrected SPT<br>'N' |    |    |    |    |   |
|----------------------|----------------|---------------|--------------|-------------|---------------|----------------|-----------------------------------------------------------------------------------------------------|----------------|-----------------|-----------------|------------------|------------------------|----|----|----|----|---|
|                      |                |               |              |             | 0-75<br>(mm)  | 75-150<br>(mm) | 0-75<br>(mm)                                                                                        | 75-150<br>(mm) | 150-225<br>(mm) | 225-300<br>(mm) |                  | 10                     | 20 | 30 | 40 | 50 |   |
| BH04                 | 1.20           | 100.17        | S            | -           | 3             | 5              | 7                                                                                                   | 7              | 9               | 11              | 34               |                        |    |    | *  |    |   |
| BH04                 | 2.00           | 99.37         | S            | -           | 1             | 1              | 1                                                                                                   | 1              | 1               | 1               | 4                | *                      |    |    |    |    |   |
| BH04                 | 4.00           | 97.37         | S            | -           | 1             | 1              | 1                                                                                                   | 1              | 1               | 1               | 4                | *                      |    |    |    |    |   |
| BH04                 | 6.00           | 95.37         | S            | -           | 0             | 0              | 1                                                                                                   | 1              | 1               | 2               | 5                | *                      |    |    |    |    |   |
| BH04                 | 8.00           | 93.37         | S            | -           | 5             | 9              | 19                                                                                                  | 23             | 8/7             |                 | 50/157           |                        |    |    |    |    | ✓ |
| BH04                 | 9.00           | 92.37         | S            | -           | 11            | 14/43          | 32                                                                                                  | 18/33          |                 |                 | 50/108           |                        |    |    |    |    | ✓ |
| BH04                 | 10.50          | 90.87         | S            | -           | 6             | 9              | 14                                                                                                  | 18             | 18/63           |                 | 50/213           |                        |    |    |    |    | ✓ |
| BH04                 | 12.00          | 89.37         | S            | -           | 6             | 9              | 16                                                                                                  | 34/8           |                 |                 | 50/83            |                        |    |    |    |    | ✓ |
| BH04                 | 13.50          | 87.87         | S            | -           | 4             | 6              | 9                                                                                                   | 12             | 12              | 16              | 49               |                        |    |    |    | *  |   |
| BH04                 | 15.00          | 86.37         | S            | -           | 6             | 9              | 11                                                                                                  | 14             | 25              |                 | 50/225           |                        |    |    |    |    | ✓ |
| BH04                 | 16.50          | 84.87         | S            | -           | 11            | 14             | 17                                                                                                  | 22             | 11/27           |                 | 50/177           |                        |    |    |    |    | ✓ |
| BH04                 | 18.00          | 83.37         | S            | -           | 9             | 11             | 13                                                                                                  | 16             | 21              |                 | 50/225           |                        |    |    |    |    | ✓ |
| BH04                 | 19.50          | 81.87         | S            | -           | 7             | 10             | 11                                                                                                  | 15             | 17              | 7/18            | 50/243           |                        |    |    |    |    | ✓ |
| BH04                 | 22.50          | 78.87         | S            | -           | 3             | 5              | 6                                                                                                   | 9              | 14              | 16              | 45               |                        |    |    |    | *  |   |
|                      |                |               |              |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Driller              |                |               | Steve Lowery |             |               |                | Remarks<br>Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005 |                |                 |                 |                  |                        |    |    |    |    |   |
| Hammer No.           |                |               | SL01         |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Energy Ratio, Er (%) |                |               | 77.00        |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Calibration Date     |                |               | 17/03/2017   |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
|                      |                |               |              |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |

-/- Blows/penetration (mm) after seating

-\*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

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# Fieldwork Results - SPT Results Summary

**Project** KRONOSPAN STORAGE BUILDING

**Project No** PN173691

**Client** KRONOSPAN LTD

| Hole                 | Depth<br>m bgl | Level<br>m OD | Type         | SWP<br>(mm) | Seating Drive |                | Test Drive                                                                                          |                |                 |                 | SPT 'N'<br>Value | Uncorrected SPT<br>'N' |    |    |    |    |   |
|----------------------|----------------|---------------|--------------|-------------|---------------|----------------|-----------------------------------------------------------------------------------------------------|----------------|-----------------|-----------------|------------------|------------------------|----|----|----|----|---|
|                      |                |               |              |             | 0-75<br>(mm)  | 75-150<br>(mm) | 0-75<br>(mm)                                                                                        | 75-150<br>(mm) | 150-225<br>(mm) | 225-300<br>(mm) |                  | 10                     | 20 | 30 | 40 | 50 |   |
| BH05                 | 1.20           | 100.09        | S            | -           | 1             | 1              | 1                                                                                                   | 1              | 2               | 2               | 6                | *                      |    |    |    |    |   |
| BH05                 | 3.00           | 98.29         | S            | -           | 1             | 1              | 1                                                                                                   | 1              | 1               | 1               | 4                | *                      |    |    |    |    |   |
| BH05                 | 5.00           | 96.29         | S            | -           | 1             |                | 1                                                                                                   | 1              | 2               | 2               | 6                | *                      |    |    |    |    |   |
| BH05                 | 6.50           | 94.79         | S            | -           | 1             | 1              | 2                                                                                                   | 2              | 3               | 3               | 10               | *                      |    |    |    |    |   |
| BH05                 | 8.00           | 93.29         | C            | -           | 9             | 16/31          | 50/18                                                                                               |                |                 |                 | 50/18            |                        |    |    |    |    | > |
| BH05                 | 9.50           | 91.79         | C            | -           | 7             | 9              | 16                                                                                                  | 18             | 16/39           |                 | 50/189           |                        |    |    |    |    | > |
| BH05                 | 11.00          | 90.29         | C            | -           | 6             | 8              | 11                                                                                                  | 15             | 17              | 7/21            | 50/246           |                        |    |    |    |    | > |
| BH05                 | 12.50          | 88.79         | C            | -           | 9             | 15             | 50/32                                                                                               |                |                 |                 | 50/32            |                        |    |    |    |    | > |
| BH05                 | 14.00          | 87.29         | C            | -           | 25            |                | 50/21                                                                                               |                |                 |                 | 50/21            |                        |    |    |    |    | > |
|                      |                |               |              |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Driller              |                |               | Steve Lowery |             |               |                | Remarks<br>Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005 |                |                 |                 |                  |                        |    |    |    |    |   |
| Hammer No.           |                |               | SL01         |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Energy Ratio, Er (%) |                |               | 77.00        |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Calibration Date     |                |               | 17/03/2017   |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
|                      |                |               |              |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |

-/- Blows/penetration (mm) after seating

-\*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

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# Fieldwork Results - SPT Results Summary

**Project** KRONOSPAN STORAGE BUILDING

**Project No** PN173691

**Client** KRONOSPAN LTD

| Hole                 | Depth<br>m bgl | Level<br>m OD | Type            | SWP<br>(mm) | Seating Drive |                | Test Drive                                                                                          |                |                 |                 | SPT 'N'<br>Value | Uncorrected SPT<br>'N' |    |    |    |    |   |
|----------------------|----------------|---------------|-----------------|-------------|---------------|----------------|-----------------------------------------------------------------------------------------------------|----------------|-----------------|-----------------|------------------|------------------------|----|----|----|----|---|
|                      |                |               |                 |             | 0-75<br>(mm)  | 75-150<br>(mm) | 0-75<br>(mm)                                                                                        | 75-150<br>(mm) | 150-225<br>(mm) | 225-300<br>(mm) |                  | 10                     | 20 | 30 | 40 | 50 |   |
| BH06                 | 1.20           | 100.20        | C               | -           | 2             | 4              | 5                                                                                                   | 3              | 3               | 3               | 14               |                        | *  |    |    |    |   |
| BH06                 | 3.45           | 97.95         | S               | -           | 1             | 1              | 1                                                                                                   | 1              | 2               | 2               | 6                | *                      |    |    |    |    |   |
| BH06                 | 5.60           | 95.80         | S               | -           | 1             | -              | 1                                                                                                   | 1              | 1               | 1               | 4                | *                      |    |    |    |    |   |
| BH06                 | 7.50           | 93.90         | C               | -           | 4             | 9              | 16                                                                                                  | 16             | 18/29           |                 | 50/179           |                        |    |    |    |    | > |
| BH06                 | 8.95           | 92.45         | C               | -           | 6             | 19/56          | 34                                                                                                  | 16/15          |                 |                 | 50/90            |                        |    |    |    |    | > |
| BH06                 | 10.55          | 90.85         | C               | -           | 14            | 11/31          | 22                                                                                                  | 28             |                 |                 | 50/150           |                        |    |    |    |    | > |
| BH06                 | 12.00          | 89.40         | C               | -           | 6             | 12             | 18                                                                                                  | 20             | 12/23           |                 | 50/173           |                        |    |    |    |    | > |
| BH06                 | 13.45          | 87.95         | C               | -           | 5             | 13             | 19                                                                                                  | 21             | 10/19           |                 | 50/169           |                        |    |    |    |    | > |
| BH06                 | 15.00          | 86.40         | C               | -           | 5             | 15             | 20                                                                                                  | 25             | 5/10            |                 | 50/160           |                        |    |    |    |    | > |
| BH06                 | 16.50          | 84.90         | C               | -           | 4             | 8              | 14                                                                                                  | 16             | 20              |                 | 50/225           |                        |    |    |    |    | > |
| BH06                 | 18.05          | 83.35         | C               | -           | 5             | 11             | 17                                                                                                  | 17             | 16/52           |                 | 50/202           |                        |    |    |    |    | > |
| BH06                 | 19.55          | 81.85         | C               | -           | 6             | 11             | 18                                                                                                  | 19             | 13/30           |                 | 50/180           |                        |    |    |    |    | > |
| BH06                 | 21.10          | 80.30         | C               | -           | 5             | 11             | 19                                                                                                  | 23             | 8/12            |                 | 50/162           |                        |    |    |    |    | > |
| BH06                 | 22.70          | 78.70         | C               | -           | 6             | 13             | 20                                                                                                  | 21             | 9/19            |                 | 50/169           |                        |    |    |    |    | > |
|                      |                |               |                 |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Driller              |                |               | Keith Pemberton |             |               |                | Remarks<br>Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005 |                |                 |                 |                  |                        |    |    |    |    |   |
| Hammer No.           |                |               | NWY MALE        |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Energy Ratio, Er (%) |                |               | 63.00           |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Calibration Date     |                |               | 08/11/2016      |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
|                      |                |               |                 |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |

-/- Blows/penetration (mm) after seating

-\*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

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# Fieldwork Results - SPT Results Summary

**Project** KRONOSPAN STORAGE BUILDING

**Project No** PN173691

**Client** KRONOSPAN LTD

| Hole                 | Depth<br>m bgl | Level<br>m OD | Type          | SWP<br>(mm) | Seating Drive |                | Test Drive                                                                                          |                |                 |                 | SPT 'N'<br>Value | Uncorrected SPT<br>'N' |    |    |    |    |   |
|----------------------|----------------|---------------|---------------|-------------|---------------|----------------|-----------------------------------------------------------------------------------------------------|----------------|-----------------|-----------------|------------------|------------------------|----|----|----|----|---|
|                      |                |               |               |             | 0-75<br>(mm)  | 75-150<br>(mm) | 0-75<br>(mm)                                                                                        | 75-150<br>(mm) | 150-225<br>(mm) | 225-300<br>(mm) |                  | 10                     | 20 | 30 | 40 | 50 |   |
| BH07                 | 1.20           | 100.22        | C             | -           | 3             | 3              | 4                                                                                                   | 3              | 4               | 3               | 14               |                        | *  |    |    |    |   |
| BH07                 | 2.00           | 99.42         | S             | -           | 1             | -              | 1                                                                                                   | -              | 1               | -               | 2                | *                      |    |    |    |    |   |
| BH07                 | 4.00           | 97.42         | S             | -           | 1             | -              | -                                                                                                   | 1              | -               | -               | 1                | *                      |    |    |    |    |   |
| BH07                 | 6.00           | 95.42         | S             | -           | 1             | 1              | 1                                                                                                   | 1              | 1               | 1               | 4                | *                      |    |    |    |    |   |
| BH07                 | 9.00           | 92.42         | C             | -           | 8             | 10             | 13                                                                                                  | 13             | 14              | 10/7            | 50/232           |                        |    |    |    |    | > |
| BH07                 | 10.50          | 90.92         | S             | -           | 7             | 9              | 10                                                                                                  | 10             | 12              | 14              | 46               |                        |    |    |    | *  |   |
| BH07                 | 12.00          | 89.42         | S             | -           | 8             | 10             | 12                                                                                                  | 15             | 15              | 8/4             | 50/229           |                        |    |    |    |    | > |
| BH07                 | 13.50          | 87.92         | S             | -           | 8             | 9              | 12                                                                                                  | 14             | 14              | 10/7            | 50/232           |                        |    |    |    |    | > |
| BH07                 | 15.00          | 86.42         | S             | -           | 8             | 10             | 14                                                                                                  | 16             | 16              | 4/3             | 50/228           |                        |    |    |    |    | > |
| BH07                 | 16.50          | 84.92         | S             | -           | 10            | 14             | 15                                                                                                  | 17             | 18/10           |                 | 50/160           |                        |    |    |    |    | > |
| BH07                 | 18.00          | 83.42         | S             | -           | 15            | 10             | 20                                                                                                  | 21             | 9/4             |                 | 50/154           |                        |    |    |    |    | > |
| BH07                 | 19.50          | 81.92         | S             | -           | 13            | 12/6           | 18                                                                                                  | 23             | 9/6             |                 | 50/156           |                        |    |    |    |    | > |
| BH07                 | 21.00          | 80.42         | S             | -           | 15            | 10/8           | 17                                                                                                  | 23             | 10/7            |                 | 50/157           |                        |    |    |    |    | > |
| BH07                 | 22.50          | 78.92         | S             | -           | 16            | 9/13           | 20                                                                                                  | 20             | 10/14           |                 | 50/164           |                        |    |    |    |    | > |
| BH07                 | 24.50          | 76.92         | S             | -           | 14            | 11/20          | 14                                                                                                  | 16             | 17              | 3/1             | 50/226           |                        |    |    |    |    | > |
|                      |                |               |               |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Driller              |                |               | Chris Cameron |             |               |                | Remarks<br>Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005 |                |                 |                 |                  |                        |    |    |    |    |   |
| Hammer No.           |                |               | VC01          |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Energy Ratio, Er (%) |                |               | 60.00         |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Calibration Date     |                |               | 17/03/2017    |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
|                      |                |               |               |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |

-/- Blows/penetration (mm) after seating

-\*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

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# Fieldwork Results - SPT Results Summary

**Project** KRONOSPAN STORAGE BUILDING

**Project No** PN173691

**Client** KRONOSPAN LTD

| Hole                 | Depth<br>m bgl | Level<br>m OD | Type        | SWP<br>(mm) | Seating Drive |                | Test Drive                                                                                          |                |                 |                 | SPT 'N'<br>Value | Uncorrected SPT<br>'N' |    |    |    |    |   |
|----------------------|----------------|---------------|-------------|-------------|---------------|----------------|-----------------------------------------------------------------------------------------------------|----------------|-----------------|-----------------|------------------|------------------------|----|----|----|----|---|
|                      |                |               |             |             | 0-75<br>(mm)  | 75-150<br>(mm) | 0-75<br>(mm)                                                                                        | 75-150<br>(mm) | 150-225<br>(mm) | 225-300<br>(mm) |                  | 10                     | 20 | 30 | 40 | 50 |   |
| BH08                 | 1.20           | 99.93         | S           | -           | 3             | 5              | 7                                                                                                   | 10             | 12              | 15              | 44               |                        |    |    |    | *  |   |
| BH08                 | 2.00           | 99.13         | S           | -           | 3             | 4              | 3                                                                                                   | 2              | 2               | 2               | 9                | *                      |    |    |    |    |   |
| BH08                 | 4.00           | 97.13         | S           | -           | 2             | 2              | 1                                                                                                   | 1              | 2               | 2               | 6                | *                      |    |    |    |    |   |
| BH08                 | 5.00           | 96.13         | C           | -           | 2             | 2              | 3                                                                                                   | 3              | 3               | 4               | 13               |                        | *  |    |    |    |   |
| BH08                 | 6.50           | 94.63         | S           | -           | 1             | -              | 1                                                                                                   | 1              | 1               | 1               | 4                | *                      |    |    |    |    |   |
| BH08                 | 8.50           | 92.63         | S           | -           | 1             | 1              | 1                                                                                                   | 1              | 2               | 2               | 6                | *                      |    |    |    |    |   |
| BH08                 | 9.50           | 91.63         | S           | -           | 1             | -              | 1                                                                                                   | 1              | 2               | 2               | 6                | *                      |    |    |    |    |   |
| BH08                 | 12.50          | 88.63         | S           | -           | 1             | -              | 1                                                                                                   | 1              | 2               | 2               | 6                | *                      |    |    |    |    |   |
| BH08                 | 15.50          | 85.63         | S           | -           | 1             | 1              | 2                                                                                                   | 2              | 3               | 3               | 10               | *                      |    |    |    |    |   |
| BH08                 | 18.00          | 83.13         | C           | -           | 3             | 5              | 7                                                                                                   | 9              | 10              | 12              | 38               |                        |    |    |    | *  |   |
| BH08                 | 19.50          | 81.63         | C           | -           | 4             | 6              | 8                                                                                                   | 10             | 11              | 14              | 43               |                        |    |    |    | *  |   |
| BH08                 | 21.00          | 80.13         | S           | -           | 4             | 11             | 11                                                                                                  | 11             | 17              | 11/60           | 50/285           |                        |    |    |    |    | ➤ |
| BH08                 | 22.50          | 78.63         | S           | -           | 6             | 12             | 12                                                                                                  | 14             | 18              | 6/10            | 50/235           |                        |    |    |    |    | ➤ |
| BH08                 | 24.00          | 77.13         | S           | -           | 7             | 12             | 20                                                                                                  | 27             | 3/5             |                 | 50/155           |                        |    |    |    |    | ➤ |
|                      |                |               |             |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Driller              |                |               | Dave Cahill |             |               |                | Remarks<br>Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005 |                |                 |                 |                  |                        |    |    |    |    |   |
| Hammer No.           |                |               | AR824       |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Energy Ratio, Er (%) |                |               | 64.00       |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
| Calibration Date     |                |               | 07/12/2016  |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |
|                      |                |               |             |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |   |

-/- Blows/penetration (mm) after seating

-\*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

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# Fieldwork Results - SPT Results Summary

**Project** KRONOSPAN STORAGE BUILDING

**Project No** PN173691

**Client** KRONOSPAN LTD

| Hole                 | Depth<br>m bgl | Level<br>m OD | Type         | SWP<br>(mm) | Seating Drive |                | Test Drive                                                                                          |                |                 |                 | SPT 'N'<br>Value | Uncorrected SPT<br>'N' |    |    |    |    |
|----------------------|----------------|---------------|--------------|-------------|---------------|----------------|-----------------------------------------------------------------------------------------------------|----------------|-----------------|-----------------|------------------|------------------------|----|----|----|----|
|                      |                |               |              |             | 0-75<br>(mm)  | 75-150<br>(mm) | 0-75<br>(mm)                                                                                        | 75-150<br>(mm) | 150-225<br>(mm) | 225-300<br>(mm) |                  | 10                     | 20 | 30 | 40 | 50 |
| BH09                 | 1.20           | 99.63         | C            | -           | 3             | 5              | 7                                                                                                   | 7              | 5               | 8               | 27               |                        |    | *  |    |    |
| BH09                 | 2.00           | 98.83         | C            | -           | 3             | 5              | 2                                                                                                   | 2              | 2               | 2               | 8                | *                      |    |    |    |    |
| BH09                 | 3.00           | 97.83         | S            | -           | 2             | 2              | 2                                                                                                   | 2              | 2               | 2               | 8                | *                      |    |    |    |    |
| BH09                 | 4.00           | 96.83         | S            | -           | 4             | 4              | 3                                                                                                   | 4              | 3               | 4               | 14               |                        | *  |    |    |    |
| BH09                 | 5.00           | 95.83         | C            | -           | 5             | 7              | 9                                                                                                   | 4              | 3               | 1               | 17               |                        | *  |    |    |    |
| BH09                 | 8.00           | 92.83         | S            | -           | 1             | 1              | 1                                                                                                   | 1              | 2               | 2               | 6                | *                      |    |    |    |    |
| BH09                 | 11.00          | 89.83         | S            | -           | 1             | 2              | 2                                                                                                   | 2              | 2               | 2               | 8                | *                      |    |    |    |    |
| BH09                 | 14.00          | 86.83         | S            | -           | 1             | 1              | 2                                                                                                   | 1              | 2               | 2               | 7                | *                      |    |    |    |    |
| BH09                 | 15.50          | 85.33         | S            | -           | 1             | 1              | 2                                                                                                   | 2              | 2               | 2               | 8                | *                      |    |    |    |    |
| BH09                 | 18.50          | 82.33         | S            | -           | 1             | 2              | 3                                                                                                   | 3              | 4               | 6               | 16               |                        | *  |    |    |    |
| BH09                 | 20.00          | 80.83         | C            | -           | 5             | 7              | 9                                                                                                   | 13             | 18              | 10/27           | 50/252           |                        |    |    |    | >  |
| BH09                 | 23.00          | 77.83         | S            | -           | 6             | 10             | 14                                                                                                  | 17             | 19/43           |                 | 50/193           |                        |    |    |    | >  |
|                      |                |               |              |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |
| Driller              |                |               | Steve Lowery |             |               |                | Remarks<br>Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005 |                |                 |                 |                  |                        |    |    |    |    |
| Hammer No.           |                |               | SL01         |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |
| Energy Ratio, Er (%) |                |               | 77.00        |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |
| Calibration Date     |                |               | 17/03/2017   |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |
|                      |                |               |              |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |

-/- Blows/penetration (mm) after seating

-\*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

**GEOTECHNICS**  
geotechnical and geoenvironmental specialists

# Fieldwork Results - SPT Results Summary

**Project** KRONOSPAN STORAGE BUILDING

**Project No** PN173691

**Client** KRONOSPAN LTD

| Hole                 | Depth<br>m bgl | Level<br>m OD | Type        | SWP<br>(mm) | Seating Drive |                | Test Drive                                                                                          |                |                 |                 | SPT 'N'<br>Value | Uncorrected SPT<br>'N' |    |    |    |    |
|----------------------|----------------|---------------|-------------|-------------|---------------|----------------|-----------------------------------------------------------------------------------------------------|----------------|-----------------|-----------------|------------------|------------------------|----|----|----|----|
|                      |                |               |             |             | 0-75<br>(mm)  | 75-150<br>(mm) | 0-75<br>(mm)                                                                                        | 75-150<br>(mm) | 150-225<br>(mm) | 225-300<br>(mm) |                  | 10                     | 20 | 30 | 40 | 50 |
| BH10                 | 1.20           | 99.92         | C           | -           | 2             | 4              | 6                                                                                                   | 7              | 8               | 9               | 30               |                        |    | *  |    |    |
| BH10                 | 2.00           | 99.12         | C           | -           | 2             | 3              | 3                                                                                                   | 4              | 3               | 4               | 14               |                        | *  |    |    |    |
| BH10                 | 3.00           | 98.12         | C           | -           | 2             | 2              | 3                                                                                                   | 3              | 3               | 3               | 12               |                        | *  |    |    |    |
| BH10                 | 4.00           | 97.12         | C           | -           | 1             | 2              | 2                                                                                                   | 3              | 2               | 2               | 9                |                        | *  |    |    |    |
| BH10                 | 5.00           | 96.12         | C           | -           | 1             | 1              | 1                                                                                                   | 2              | 1               | 2               | 6                |                        | *  |    |    |    |
| BH10                 | 8.00           | 93.12         | S           | -           | 1             | -              | 1                                                                                                   | 2              | 2               | 2               | 7                |                        | *  |    |    |    |
| BH10                 | 11.00          | 90.12         | S           | -           | 1             | 1              | 2                                                                                                   | 3              | 3               | 3               | 11               |                        | *  |    |    |    |
| BH10                 | 14.00          | 87.12         | S           | -           | 1             | 2              | 2                                                                                                   | 3              | 3               | 3               | 11               |                        | *  |    |    |    |
| BH10                 | 17.00          | 84.12         | C           | -           | 7             | 12             | 17                                                                                                  | 24             | 9/30            |                 | 50/180           |                        |    |    |    | >  |
| BH10                 | 18.50          | 82.62         | C           | -           | 4             | 6              | 7                                                                                                   | 6              | 7               | 7               | 27               |                        |    | *  |    |    |
| BH10                 | 20.00          | 81.12         | C           | -           | 10            | 15/65          | 21                                                                                                  | 29/30          |                 |                 | 50/105           |                        |    |    |    | >  |
|                      |                |               |             |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |
| Driller              |                |               | Dave Cahill |             |               |                | Remarks<br>Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005 |                |                 |                 |                  |                        |    |    |    |    |
| Hammer No.           |                |               | AR824       |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |
| Energy Ratio, Er (%) |                |               | 64.00       |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |
| Calibration Date     |                |               | 07/12/2016  |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |
|                      |                |               |             |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |

-/- Blows/penetration (mm) after seating

-\*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

**GEOTECHNICS**  
geotechnical and geoenvironmental specialists

# Fieldwork Results - SPT Results Summary

**Project** KRONOSPAN STORAGE BUILDING

**Project No** PN173691

**Client** KRONOSPAN LTD

| Hole                 | Depth<br>m bgl | Level<br>m OD | Type         | SWP<br>(mm) | Seating Drive |                | Test Drive                                                                                          |                |                 |                 | SPT 'N'<br>Value | Uncorrected SPT<br>'N' |    |    |    |    |
|----------------------|----------------|---------------|--------------|-------------|---------------|----------------|-----------------------------------------------------------------------------------------------------|----------------|-----------------|-----------------|------------------|------------------------|----|----|----|----|
|                      |                |               |              |             | 0-75<br>(mm)  | 75-150<br>(mm) | 0-75<br>(mm)                                                                                        | 75-150<br>(mm) | 150-225<br>(mm) | 225-300<br>(mm) |                  | 10                     | 20 | 30 | 40 | 50 |
| BH11                 | 1.20           | 99.86         | S            | -           | 4             | 5              | 6                                                                                                   | 6              | 7               | 9               | 28               |                        |    | *  |    |    |
| BH11                 | 2.00           | 99.06         | S            | -           | 3             | 5              | 7                                                                                                   | 9              | 10              | 13              | 39               |                        |    |    | *  |    |
| BH11                 | 3.00           | 98.06         | C            | -           | 3             | 5              | 4                                                                                                   | 3              | 2               | 2               | 11               | *                      |    |    |    |    |
| BH11                 | 4.00           | 97.06         | C            | -           | 2             | 3              | 5                                                                                                   | 5              | 6               | 7               | 23               |                        |    | *  |    |    |
| BH11                 | 5.00           | 96.06         | S            | -           | 2             | 1              | 2                                                                                                   | 2              | 2               | 4               | 10               | *                      |    |    |    |    |
| BH11                 | 7.50           | 93.56         | S            | -           | 1             | 2              | 2                                                                                                   | 2              | 2               | 3               | 9                | *                      |    |    |    |    |
| BH11                 | 10.50          | 90.56         | S            | -           | 1             | 1              | 2                                                                                                   | 2              | 2               | 2               | 8                | *                      |    |    |    |    |
| BH11                 | 13.50          | 87.56         | S            | -           | 1             | 2              | 2                                                                                                   | 2              | 2               | 2               | 8                | *                      |    |    |    |    |
| BH11                 | 16.50          | 84.56         | C            | -           | 5             | 8              | 11                                                                                                  | 14             | 18              | 7/22            | 50/247           |                        |    |    |    | >  |
| BH11                 | 18.00          | 83.06         | S            | -           | 4             | 5              | 7                                                                                                   | 7              | 9               | 11              | 34               |                        |    | *  |    |    |
| BH11                 | 19.50          | 81.56         | S            | -           | 2             | 3              | 4                                                                                                   | 4              | 5               | 6               | 19               |                        | *  |    |    |    |
| BH11                 | 22.50          | 78.56         | S            | -           | 4             | 7              | 10                                                                                                  | 16             | 24/67           |                 | 50/217           |                        |    |    |    | >  |
|                      |                |               |              |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |
| Driller              |                |               | Steve Lowery |             |               |                | Remarks<br>Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005 |                |                 |                 |                  |                        |    |    |    |    |
| Hammer No.           |                |               | SL01         |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |
| Energy Ratio, Er (%) |                |               | 77.00        |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |
| Calibration Date     |                |               | 17/03/2017   |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |
|                      |                |               |              |             |               |                |                                                                                                     |                |                 |                 |                  |                        |    |    |    |    |

-/- Blows/penetration (mm) after seating

-\*/- Total blows/penetration (mm)

SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)

C - SPT with cone

L - Split Spoon with liner used

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## **APPENDIX 3**

### **Monitoring Results**

# FIELDWORK – Water Level Monitoring

Project KRONOSPAN STORAGE BUILDING

Project No PN173691

Client KRONOSPAN LTD

Sheet No 1

| Borehole             |      | BH01       |       | BH02        |       | BH03        |       | BH04        |       | BH05        |       | BH06        |        |
|----------------------|------|------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|--------|
| Instrument (dia. mm) |      | S (50mm)   |       | S (50mm)    |       | S (50mm)    |       | S (50mm)    |       | S (50mm)    |       | S (50mm)    |        |
| Depth to Base (m)    |      | 5.00       |       | 6.00        |       | 11.00       |       | 25.00       |       | 9.00        |       | 3.00        |        |
| Filter Zone (m)      |      | 2.00-5.00  |       | 3.00-6.00   |       | 6.00-11.00  |       | 7.00-9.00   |       | 6.00-9.00   |       | 1.00-3.00   |        |
| Level                |      | 99.09 m OD |       | 101.28 m OD |       | 101.35 m OD |       | 101.37 m OD |       | 101.29 m OD |       | 101.40 m OD |        |
| Date                 | Time | Depth (m)  | Level | Depth (m)   | Level | Depth (m)   | Level | Depth (m)   | Level | Depth (m)   | Level | Depth (m)   | Level  |
| 18 Sep 2017          |      | 2.70       | 96.39 | 4.70        | 96.58 | Buried.     |       | 5.90        | 95.47 | 5.75        | 95.54 | 1.30        | 100.10 |
| 29 Sep 2017          |      | 2.65       | 96.44 | 4.00        | 97.28 | 5.85        | 95.50 | 5.85        | 95.52 | No          |       | 1.30        | 100.10 |
| 5 Oct 2017           |      | 2.60       | 96.49 | 4.15        | 97.13 | 5.90        | 95.45 | 5.90        | 95.47 | No          |       | 1.30        | 100.10 |
| 12 Oct 2017          |      | 2.65       | 96.44 | 5.00        | 96.28 | 5.85        | 95.50 | 5.90        | 95.47 | No          |       | 1.30        | 100.10 |

## Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

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# FIELDWORK – Water Level Monitoring

Project KRONOSPAN STORAGE BUILDING

Project No PN173691

Client KRONOSPAN LTD

Sheet No 2

| Borehole             |      | BH07        |       | BH08        |       | BH09        |       | BH10        |       | BH11        |       |           |       |
|----------------------|------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-----------|-------|
| Instrument (dia. mm) |      | S (50mm)    |       | S (50mm)    |       | S (50mm)    |       | S (50mm)    |       | S (50mm)    |       |           |       |
| Depth to Base (m)    |      | 6.00        |       | 6.00        |       | 21.00       |       | 6.00        |       | 5.50        |       |           |       |
| Filter Zone (m)      |      | 3.00-6.00   |       | 3.00-6.00   |       | 17.00-21.00 |       | 3.00-6.00   |       | 2.50-5.50   |       |           |       |
| Level                |      | 101.42 m OD |       | 101.13 m OD |       | 100.83 m OD |       | 101.12 m OD |       | 101.06 m OD |       |           |       |
| Date                 | Time | Depth (m)   | Level | Depth (m)   | Level | Depth (m)   | Level | Depth (m)   | Level | Depth (m)   | Level | Depth (m) | Level |
| 18 Sep 2017          |      | 5.40        | 96.02 | 2.50        | 98.63 | 9.20        | 91.63 | 2.30        | 98.82 | 2.10        | 98.96 |           |       |
| 29 Sep 2017          |      | 5.30        | 96.12 | 2.45        | 98.68 | 9.25        | 91.58 | 2.30        | 98.82 | 2.10        | 98.96 |           |       |
| 5 Oct 2017           |      | 5.30        | 96.12 | 2.50        | 98.63 | 9.30        | 91.53 | 2.20        | 98.92 | 2.15        | 98.91 |           |       |
| 12 Oct 2017          |      | 5.30        | 96.12 | 2.50        | 98.63 | 9.30        | 91.53 | 2.25        | 98.87 | 2.15        | 98.91 |           |       |

## Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

**GEOTECHNICS**  
geotechnical and geoenvironmental specialists

# FIELDWORK - Insitu Gas Monitoring - Daily Record

Project KRONOSPAN STORAGE BUILDING

Project No

PN173691

Date

18/09/2017

Client KRONOSPAN LTD

Sheet No.

1 (1 of 3)

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

Other GFM436 Gas Analyser;

## Weather / Site Conditions

Wind

Still ☐

Light ☒

Moderate ☐

Strong ☐

Cloud Cover

None ☐

Slight ☐

Cloudy ☒

Overcast ☐

Precipitation

Dry ☐

Slight ☒

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Time<br>(hh:mm) | Depth to Water<br>(m bgl) | Current Hole Depth<br>(m bgl) | Methane (Peak) CH4<br>(% VOL) | Methane (Steady) CH4<br>(% VOL) | Methane (Peak) CH4<br>(% LEL) | Methane (Steady) CH4<br>(% LEL) | Remarks |
|----------|----------------------|-----------------|---------------------------|-------------------------------|-------------------------------|---------------------------------|-------------------------------|---------------------------------|---------|
| BH01     | 5.00                 |                 | 2.70                      | 5.00                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |         |
| BH02     | 6.00                 |                 | 4.70                      | 6.00                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |         |
| BH03     | 11.00                |                 | Buried.                   |                               | -                             | -                               | -                             | -                               | Buried  |
| BH04     | 25.00                |                 | 5.90                      | 9.35                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |         |
| BH05     | 9.00                 |                 | 5.75                      | 6.05                          | 0.2                           | 0.0                             | 5.5                           | 0.0                             |         |
| BH06     | 3.00                 |                 | 1.30                      | 3.30                          | 3.7                           | 3.2                             | 85.7                          | 74.7                            |         |
| BH07     | 6.00                 |                 | 5.40                      | 6.25                          | 1.3                           | 1.2                             | 30.7                          | 29.2                            |         |
| BH08     | 6.00                 |                 | 2.50                      | 6.25                          | 0.2                           | 0.1                             | 4.7                           | 4.1                             |         |
| BH09     | 21.00                |                 | 9.20                      | 20.30                         | 6.4                           | 5.0                             | >>>                           | >>>                             |         |
| BH10     | 6.00                 |                 | 2.30                      | 5.05                          | 0.2                           | 0.0                             | 5.5                           | 0.0                             |         |
| BH11     | 5.50                 |                 | 2.10                      | 5.20                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |         |

Remarks

geotechnics

# FIELDWORK - Insitu Gas Monitoring - Daily Record

Project KRONOSPAN STORAGE BUILDING

Project No

PN173691

Date

18/09/2017

Client KRONOSPAN LTD

Sheet No.

1 (2 of 3)

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

Other GFM436 Gas Analyser;

## Weather / Site Conditions

Wind

Still ☐

Light ☒

Moderate ☐

Strong ☐

Cloud Cover

None ☐

Slight ☐

Cloudy ☒

Overcast ☐

Precipitation

Dry ☐

Slight ☒

Moderate ☐

Heavy ☐

| Borehole | Depth to Base (m) | Carbon Dioxide (Peak) (% VOL) | Carbon Dioxide (Steady) (% VOL) | Oxygen (Peak) (% VOL) | Oxygen (Steady) (% VOL) | Nitrogen (Peak) N2 (% VOL) | Nitrogen (Steady) N2 (% VOL) | Hydrogen Sulphide H2S (ppm) | Remarks |
|----------|-------------------|-------------------------------|---------------------------------|-----------------------|-------------------------|----------------------------|------------------------------|-----------------------------|---------|
| BH01     | 5.00              | 0.0                           | 0.0                             | 20.5                  | 20.5                    | 79.4                       | 79.4                         | 0.0                         | Buried  |
| BH02     | 6.00              | 0.0                           | 0.0                             | 20.6                  | 20.5                    | 79.3                       | 79.4                         | 0.0                         |         |
| BH03     | 11.00             | -                             | -                               | -                     | -                       | -                          | -                            | -                           |         |
| BH04     | 25.00             | 0.0                           | 0.0                             | 20.3                  | 20.3                    | 79.6                       | 79.6                         | 0.0                         |         |
| BH05     | 9.00              | 0.0                           | 0.0                             | 17.3                  | 17.4                    | 82.4                       | 82.5                         | 0.0                         |         |
| BH06     | 3.00              | 0.6                           | 0.6                             | 4.5                   | 4.9                     | 80.1                       | 81.3                         | 0.0                         |         |
| BH07     | 6.00              | 0.9                           | 0.8                             | 4.0                   | 6.7                     | 81.1                       | 83.8                         | 0.0                         |         |
| BH08     | 6.00              | 0.8                           | 0.8                             | 13.5                  | 13.0                    | 85.4                       | 86.0                         | 0.0                         |         |
| BH09     | 21.00             | 7.1                           | 5.1                             | 13.6                  | 15.6                    | 72.8                       | 74.2                         | 0.0                         |         |
| BH10     | 6.00              | 0.8                           | 0.7                             | 15.9                  | 16.0                    | 83.0                       | 83.2                         | 0.0                         |         |
| BH11     | 5.50              | 0.0                           | 0.0                             | 20.0                  | 19.8                    | 79.9                       | 80.1                         | 0.0                         |         |

Remarks

**geotechnics**

# FIELDWORK - Insitu Gas Monitoring - Daily Record

Project KRONOSPAN STORAGE BUILDING

Project No

PN173691

Date

18/09/2017

Client KRONOSPAN LTD

Sheet No.

1 (3 of 3)

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

Other GFM436 Gas Analyser;

## Weather / Site Conditions

Wind

Still ☐

Light ☒

Moderate ☐

Strong ☐

Cloud Cover

None ☐

Slight ☐

Cloudy ☒

Overcast ☐

Precipitation

Dry ☐

Slight ☒

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Carbon Monoxide<br>CO<br>(ppm) | Barometric Pressure<br>(mBars) | Flow Rate (Peak)<br>(l/hr) | Flow Rate (Steady)<br>(l/hr) | Remarks |
|----------|----------------------|--------------------------------|--------------------------------|----------------------------|------------------------------|---------|
| BH01     | 5.00                 | 0.0                            | 1007                           | 0.0                        | 0.0                          | Buried  |
| BH02     | 6.00                 | 0.0                            | 1007                           | 0.0                        | 0.0                          |         |
| BH03     | 11.00                | -                              | 1007                           | -                          | -                            |         |
| BH04     | 25.00                | 0.0                            | 1007                           | 0.0                        | 0.0                          |         |
| BH05     | 9.00                 | 0.0                            | 1007                           | 0.0                        | 0.0                          |         |
| BH06     | 3.00                 | 0.0                            | 1006                           | 0.0                        | 0.0                          |         |
| BH07     | 6.00                 | 0.0                            | 1007                           | 0.0                        | 0.0                          |         |
| BH08     | 6.00                 | 0.0                            | 1005                           | 0.0                        | 0.0                          |         |
| BH09     | 21.00                | 0.0                            | 1006                           | 0.0                        | 0.0                          |         |
| BH10     | 6.00                 | 0.0                            | 1005                           | 0.0                        | 0.0                          |         |
| BH11     | 5.50                 | 0.0                            | 1005                           | 0.0                        | 0.0                          |         |

Remarks



# FIELDWORK - Insitu Gas Monitoring - Daily Record

Project KRONOSPAN STORAGE BUILDING

Project No

PN173691

Date

29/09/2017

Client KRONOSPAN LTD

Sheet No.

1 (1 of 3)

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

Other GFM436 Gas Analyser;

## Weather / Site Conditions

Wind

Still ☐

Light ☒

Moderate ☐

Strong ☐

Cloud Cover

None ☐

Slight ☒

Cloudy ☐

Overcast ☐

Precipitation

Dry ☐

Slight ☒

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Time<br>(hh:mm) | Depth to Water<br>(m bgl) | Current Hole Depth<br>(m bgl) | Methane (Peak) CH4<br>(% VOL) | Methane (Steady) CH4<br>(% VOL) | Methane (Peak) CH4<br>(% LEL) | Methane (Steady) CH4<br>(% LEL) | Remarks   |
|----------|----------------------|-----------------|---------------------------|-------------------------------|-------------------------------|---------------------------------|-------------------------------|---------------------------------|-----------|
| BH01     | 5.00                 |                 | 2.65                      | 5.00                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |           |
| BH02     | 6.00                 |                 | 4.00                      | 6.00                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |           |
| BH03     | 11.00                |                 | 5.85                      | 10.85                         | 0.7                           | 0.6                             | 17.4                          | 15.7                            |           |
| BH04     | 25.00                |                 | 5.85                      | 9.35                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |           |
| BH05     | 9.00                 |                 | No access                 |                               | -                             | -                               | -                             | -                               | No access |
| BH06     | 3.00                 |                 | 1.30                      | 3.30                          | 4.6                           | 4.3                             | >>>                           | 98.8                            |           |
| BH07     | 6.00                 |                 | 5.30                      | 6.25                          | 3.8                           | 2.0                             | 88.6                          | 47.3                            |           |
| BH08     | 6.00                 |                 | 2.45                      | 6.20                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |           |
| BH09     | 21.00                |                 | 9.25                      | 20.30                         | 4.0                           | 3.1                             | 92.6                          | 78.5                            |           |
| BH10     | 6.00                 |                 | 2.30                      | 5.05                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |           |
| BH11     | 5.50                 |                 | 2.10                      | 5.20                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |           |

Remarks

geotechnics

# FIELDWORK - Insitu Gas Monitoring - Daily Record

Project KRONOSPAN STORAGE BUILDING

Project No

PN173691

Date

29/09/2017

Client KRONOSPAN LTD

Sheet No.

1 (2 of 3)

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

Other GFM436 Gas Analyser;

## Weather / Site Conditions

Wind

Still ☐

Light ☒

Moderate ☐

Strong ☐

Cloud Cover

None ☐

Slight ☒

Cloudy ☐

Overcast ☐

Precipitation

Dry ☐

Slight ☒

Moderate ☐

Heavy ☐

| Borehole | Depth to Base (m) | Carbon Dioxide (Peak) (% VOL) | Carbon Dioxide (Steady) (% VOL) | Oxygen (Peak) (% VOL) | Oxygen (Steady) (% VOL) | Nitrogen (Peak) N2 (% VOL) | Nitrogen (Steady) N2 (% VOL) | Hydrogen Sulphide H2S (ppm) | Remarks   |
|----------|-------------------|-------------------------------|---------------------------------|-----------------------|-------------------------|----------------------------|------------------------------|-----------------------------|-----------|
| BH01     | 5.00              | 3.7                           | 1.5                             | 8.9                   | 14.7                    | 87.3                       | 83.7                         | 0.0                         | No access |
| BH02     | 6.00              | 2.5                           | 1.0                             | 13.6                  | 17.0                    | 83.8                       | 81.9                         | 0.0                         |           |
| BH03     | 11.00             | 0.8                           | 0.7                             | 7.2                   | 7.5                     | 91.3                       | 91.0                         | 0.0                         |           |
| BH04     | 25.00             | 0.0                           | 0.0                             | 20.3                  | 20.3                    | 79.6                       | 79.6                         | 0.0                         |           |
| BH05     | 9.00              | -                             | -                               | -                     | -                       | -                          | -                            | -                           |           |
| BH06     | 3.00              | 1.4                           | 1.3                             | 2.3                   | 2.6                     | 91.7                       | 91.6                         | 0.0                         |           |
| BH07     | 6.00              | 2.4                           | 1.7                             | 2.8                   | 13.2                    | 90.9                       | 83.4                         | 0.0                         |           |
| BH08     | 6.00              | 1.7                           | 1.6                             | 7.6                   | 7.8                     | 90.7                       | 90.4                         | 0.0                         |           |
| BH09     | 21.00             | 2.1                           | 1.5                             | 15.5                  | 16.5                    | 78.8                       | 78.3                         | 0.0                         |           |
| BH10     | 6.00              | 1.5                           | 1.4                             | 15.4                  | 15.6                    | 83.1                       | 82.8                         | 0.0                         |           |
| BH11     | 5.50              | 0.0                           | 0.0                             | 20.0                  | 20.0                    | 79.9                       | 79.9                         | 0.0                         |           |

Remarks

geotechnics

# FIELDWORK - Insitu Gas Monitoring - Daily Record

Project KRONOSPAN STORAGE BUILDING

Project No

PN173691

Date

29/09/2017

Client KRONOSPAN LTD

Sheet No.

1 (3 of 3)

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

Other GFM436 Gas Analyser;

## Weather / Site Conditions

Wind

Still ☐

Light ☒

Moderate ☐

Strong ☐

Cloud Cover

None ☐

Slight ☒

Cloudy ☐

Overcast ☐

Precipitation

Dry ☐

Slight ☒

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Carbon Monoxide<br>CO<br>(ppm) | Barometric Pressure<br>(mBars) | Flow Rate (Peak)<br>(l/hr) | Flow Rate (Steady)<br>(l/hr) | Remarks   |
|----------|----------------------|--------------------------------|--------------------------------|----------------------------|------------------------------|-----------|
| BH01     | 5.00                 | 0.0                            | 1001                           | 0.0                        | 0.0                          | No access |
| BH02     | 6.00                 | 0.0                            | 1001                           | 0.0                        | 0.0                          |           |
| BH03     | 11.00                | 0.0                            | 1001                           | 0.0                        | 0.0                          |           |
| BH04     | 25.00                | 0.0                            | 1001                           | 0.0                        | 0.0                          |           |
| BH05     | 9.00                 | -                              | 1001                           | -                          | -                            |           |
| BH06     | 3.00                 | 0.0                            | 1001                           | 0.0                        | 0.0                          |           |
| BH07     | 6.00                 | 0.0                            | 1001                           | 0.0                        | 0.0                          |           |
| BH08     | 6.00                 | 0.0                            | 1001                           | 0.0                        | 0.0                          |           |
| BH09     | 21.00                | 0.0                            | 1002                           | 0.0                        | 0.0                          |           |
| BH10     | 6.00                 | 0.0                            | 1001                           | 0.0                        | 0.0                          |           |
| BH11     | 5.50                 | 0.0                            | 1002                           | 0.0                        | 0.0                          |           |

Remarks

**geotechnics**

# FIELDWORK - Insitu Gas Monitoring - Daily Record

Project KRONOSPAN STORAGE BUILDING

Project No

PN173691

Date

05/10/2017

Client KRONOSPAN LTD

Sheet No.

1 (1 of 3)

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

Other GFM436 Gas Analyser;

## Weather / Site Conditions

Wind

Still ☐

Light ☐

Moderate ☒

Strong ☐

Cloud Cover

None ☐

Slight ☐

Cloudy ☒

Overcast ☐

Precipitation

Dry ☒

Slight ☐

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Time<br>(hh:mm) | Depth to Water<br>(m bgl) | Current Hole Depth<br>(m bgl) | Methane (Peak) CH4<br>(% VOL) | Methane (Steady) CH4<br>(% VOL) | Methane (Peak) CH4<br>(% LEL) | Methane (Steady) CH4<br>(% LEL) | Remarks   |
|----------|----------------------|-----------------|---------------------------|-------------------------------|-------------------------------|---------------------------------|-------------------------------|---------------------------------|-----------|
| BH01     | 5.00                 |                 | 2.60                      | 5.00                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |           |
| BH02     | 6.00                 |                 | 4.15                      | 6.00                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |           |
| BH03     | 11.00                |                 | 5.90                      | 9.35                          | 0.6                           | 0.5                             | 13.6                          | 12.8                            |           |
| BH04     | 25.00                |                 | 5.90                      | 9.35                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |           |
| BH05     | 9.00                 |                 | No access                 |                               | -                             | -                               | -                             | -                               | No access |
| BH06     | 3.00                 |                 | 1.30                      | 3.30                          | 1.0                           | 0.9                             | 24.0                          | 20.6                            |           |
| BH07     | 6.00                 |                 | 5.30                      | 6.25                          | 1.4                           | 1.0                             | 32.1                          | 23.8                            |           |
| BH08     | 6.00                 |                 | 2.50                      | 6.20                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |           |
| BH09     | 21.00                |                 | 9.30                      | 20.30                         | 1.5                           | 1.5                             | 36.0                          | 35.3                            |           |
| BH10     | 6.00                 |                 | 2.20                      | 5.05                          | 0.3                           | 0.3                             | 8.1                           | 7.8                             |           |
| BH11     | 5.50                 |                 | 2.15                      | 5.20                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |           |

Remarks

geotechnics

# FIELDWORK - Insitu Gas Monitoring - Daily Record

Project KRONOSPAN STORAGE BUILDING

Project No

PN173691

Date

05/10/2017

Client KRONOSPAN LTD

Sheet No.

1 (2 of 3)

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

Other GFM436 Gas Analyser;

## Weather / Site Conditions

Wind

Still ☐

Light ☐

Moderate ☒

Strong ☐

Cloud Cover

None ☐

Slight ☐

Cloudy ☒

Overcast ☐

Precipitation

Dry ☒

Slight ☐

Moderate ☐

Heavy ☐

| Borehole | Depth to Base (m) | Carbon Dioxide (Peak) (% VOL) | Carbon Dioxide (Steady) (% VOL) | Oxygen (Peak) (% VOL) | Oxygen (Steady) (% VOL) | Nitrogen (Peak) N2 (% VOL) | Nitrogen (Steady) N2 (% VOL) | Hydrogen Sulphide H2S (ppm) | Remarks   |
|----------|-------------------|-------------------------------|---------------------------------|-----------------------|-------------------------|----------------------------|------------------------------|-----------------------------|-----------|
| BH01     | 5.00              | 14.6                          | 5.6                             | 0.5                   | 13.0                    | 84.8                       | 81.3                         | 0.0                         | No access |
| BH02     | 6.00              | 5.0                           | 3.2                             | 6.3                   | 11.5                    | 88.6                       | 85.2                         | 0.0                         |           |
| BH03     | 11.00             | 0.7                           | 0.6                             | 10.9                  | 11.3                    | 87.7                       | 87.5                         | 0.0                         |           |
| BH04     | 25.00             | 0.0                           | 0.0                             | 19.9                  | 20.0                    | 80.0                       | 79.9                         | 0.0                         |           |
| BH05     | 9.00              | -                             | -                               | -                     | -                       | -                          | -                            | -                           |           |
| BH06     | 3.00              | 2.0                           | 1.9                             | 6.5                   | 6.6                     | 90.5                       | 90.4                         | 0.0                         |           |
| BH07     | 6.00              | 0.9                           | 0.9                             | 15.4                  | 16.3                    | 82.2                       | 81.7                         | 0.0                         |           |
| BH08     | 6.00              | 1.2                           | 0.6                             | 10.1                  | 15.2                    | 88.6                       | 84.3                         | 0.0                         |           |
| BH09     | 21.00             | 0.6                           | 0.5                             | 18.4                  | 18.5                    | 79.4                       | 79.4                         | 0.0                         |           |
| BH10     | 6.00              | 0.7                           | 0.5                             | 17.4                  | 18.7                    | 81.5                       | 80.4                         | 0.0                         |           |
| BH11     | 5.50              | 0.0                           | 0.0                             | 20.2                  | 20.3                    | 79.7                       | 79.6                         | 0.0                         |           |

Remarks

geotechnics

# FIELDWORK - Insitu Gas Monitoring - Daily Record

Project KRONOSPAN STORAGE BUILDING

Project No

PN173691

Date

05/10/2017

Client KRONOSPAN LTD

Sheet No.

1 (3 of 3)

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

Other GFM436 Gas Analyser;

## Weather / Site Conditions

Wind

Still ☐

Light ☐

Moderate ☒

Strong ☐

Cloud Cover

None ☐

Slight ☐

Cloudy ☒

Overcast ☐

Precipitation

Dry ☒

Slight ☐

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Carbon Monoxide<br>CO<br>(ppm) | Barometric Pressure<br>(mBars) | Flow Rate (Peak)<br>(l/hr) | Flow Rate (Steady)<br>(l/hr) | Remarks   |
|----------|----------------------|--------------------------------|--------------------------------|----------------------------|------------------------------|-----------|
| BH01     | 5.00                 | 0.0                            | 1005                           | 0.0                        | 0.0                          | No access |
| BH02     | 6.00                 | 0.0                            | 1006                           | 0.0                        | 0.0                          |           |
| BH03     | 11.00                | 0.0                            | 1006                           | 0.0                        | 0.0                          |           |
| BH04     | 25.00                | 0.0                            | 1006                           | 0.0                        | 0.0                          |           |
| BH05     | 9.00                 | -                              | 1006                           | -                          | -                            |           |
| BH06     | 3.00                 | 0.0                            | 1006                           | 0.0                        | 0.0                          |           |
| BH07     | 6.00                 | 0.0                            | 1006                           | 0.0                        | 0.0                          |           |
| BH08     | 6.00                 | 0.0                            | 1005                           | 0.0                        | 0.0                          |           |
| BH09     | 21.00                | 0.0                            | 1004                           | 0.0                        | 0.0                          |           |
| BH10     | 6.00                 | 0.0                            | 1005                           | 0.0                        | 0.0                          |           |
| BH11     | 5.50                 | 0.0                            | 1004                           | 0.0                        | 0.0                          |           |

Remarks



# FIELDWORK - Insitu Gas Monitoring - Daily Record

Project KRONOSPAN STORAGE BUILDING

Project No

PN173691

Date

12/10/2017

Client KRONOSPAN LTD

Sheet No.

1 (1 of 3)

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

Other GFM436 Gas Analyser;

## Weather / Site Conditions

Wind

Still ☐

Light ☒

Moderate ☐

Strong ☐

Cloud Cover

None ☐

Slight ☒

Cloudy ☐

Overcast ☐

Precipitation

Dry ☒

Slight ☐

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Time<br>(hh:mm) | Depth to Water<br>(m bgl) | Current Hole Depth<br>(m bgl) | Methane (Peak) CH4<br>(% VOL) | Methane (Steady) CH4<br>(% VOL) | Methane (Peak) CH4<br>(% LEL) | Methane (Steady) CH4<br>(% LEL) | Remarks   |
|----------|----------------------|-----------------|---------------------------|-------------------------------|-------------------------------|---------------------------------|-------------------------------|---------------------------------|-----------|
| BH01     | 5.00                 |                 | 2.65                      | 5.00                          | 0.2                           | 0.1                             | 6.7                           | 3.9                             |           |
| BH02     | 6.00                 |                 | 5.00                      | 6.00                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |           |
| BH03     | 11.00                |                 | 5.85                      | 9.35                          | 0.1                           | 0.1                             | 3.3                           | 3.3                             |           |
| BH04     | 25.00                |                 | 5.90                      | 9.35                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |           |
| BH05     | 9.00                 |                 | No access                 |                               | -                             | -                               | -                             | -                               | No access |
| BH06     | 3.00                 |                 | 1.30                      | 3.30                          | 2.1                           | 1.9                             | 49.6                          | 44.4                            |           |
| BH07     | 6.00                 |                 | 5.30                      | 6.25                          | 1.6                           | 1.4                             | 36.7                          | 33.7                            |           |
| BH08     | 6.00                 |                 | 2.50                      | 6.20                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |           |
| BH09     | 21.00                |                 | 9.30                      | 20.30                         | 1.4                           | 1.2                             | 33.7                          | 27.5                            |           |
| BH10     | 6.00                 |                 | 2.25                      | 5.05                          | 0.0                           | 0.0                             | 0.0                           | 0.0                             |           |
| BH11     | 5.50                 |                 | 2.15                      | 5.20                          | 0.1                           | 0.0                             | 3.5                           | 0.0                             |           |

Remarks

geotechnics

# FIELDWORK - Insitu Gas Monitoring - Daily Record

Project KRONOSPAN STORAGE BUILDING

Project No

PN173691

Date

12/10/2017

Client KRONOSPAN LTD

Sheet No.

1 (2 of 3)

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

Other GFM436 Gas Analyser;

## Weather / Site Conditions

Wind

Still ☐

Light ☒

Moderate ☐

Strong ☐

Cloud Cover

None ☐

Slight ☒

Cloudy ☐

Overcast ☐

Precipitation

Dry ☒

Slight ☐

Moderate ☐

Heavy ☐

| Borehole | Depth to Base (m) | Carbon Dioxide (Peak) (% VOL) | Carbon Dioxide (Steady) (% VOL) | Oxygen (Peak) (% VOL) | Oxygen (Steady) (% VOL) | Nitrogen (Peak) N2 (% VOL) | Nitrogen (Steady) N2 (% VOL) | Hydrogen Sulphide H2S (ppm) | Remarks   |
|----------|-------------------|-------------------------------|---------------------------------|-----------------------|-------------------------|----------------------------|------------------------------|-----------------------------|-----------|
| BH01     | 5.00              | 6.9                           | 6.7                             | 8.5                   | 11.8                    | 84.4                       | 81.2                         | 0.0                         | No access |
| BH02     | 6.00              | 0.8                           | 0.4                             | 3.8                   | 8.0                     | 95.7                       | 91.1                         | 0.0                         |           |
| BH03     | 11.00             | 0.0                           | 0.0                             | 19.2                  | 19.3                    | 80.6                       | 80.5                         | 0.0                         |           |
| BH04     | 25.00             | 0.0                           | 0.0                             | 19.5                  | 19.5                    | 80.4                       | 80.4                         | 0.0                         |           |
| BH05     | 9.00              | -                             | -                               | -                     | -                       | -                          | -                            | -                           |           |
| BH06     | 3.00              | 2.4                           | 2.0                             | 4.3                   | 6.9                     | 89.1                       | 81.1                         | 0.0                         |           |
| BH07     | 6.00              | 1.9                           | 1.2                             | 12.2                  | 14.2                    | 84.2                       | 83.1                         | 0.0                         |           |
| BH08     | 6.00              | 0.4                           | 0.4                             | 17.8                  | 18.9                    | 81.7                       | 80.6                         | 0.0                         |           |
| BH09     | 21.00             | 1.1                           | 0.4                             | 17.3                  | 18.1                    | 80.2                       | 80.1                         | 0.0                         |           |
| BH10     | 6.00              | 1.2                           | 1.0                             | 16.6                  | 17.7                    | 82.1                       | 81.2                         | 0.0                         |           |
| BH11     | 5.50              | 0.0                           | 0.0                             | 20.2                  | 20.2                    | 79.7                       | 79.6                         | 0.0                         |           |

Remarks

geotechnics

# FIELDWORK - Insitu Gas Monitoring - Daily Record

Project KRONOSPAN STORAGE BUILDING

Project No

PN173691

Date

12/10/2017

Client KRONOSPAN LTD

Sheet No.

1 (3 of 3)

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

Other GFM436 Gas Analyser;

## Weather / Site Conditions

Wind

Still ☐

Light ☒

Moderate ☐

Strong ☐

Cloud Cover

None ☐

Slight ☒

Cloudy ☐

Overcast ☐

Precipitation

Dry ☒

Slight ☐

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Carbon Monoxide<br>CO<br>(ppm) | Barometric Pressure<br>(mBars) | Flow Rate (Peak)<br>(l/hr) | Flow Rate (Steady)<br>(l/hr) | Remarks   |
|----------|----------------------|--------------------------------|--------------------------------|----------------------------|------------------------------|-----------|
| BH01     | 5.00                 | 0.0                            | 1005                           | 0.0                        | 0.0                          | No access |
| BH02     | 6.00                 | 0.0                            | 1004                           | 0.0                        | 0.0                          |           |
| BH03     | 11.00                | 0.0                            | 1004                           | 0.0                        | 0.0                          |           |
| BH04     | 25.00                | 0.0                            | 1004                           | 0.0                        | 0.0                          |           |
| BH05     | 9.00                 | -                              | 1004                           | -                          | -                            |           |
| BH06     | 3.00                 | 0.0                            | 1004                           | 0.0                        | 0.0                          |           |
| BH07     | 6.00                 | 0.0                            | 1004                           | 0.0                        | 0.0                          |           |
| BH08     | 6.00                 | 0.0                            | 1004                           | 0.0                        | 0.0                          |           |
| BH09     | 21.00                | 0.0                            | 1004                           | 0.0                        | 0.0                          |           |
| BH10     | 6.00                 | 0.0                            | 1004                           | 0.0                        | 0.0                          |           |
| BH11     | 5.50                 | 0.0                            | 1005                           | 0.0                        | 0.0                          |           |

Remarks



## **APPENDIX 4**

### **Laboratory Test Results - Geotechnical**

## Classification and Strength

| Symbol                          | C - Clay<br>(0 - containing organic matter)<br>Plasticity    | M - Silt<br>L - Low<br>I - Intermediate<br>H - High<br>V - Very High<br>E - Extremely High |
|---------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| I <sub>p</sub>                  | Plasticity Index                                             |                                                                                            |
| %                               | % Retained on 425 µm sieve, shown under I <sub>p</sub> value |                                                                                            |
| w <sub>L</sub>                  | Liquid Limit                                                 |                                                                                            |
| w <sub>p</sub>                  | Plastic Limit                                                |                                                                                            |
| NP                              | Non-Plastic                                                  |                                                                                            |
| NAT                             | Sample tested in natural state                               |                                                                                            |
| w                               | Water Content                                                |                                                                                            |
| p <sub>d</sub>                  | Particle Density                                             |                                                                                            |
| Test                            | <b>Quick undrained triaxial tests</b>                        |                                                                                            |
| SS                              | Single stage - 102mm diameter.                               |                                                                                            |
| S3                              | Single stage - set of 3<br>38mm diameter.                    |                                                                                            |
| MS                              | Multistage - 102mm diameter.                                 |                                                                                            |
| D                               | Drained Test                                                 |                                                                                            |
| HV                              | Hand Vane                                                    |                                                                                            |
| PP                              | Pocket Penetrometer (kg/cm <sup>2</sup> )                    |                                                                                            |
| NST                             | Not suitable for test                                        |                                                                                            |
| γ <sub>b</sub>                  | Bulk Density                                                 |                                                                                            |
| σ <sub>3</sub>                  | Triaxial Cell Pressure                                       |                                                                                            |
| σ <sub>1</sub> - σ <sub>3</sub> | Deviator Stress                                              |                                                                                            |
| ##                              | Excessive Strain                                             |                                                                                            |
| c <sub>u</sub>                  | Undrained Cohesion                                           |                                                                                            |
| c                               | Cohesion Intercept                                           |                                                                                            |
| φ                               | Angle of Shearing Resistance                                 |                                                                                            |
| Linear Shrink                   | Linear Shrinkage                                             |                                                                                            |

## Consolidation

|                  |                                       |
|------------------|---------------------------------------|
| m <sub>v</sub>   | Coefficient of Volume Compressibility |
| c <sub>v50</sub> | Coefficient of Consolidation - Log t  |
| c <sub>v90</sub> | Coefficient of Consolidation - √t     |

## Rock

|    |                      |
|----|----------------------|
| UF | Unacceptable Failure |
|----|----------------------|

## Chemical Analysis

|                 |                                                                                                                                    |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------|
| Acid Soluble    | Total sulphate in specimen, expressed as SO <sub>3</sub> %, value in brackets expressed as SO <sub>4</sub> %                       |
| Water Soluble   | Soluble sulphate in 2:1 water : soil extract, expressed as SO <sub>3</sub> g/l, value in brackets expressed as SO <sub>4</sub> g/l |
| In Water        | Sulphate content of groundwater, expressed as SO <sub>3</sub> g/l, value in brackets expressed as SO <sub>4</sub> g/l              |
| pH              | pH value                                                                                                                           |
| Organic content | Organic content expressed as a percentage of dry weight                                                                            |
| Chloride        | Chloride Ion content expressed as a percentage of dry weight                                                                       |

## MCV, Compaction, CBR

|     |                                                   |
|-----|---------------------------------------------------|
| MCV | Moisture Condition Value at natural water content |
| MCC | Moisture Condition Calibration                    |
| CCV | Chalk Crushing Value                              |

### Compaction

|      |                         |
|------|-------------------------|
| Type | 2.5 = BS 2.5 kg Rammer  |
|      | 4.5 = BS 4.5 kg Rammer  |
|      | V = BS Vibrating Hammer |

γ<sub>b</sub> Bulk Density

γ<sub>d</sub> Dry Density

### CBR California Bearing Ratio

|      |                                                           |
|------|-----------------------------------------------------------|
| Type | 2.5 = Test on Specimen Recompacted using BS 2.5 kg Rammer |
|      | 4.5 = As above but using BS 4.5 kg Rammer                 |
|      | V = As above but using BS Vibrating Hammer                |
|      | M = Test on open drive mould specimen cut in field        |
|      | S = Soaked Specimen                                       |

Top CBR at top of mould

Bottom CBR at bottom of mould

ND None Detected

\* In the Sample Description denotes a laboratory only description

Tests performed in accordance with  
**BS 1377: Parts 1-9:1990 incorporating amendments where appropriate and BS EN ISO 17892: Parts 1-2:2014; Part 3:2015; Part 4:2016; Part 5:2017**

## LABORATORY RESULTS - Classification and Strength

**Project** KRONOSPAN STORAGE BUILDING

**Project No:** PN173691

| Sample                                                                                      |                                   |      |               |                                                                                                                   | Classification                                                                                                                                                                                                                                              |                               |                     |                     |                             | Strength |                                                          |                                     |                                                     |                                     |                                                                                                                                        |  |
|---------------------------------------------------------------------------------------------|-----------------------------------|------|---------------|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------|---------------------|-----------------------------|----------|----------------------------------------------------------|-------------------------------------|-----------------------------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--|
| Hole                                                                                        | Depth<br>(Specimen<br>Depth)<br>m | Type | Sample<br>Ref | Description                                                                                                       | Symbol                                                                                                                                                                                                                                                      | I <sub>p</sub><br>(>425)<br>% | w <sub>L</sub><br>% | w <sub>p</sub><br>% | w<br>(p <sub>d</sub> )<br>% | Test     | γ <sub>b</sub><br>(γ <sub>d</sub> )<br>Mg/m <sup>3</sup> | σ <sub>3</sub><br>kN/m <sup>2</sup> | σ <sub>1</sub> -σ <sub>3</sub><br>kN/m <sup>2</sup> | c <sub>u</sub><br>kN/m <sup>2</sup> | c <sub>Avg</sub><br>kN/m <sup>2</sup>                                                                                                  |  |
| BH01                                                                                        | 7.05-<br>7.50<br>(7.05)           | UT   | N69883        | Soft thinly laminated grey CLAY.                                                                                  |                                                                                                                                                                                                                                                             |                               |                     |                     | 29.5<br>29.5<br>29.5        | MS       | 2.02<br>2.02<br>2.02                                     | 100<br>200<br>400                   | 94<br>94<br>94                                      | 47<br>47<br>47                      | 47                                                                                                                                     |  |
| BH01                                                                                        | 7.50<br>(7.50)                    | D    | N69884        | Soft grey clayey SILT.                                                                                            | MI                                                                                                                                                                                                                                                          | 11<br>(NAT)                   | 36                  | 25                  | 34.2                        |          |                                                          |                                     |                                                     |                                     |                                                                                                                                        |  |
| BH01                                                                                        | 17.00<br>(17.00)                  | D    | N69896        | Very stiff brown slightly sandy slightly<br>gravelly CLAY.                                                        | CL                                                                                                                                                                                                                                                          | 11<br>(32%)                   | 24                  | 13                  | 11.2                        |          |                                                          |                                     |                                                     |                                     |                                                                                                                                        |  |
| BH01                                                                                        | 19.05-<br>19.50<br>(19.05)        | UT   | N69898        | Very stiff brown slightly sandy slightly<br>gravelly CLAY.                                                        |                                                                                                                                                                                                                                                             |                               |                     |                     | 12.9<br>12.9<br>12.9        | MS       | 2.32<br>2.32<br>2.32                                     | 200<br>400<br>800                   | 809<br>840<br>903                                   | 404<br>420<br>452                   | 425                                                                                                                                    |  |
| BH02                                                                                        | 2.00-<br>2.45<br>(2.00)           | UT   | N69875        | Firm to stiff greyish brown slightly<br>sandy gravelly SILT.                                                      |                                                                                                                                                                                                                                                             | (77%)                         | 31                  | NP                  | 9.7                         |          |                                                          |                                     |                                                     |                                     |                                                                                                                                        |  |
| BH02                                                                                        | 3.00-<br>3.45<br>(3.00)           | D    | N70182        | Firm greyish brown silty CLAY.                                                                                    | CI                                                                                                                                                                                                                                                          | 22<br>(NAT)                   | 46                  | 24                  | 27.8                        |          |                                                          |                                     |                                                     |                                     |                                                                                                                                        |  |
| BH02                                                                                        | 5.00-<br>5.45<br>(5.00)           | UT   | N69881        | Soft thickly laminated grey silty CLAY.                                                                           | CI                                                                                                                                                                                                                                                          | 13<br>(0%)                    | 37                  | 24                  | 34.4<br>34.4<br>34.4        | MS       | 2.08<br>2.08<br>2.08                                     | 100<br>200<br>400                   | 49                                                  | 24<br>##                            | 24                                                                                                                                     |  |
| BH02                                                                                        | 7.00-<br>8.00<br>(7.00)           | B    | N69882        | Grey slightly sandy slightly gravelly silty<br>CLAY.                                                              | CL                                                                                                                                                                                                                                                          | 11<br>(3%)                    | 32                  | 21                  | 31.8                        |          |                                                          |                                     |                                                     |                                     |                                                                                                                                        |  |
| BH02                                                                                        | 12.50-<br>12.80<br>(12.50)        | D    | N69892        | Very stiff brown slightly sandy slightly<br>gravelly CLAY.                                                        | CL                                                                                                                                                                                                                                                          | 14<br>(28%)                   | 28                  | 14                  | 11.1                        |          |                                                          |                                     |                                                     |                                     |                                                                                                                                        |  |
| BH02                                                                                        | 14.00-<br>14.45<br>(14.00)        | UT   | N69893        | Very stiff brown slightly sandy slightly<br>gravelly CLAY.<br>(See Test Remarks Sheet for further<br>information) | CL                                                                                                                                                                                                                                                          | 16<br>(11%)                   | 29                  | 13                  | 9.0<br>9.8<br>9.8<br>9.8    | MS       | 2.22                                                     |                                     | NST                                                 |                                     |                                                                                                                                        |  |
| BH03                                                                                        | 4.00-<br>4.45<br>(4.00)           | UT   | N70141        | Soft grey silty CLAY with laminae of<br>clayey silt.                                                              |                                                                                                                                                                                                                                                             |                               |                     |                     | 30.3                        | SS       | 2.01                                                     | 80                                  | 51                                                  | 25<br>##                            | 25                                                                                                                                     |  |
| BH03                                                                                        | 11.45<br>(11.45)                  | D    | N70163        | Very stiff brown slightly sandy slightly<br>gravelly CLAY.                                                        | CL                                                                                                                                                                                                                                                          | 11<br>(28%)                   | 24                  | 13                  | 11.5                        |          |                                                          |                                     |                                                     |                                     |                                                                                                                                        |  |
| BH03                                                                                        | 16.00<br>(16.00)                  | D    | N70171        | Very stiff brown slightly sandy slightly<br>gravelly CLAY.                                                        | CL                                                                                                                                                                                                                                                          | 13<br>(24%)                   | 26                  | 13                  | 13.1                        |          |                                                          |                                     |                                                     |                                     |                                                                                                                                        |  |
| BH03                                                                                        | 22.70-<br>23.07<br>(22.70)        | D    | N70181        | Very stiff brown slightly gravelly silty<br>CLAY.                                                                 | CI                                                                                                                                                                                                                                                          | 20<br>(15%)                   | 39                  | 19                  | 15.0                        |          |                                                          |                                     |                                                     |                                     |                                                                                                                                        |  |
| BH04                                                                                        | 3.00-<br>3.45<br>(3.00)           | UT   | N69876        | Soft to firm thinly laminated brown<br>CLAY with laminae of silt.                                                 | CI                                                                                                                                                                                                                                                          | 17<br>(NAT)                   | 40                  | 23                  | 28.6<br>28.6<br>28.6        | MS       | 2.00<br>2.00<br>2.00                                     | 50                                  | 47<br>47<br>49                                      | 24<br>23<br>25                      | 24                                                                                                                                     |  |
|                                                                                             |                                   |      |               |                                                                                                                   |                                                                                                                                                                                                                                                             |                               |                     |                     |                             |          |                                                          |                                     |                                                     |                                     |                                                                                                                                        |  |
| Remarks  |                                   |      |               |                                                                                                                   | NST - Not suitable for Test<br>Water Content Test/Bulk Density Test/Particle Density Test performed in accordance with<br>BS EN ISO 17892-1:2014/BS EN ISO 17892-2:2014/BS EN ISO 17892-3:2015<br>All other Tests performed in accordance with BS1377: 1990 |                               |                     |                     |                             |          |                                                          |                                     |                                                     |                                     | <br>geotechnical and geoenvironmental specialists |  |

# LABORATORY RESULTS - Classification and Strength

Project KRONOSPAN STORAGE BUILDING

Project No: PN173691

| Sample |                                   |      |               |                                                                       | Classification |                          |            |            |                       | Strength |                                                   |                                 |                                            |                            |                                |
|--------|-----------------------------------|------|---------------|-----------------------------------------------------------------------|----------------|--------------------------|------------|------------|-----------------------|----------|---------------------------------------------------|---------------------------------|--------------------------------------------|----------------------------|--------------------------------|
| Hole   | Depth<br>(Specimen<br>Depth)<br>m | Type | Sample<br>Ref | Description                                                           | Symbol         | $I_p$<br>( $>425$ )<br>% | $w_L$<br>% | $w_p$<br>% | $w$<br>( $p_d$ )<br>% | Test     | $\gamma_b$<br>( $\gamma_d$ )<br>Mg/m <sup>3</sup> | $\sigma_3$<br>kN/m <sup>2</sup> | $\sigma_1 - \sigma_3$<br>kN/m <sup>2</sup> | $c_u$<br>kN/m <sup>2</sup> | $c_{Avg}$<br>kN/m <sup>2</sup> |
| BH04   | 4.80<br>(4.80)                    | D    | N69880        | Soft grey CLAY.                                                       | CI             | 20<br>(NAT)              | 43         | 23         | 32.0                  |          |                                                   |                                 |                                            |                            |                                |
| BH04   | 11.50<br>(11.50)                  | D    | N69890        | Very stiff brown slightly sandy slightly<br>gravelly CLAY.            | CL             | 14<br>(16%)              | 27         | 13         | 11.9                  |          |                                                   |                                 |                                            |                            |                                |
| BH04   | 14.50<br>(14.50)                  | D    | N69895        | Very stiff brown slightly sandy slightly<br>gravelly CLAY.            | CL             | 13<br>(19%)              | 27         | 14         | 8.5                   |          |                                                   |                                 |                                            |                            |                                |
| BH05   | 4.00-<br>4.45<br>(4.00)           | UT   | N70142        | Soft thickly laminated grey silty CLAY.                               |                |                          |            |            | 28.0                  | SS       | 2.05                                              | 80                              | 137                                        | 69                         | 69                             |
| BH05   | 4.50<br>(4.50)                    | D    | N70146        | Soft grey clayey SILT.                                                |                | (NAT)                    | 32         | NP         | 33.2                  |          |                                                   |                                 |                                            |                            |                                |
| BH05   | 11.00-<br>11.40<br>(11.00)        | B    | N70162        | Very stiff brown slightly sandy slightly<br>gravelly CLAY.            | CL             | 12<br>(20%)              | 26         | 14         | 9.9                   |          |                                                   |                                 |                                            |                            |                                |
| BH06   | 4.45-<br>4.90<br>(4.45)           | UT   | N70145        | Very soft to soft grey silty CLAY.                                    |                |                          |            |            | 31.6                  | SS       | 1.99                                              | 90                              | 40                                         | 20                         | 20                             |
| BH06   | 11.80<br>(11.80)                  | D    | N70164        | Very stiff brown slightly sandy slightly<br>gravelly CLAY.            | CL             | 13<br>(39%)              | 26         | 13         | 9.5                   |          |                                                   |                                 |                                            |                            |                                |
| BH07   | 3.00-<br>3.45<br>(3.00)           | UT   | N69877        | Soft thinly laminated greyish brown<br>slightly gravelly clayey SILT. |                | (6%)                     | 29         | NP         | 27.2<br>27.2<br>27.2  | MS       | 2.02<br>2.02<br>2.02                              | 50<br>100<br>200                | 173<br>176<br>178                          | 87<br>88<br>89<br>##       | 88                             |
| BH07   | 11.00<br>(11.00)                  | B    | N69889        | Very stiff brown slightly sandy slightly<br>gravelly CLAY.            | CL             | 14<br>(17%)              | 26         | 12         | 8.8                   |          |                                                   |                                 |                                            |                            |                                |
| BH07   | 14.00<br>(14.00)                  | B    | N69894        | Very stiff brown slightly sandy slightly<br>gravelly CLAY.            | CL             | 15<br>(12%)              | 30         | 15         | 11.4                  |          |                                                   |                                 |                                            |                            |                                |
| BH07   | 17.00<br>(17.00)                  | B    | N69897        | Very stiff brown slightly sandy slightly<br>gravelly CLAY.            | CL             | 11<br>(16%)              | 23         | 12         | 9.1                   |          |                                                   |                                 |                                            |                            |                                |
| BH07   | 20.00<br>(20.00)                  | D    | N69899        | Very stiff brown slightly sandy slightly<br>gravelly CLAY.            | CL             | 14<br>(12%)              | 28         | 14         | 16.9                  |          |                                                   |                                 |                                            |                            |                                |
| BH08   | 3.30<br>(3.30)                    | D    | N70140        | Soft brown gravelly clayey SILT.                                      |                | (40%)                    | 26         | NP         | 18.5                  |          |                                                   |                                 |                                            |                            |                                |
| BH09   | 2.80<br>(2.80)                    | D    | N70138        | Soft to firm brown slightly gravelly silty<br>CLAY.                   | CI             | 16<br>(24%)              | 38         | 22         | 28.2                  |          |                                                   |                                 |                                            |                            |                                |
| BH09   | 6.50-<br>6.95<br>(6.50)           | UT   | N70150        | Firm laminated grey slightly gravelly<br>silty CLAY.                  |                |                          |            |            | 26.9                  | SS       | 2.02                                              | 130                             | 208                                        | 104<br>##                  | 104                            |
| BH09   | 12.50-<br>12.95<br>(12.50)        | UT   | N70167        | Soft laminated grey slightly gravelly<br>silty CLAY.                  |                |                          |            |            | 33.7                  | SS       | 1.99                                              | 250                             | 41                                         | 21<br>##                   | 21                             |
|        |                                   |      |               |                                                                       |                |                          |            |            |                       |          |                                                   |                                 |                                            |                            |                                |

**Remarks**  NST - Not suitable for Test  
 Water Content Test/Bulk Density Test/Particle Density Test performed in accordance with  
 BS EN ISO 17892-1:2014/BS EN ISO 17892-2:2014/BS EN ISO 17892-3:2015  
 All other Tests performed in accordance with BS1377: 1990

**GEOTECHNICS**  
 geotechnical and geoenvironmental specialists

## LABORATORY RESULTS - Classification and Strength

**Project** KRONOSPAN STORAGE BUILDING

**Project No:** PN173691

| Sample |                                   |      |               |                                                                                    | Classification |                          |            |            |                       | Strength |                                                                |                                 |                                            |                            |                                |
|--------|-----------------------------------|------|---------------|------------------------------------------------------------------------------------|----------------|--------------------------|------------|------------|-----------------------|----------|----------------------------------------------------------------|---------------------------------|--------------------------------------------|----------------------------|--------------------------------|
| Hole   | Depth<br>(Specimen<br>Depth)<br>m | Type | Sample<br>Ref | Description                                                                        | Symbol         | $I_p$<br>( $>425$ )<br>% | $w_L$<br>% | $w_p$<br>% | $w$<br>( $p_d$ )<br>% | Test     | $\gamma_b$<br>( $\gamma_d$ ) <sup>3</sup><br>Mg/m <sup>3</sup> | $\sigma_3$<br>kN/m <sup>2</sup> | $\sigma_1 - \sigma_3$<br>kN/m <sup>2</sup> | $c_u$<br>kN/m <sup>2</sup> | $c_{Avg}$<br>kN/m <sup>2</sup> |
| BH09   | 21.50-<br>21.95<br>(21.50)        | UT   | N70178        | Stiff laminated brown CLAY.<br>(See Test Remarks Sheet for further<br>information) | Cl             | 24<br>(6%)               | 41         | 17         | 20.3                  | SS       | 2.05                                                           |                                 | NST                                        |                            |                                |
| BH10   | 3.00-<br>3.45<br>(3.00)           | D    | N70139        | Light greyish brown slightly sandy<br>gravelly SILT.                               |                | (72%)                    | 29         | NP         | 14.6                  |          |                                                                |                                 |                                            |                            |                                |
| BH10   | 6.50-<br>6.95<br>(6.50)           | UT   | N70151        | Firm dark grey silty CLAY.                                                         |                |                          |            |            | 19.5                  | SS       | 2.19                                                           | 130                             | 292                                        | 146<br>##                  | 146                            |
| BH10   | 12.50-<br>12.95<br>(12.50)        | UT   | N70168        | Soft dark grey silty CLAY.                                                         |                |                          |            |            | 31.1                  | SS       | 2.04                                                           | 250                             | 65                                         | 32<br>##                   | 32                             |
| BH11   | 6.00<br>(6.00)                    | D    | N70227        | Soft to firm grey clayey SILT.                                                     |                | (2%)                     | 31         | NP         | 26.0                  |          |                                                                |                                 |                                            |                            |                                |
| BH11   | 9.00-<br>9.45<br>(9.00)           | UT   | N70159        | Soft laminated grey silty CLAY.                                                    |                |                          |            |            | 28.0                  | SS       | 2.04                                                           | 180                             | 57                                         | 29                         | 29                             |
| BH11   | 12.00-<br>12.45<br>(12.00)        | UT   | N70165        | Soft to firm laminated grey silty CLAY.                                            |                |                          |            |            | 31.2                  | SS       | 2.02                                                           | 240                             | 101                                        | 51<br>##                   | 51                             |
|        |                                   |      |               |                                                                                    |                |                          |            |            |                       |          |                                                                |                                 |                                            |                            |                                |

Remarks

AGS

NST - Not suitable for Test

Water Content Test/Bulk Density Test/Particle Density Test performed in accordance with

BS EN ISO 17892-1:2014/BS EN ISO 17892-2:2014/BS EN ISO 17892-3:2015

All other Tests performed in accordance with BS1377: 1990

GEOTECHNICS

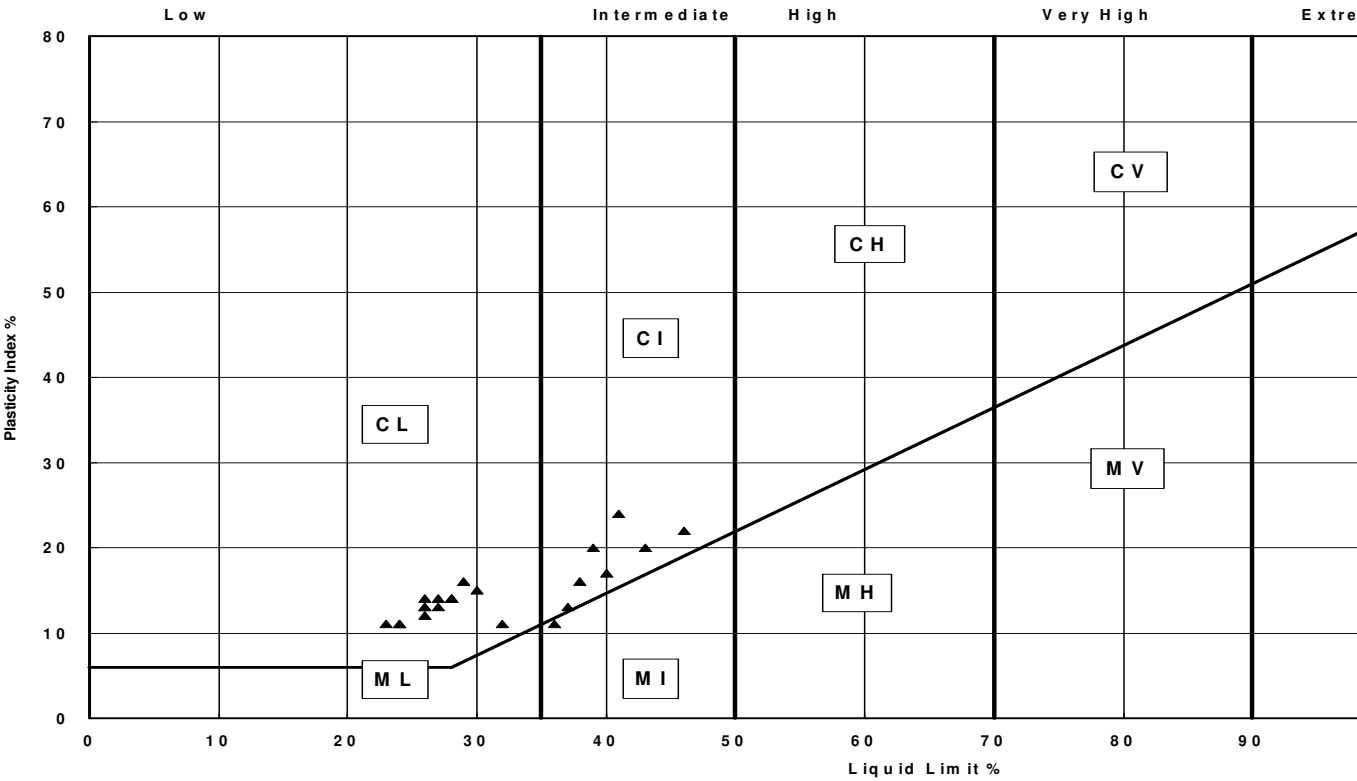
geotechnical and geoenvironmental specialists

LABORATORY RESULTS - Classification Chart

Project: KRONOSPAN STORAGE BUILDING

Project No: PN173691

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT  
for all items tested



| Soil Type | Plasticity Characteristics |
|-----------|----------------------------|
| C Clay    | L Low                      |
|           | I Intermediate             |
| M Silt    | H High                     |
|           | V Very High                |
|           | E Extremely High           |

Table of Soil Types and Plasticity Characteristics from BS 5930 : 1999

Remarks

06/10/2017

LABORATORY RESULTS - Particle Size Distribution

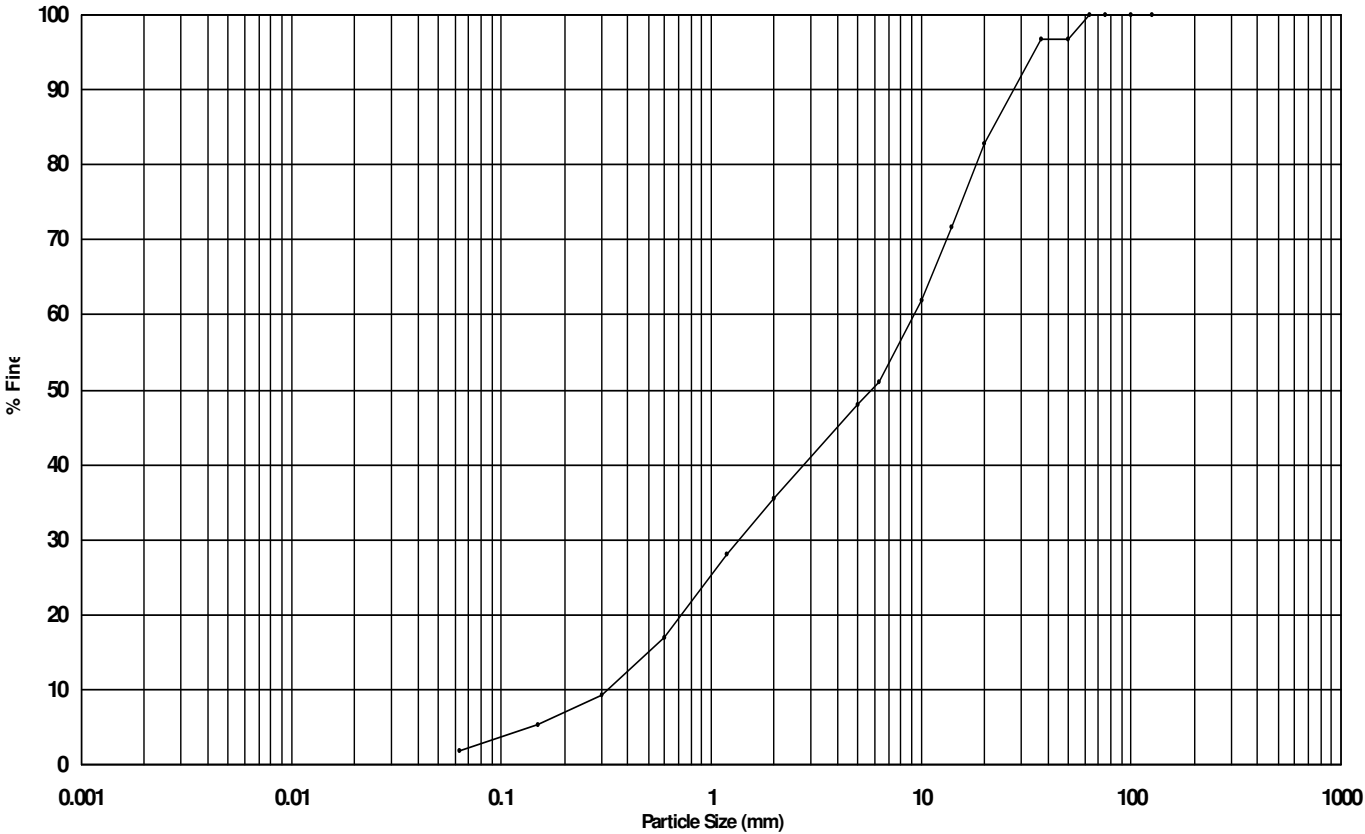
Project: KRONOSPAN STORAGE BUILDING

Project No: PN173691

Hole BH01  
Sample Depth 1.20-1.65m  
Sample Type B  
Sample Ref N69872

Sample Description

Grey very sandy slightly clayey fine to coarse GRAVEL.



| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification        | % of each |
|-----------------------|-----------|
| SILT (including CLAY) | 2         |
| SAND                  | 33        |
| GRAVEL                | 65        |
| COBBLES               | 0         |
| BOULDERS              | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 100     |
| 63 mm   | 100     |
| 50 mm   | 97      |
| 37.5 mm | 97      |
| 20 mm   | 83      |
| 14 mm   | 72      |
| 10 mm   | 62      |
| 5 mm    | 48      |
| 2 mm    | 35      |
| 1.18 mm | 28      |
| 600 µm  | 17      |
| 300 µm  | 9       |
| 150 µm  | 5       |
| 63 µm   | 2       |

| Size | % Finer |
|------|---------|
|      |         |
|      |         |
|      |         |
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|      |         |
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|      |         |
|      |         |
|      |         |

| Uniformity Coefficient  |  |
|-------------------------|--|
| 28.11                   |  |
| Sieving Method          |  |
| Wet sieve               |  |
| Fine Particle Analysis  |  |
| Method                  |  |
| Pre-treated with        |  |
| % loss on Pre-treatment |  |
| Particle Density        |  |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

05/10/2017

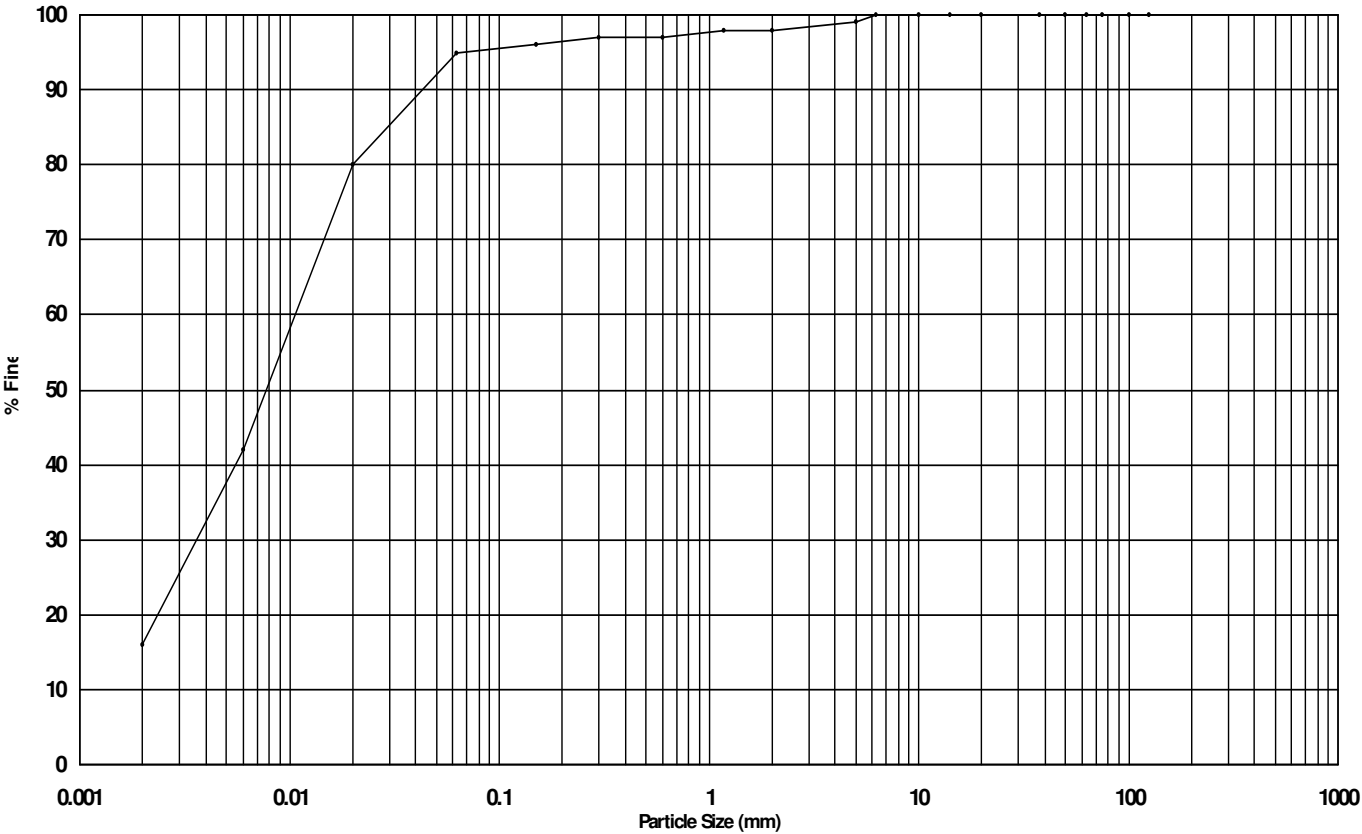
LABORATORY RESULTS - Particle Size Distribution

Project: KRONOSPAN STORAGE BUILDING

Project No: PN173691

Hole BH02  
Sample Depth 7.00-8.00m  
Sample Type B  
Sample Ref N69882

Sample Description  
Grey slightly sandy slightly gravelly silty CLAY.



|                |      |        |        |      |        |        |        |        |        |         |          |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification | % of each |
|----------------|-----------|
| CLAY           | 16        |
| SILT           | 79        |
| SAND           | 3         |
| GRAVEL         | 2         |
| COBBLES        | 0         |
| BOULDERS       | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 100     |
| 63 mm   | 100     |
| 50 mm   | 100     |
| 37.5 mm | 100     |
| 20 mm   | 100     |
| 14 mm   | 100     |
| 10 mm   | 100     |
| 5 mm    | 99      |
| 2 mm    | 98      |
| 1.18 mm | 98      |
| 600 µm  | 97      |
| 300 µm  | 97      |
| 150 µm  | 96      |
| 63 µm   | 95      |

| Size  | % Finer |
|-------|---------|
| 20 µm | 80      |
| 6 µm  | 42      |
| 2 µm  | 16      |

| Uniformity Coefficient  |                   |
|-------------------------|-------------------|
| Not Available           |                   |
| Sieving Method          |                   |
| Wet sieve               |                   |
| Fine Particle Analysis  |                   |
| Method                  | Pipette           |
| Pre-treated with        | Hydrogen Peroxide |
| % loss on Pre-treatment | 0.00              |
| Particle Density        | 2.65 (Assumed)    |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016  
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

05/10/2017

LABORATORY RESULTS - Particle Size Distribution

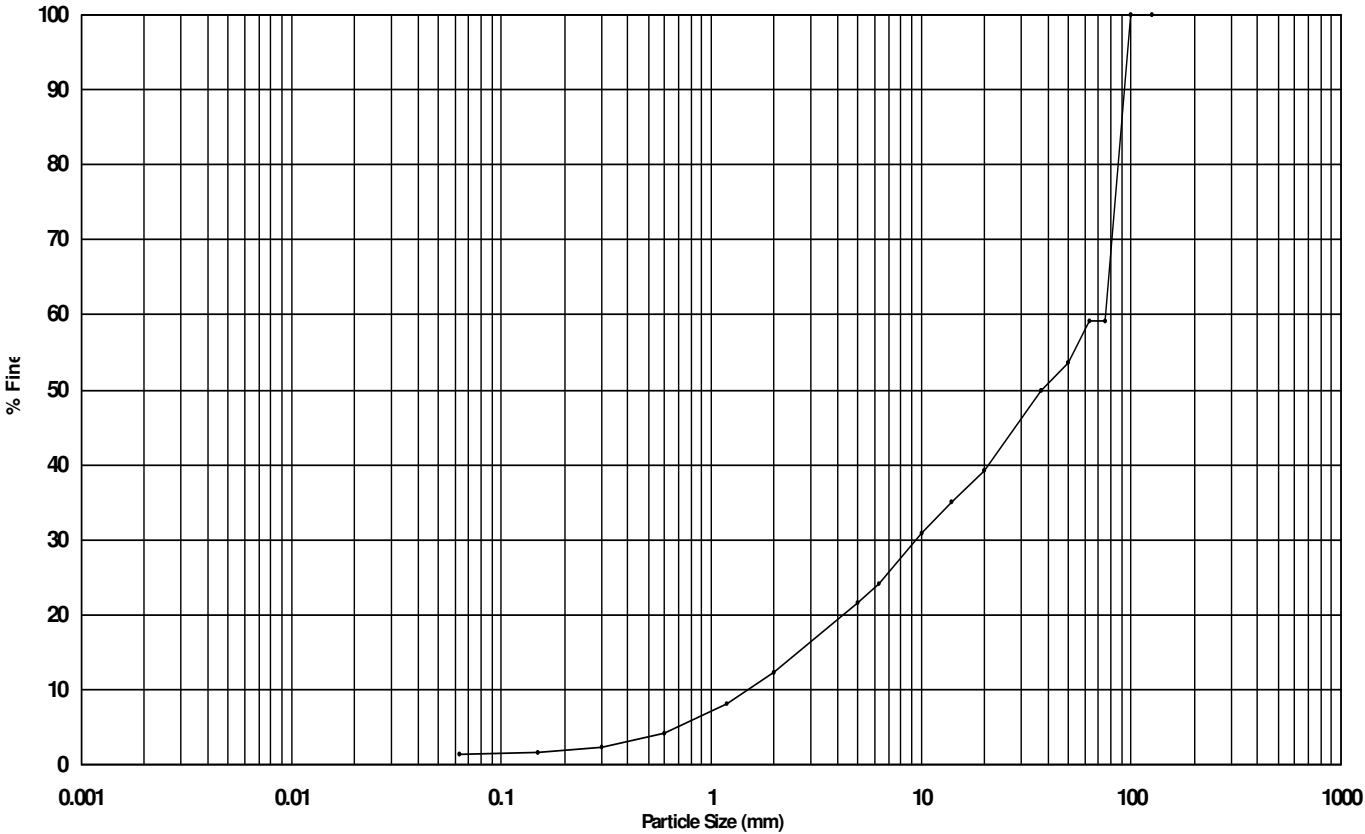
Project: KRONOSPAN STORAGE BUILDING

Project No: PN173691

Hole BH02  
Sample Depth 9.00-9.45m  
Sample Type B  
Sample Ref N69888

Sample Description

Multicoloured sandy slightly clayey fine to coarse GRAVEL with a high cobble content.



| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification        | % of each |
|-----------------------|-----------|
| SILT (including CLAY) | 1         |
| SAND                  | 11        |
| GRAVEL                | 47        |
| COBBLES               | 41        |
| BOULDERS              | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 59      |
| 63 mm   | 59      |
| 50 mm   | 54      |
| 37.5 mm | 50      |
| 20 mm   | 39      |
| 14 mm   | 35      |
| 10 mm   | 31      |
| 5 mm    | 22      |
| 2 mm    | 12      |
| 1.18 mm | 8       |
| 600 µm  | 4       |
| 300 µm  | 2       |
| 150 µm  | 2       |
| 63 µm   | 1       |

| Size | % Finer |
|------|---------|
|      |         |
|      |         |
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| Uniformity Coefficient  |  |
|-------------------------|--|
| 50.27                   |  |
| Sieving Method          |  |
| Wet sieve               |  |
| Fine Particle Analysis  |  |
| Method                  |  |
| Pre-treated with        |  |
| % loss on Pre-treatment |  |
| Particle Density        |  |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

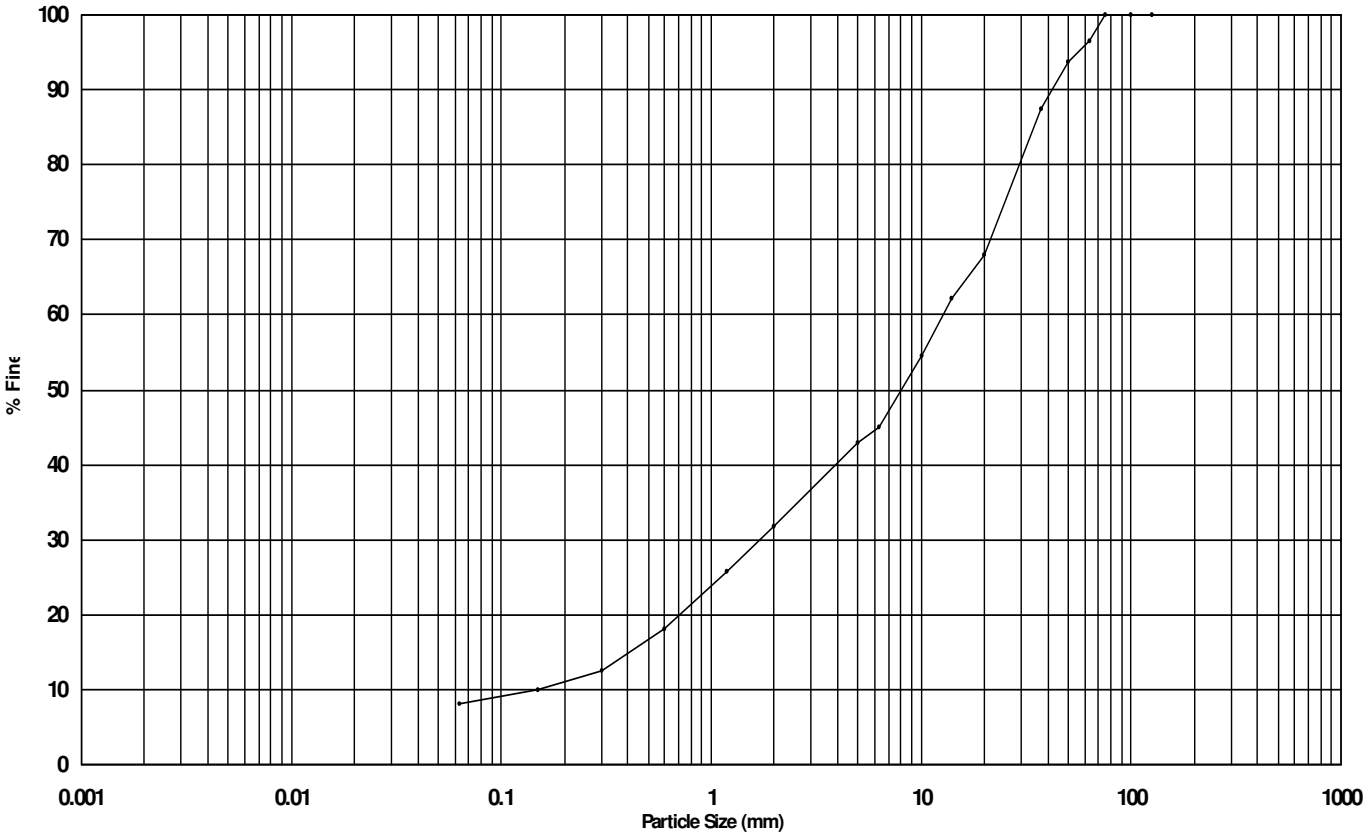
Project: KRONOSPAN STORAGE BUILDING

Project No: PN173691

Hole BH03  
Sample Depth 0.40-0.60m  
Sample Type B  
Sample Ref N70132

Sample Description

POSSIBLE MADE GROUND: Light greyish brown very sandy clayey fine to coarse gravel with a low cobble content and some timber fragments and nails.



| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification        | % of each |
|-----------------------|-----------|
| SILT (including CLAY) | 8         |
| SAND                  | 24        |
| GRAVEL                | 64        |
| COBBLES               | 4         |
| BOULDERS              | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 100     |
| 63 mm   | 96      |
| 50 mm   | 94      |
| 37.5 mm | 87      |
| 20 mm   | 68      |
| 14 mm   | 62      |
| 10 mm   | 55      |
| 5 mm    | 43      |
| 2 mm    | 32      |
| 1.18 mm | 26      |
| 600 µm  | 18      |
| 300 µm  | 13      |
| 150 µm  | 10      |
| 63 µm   | 8       |

| Size | % Finer |
|------|---------|
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| Uniformity Coefficient  |  |
|-------------------------|--|
| 82.06                   |  |
| Sieving Method          |  |
| Wet sieve               |  |
| Fine Particle Analysis  |  |
| Method                  |  |
| Pre-treated with        |  |
| % loss on Pre-treatment |  |
| Particle Density        |  |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

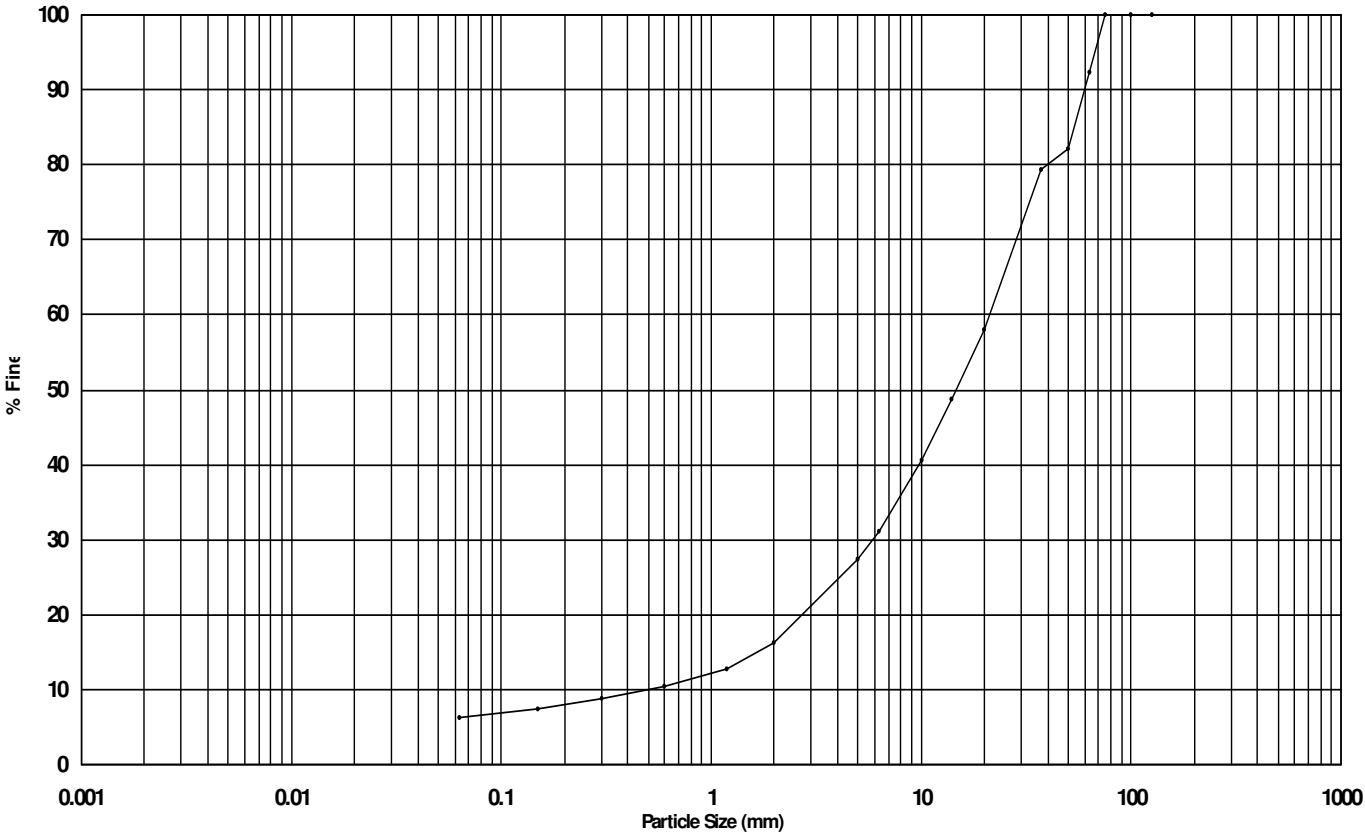
Project: KRONOSPAN STORAGE BUILDING

Hole BH03  
Sample Depth 8.00-8.45m  
Sample Type B  
Sample Ref N70156

Project No: PN173691

Sample Description

Multicoloured sandy clayey fine to coarse GRAVEL with a medium cobble content.



| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification        | % of each |
|-----------------------|-----------|
| SILT (including CLAY) | 6         |
| SAND                  | 10        |
| GRAVEL                | 76        |
| COBBLES               | 8         |
| BOULDERS              | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 100     |
| 63 mm   | 92      |
| 50 mm   | 82      |
| 37.5 mm | 79      |
| 20 mm   | 58      |
| 14 mm   | 49      |
| 10 mm   | 41      |
| 5 mm    | 27      |
| 2 mm    | 16      |
| 1.18 mm | 13      |
| 600 µm  | 10      |
| 300 µm  | 9       |
| 150 µm  | 7       |
| 63 µm   | 6       |

| Size | % Finer |
|------|---------|
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| Uniformity Coefficient  |  |
|-------------------------|--|
| 41.45                   |  |
| Sieving Method          |  |
| Wet sieve               |  |
| Fine Particle Analysis  |  |
| Method                  |  |
| Pre-treated with        |  |
| % loss on Pre-treatment |  |
| Particle Density        |  |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

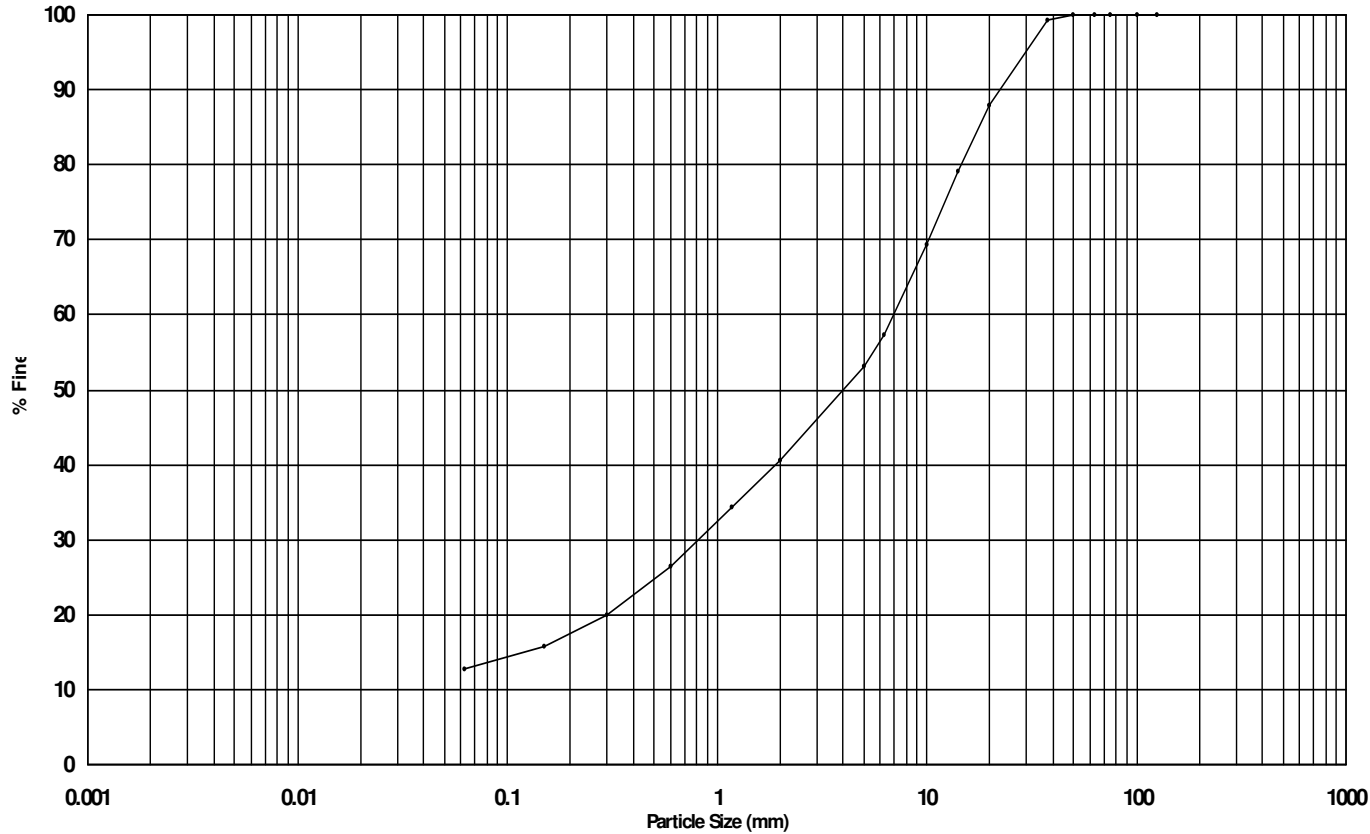
Project: KRONOSPAN STORAGE BUILDING

Hole BH04  
Sample Depth 0.50-1.20m  
Sample Type B  
Sample Ref N69871

Project No: PN173691

Sample Description

MADE GROUND: Brown very sandy silty fine to coarse gravel.



|                |      |        |        |      |        |        |        |        |        |         |          |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification        | % of each |
|-----------------------|-----------|
|                       |           |
| SILT (including CLAY) | 13        |
| SAND                  | 28        |
| GRAVEL                | 59        |
| COBBLES               | 0         |
| BOULDERS              | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 100     |
| 63 mm   | 100     |
| 50 mm   | 100     |
| 37.5 mm | 99      |
| 20 mm   | 88      |
| 14 mm   | 79      |
| 10 mm   | 69      |
| 5 mm    | 53      |
| 2 mm    | 41      |
| 1.18 mm | 34      |
| 600 µm  | 26      |
| 300 µm  | 20      |
| 150 µm  | 16      |
| 63 µm   | 13      |

| Size | % Finer |
|------|---------|
|      |         |

| Uniformity Coefficient  |  |
|-------------------------|--|
| Not Available           |  |
| Sieving Method          |  |
| Wet sieve               |  |
| Fine Particle Analysis  |  |
| Method                  |  |
| Pre-treated with        |  |
| % loss on Pre-treatment |  |
| Particle Density        |  |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

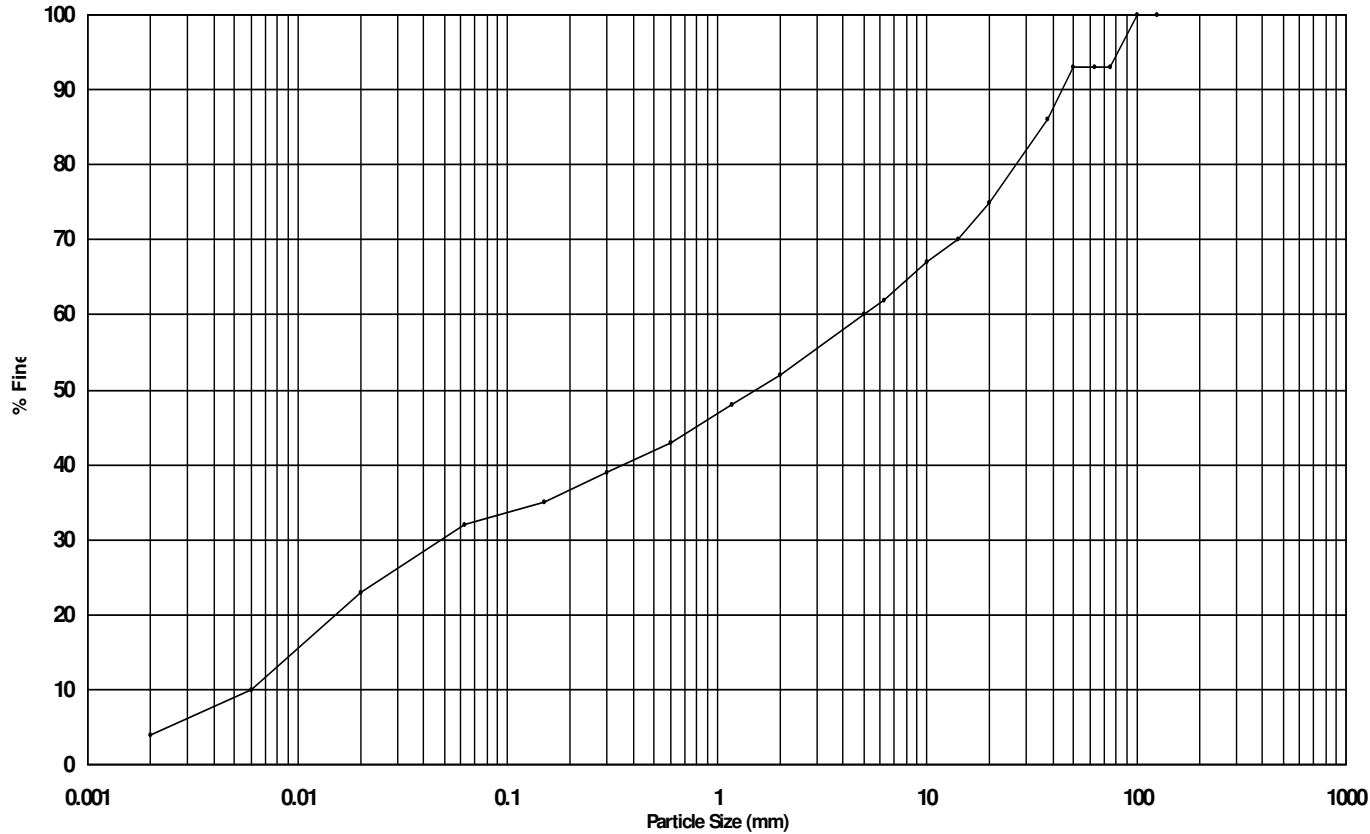
Project: KRONOSPAN STORAGE BUILDING

Hole BH04  
Sample Depth 8.00-8.45m  
Sample Type B  
Sample Ref N69886

Project No: PN173691

Sample Description

Multicoloured very sandy very silty fine to coarse GRAVEL with a medium cobble content.



| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification | % of each |
|----------------|-----------|
| CLAY           | 4         |
| SILT           | 28        |
| SAND           | 20        |
| GRAVEL         | 41        |
| COBBLES        | 7         |
| BOULDERS       | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 93      |
| 63 mm   | 93      |
| 50 mm   | 93      |
| 37.5 mm | 86      |
| 20 mm   | 75      |
| 14 mm   | 70      |
| 10 mm   | 67      |
| 5 mm    | 60      |
| 2 mm    | 52      |
| 1.18 mm | 48      |
| 600 µm  | 43      |
| 300 µm  | 39      |
| 150 µm  | 35      |
| 63 µm   | 32      |

| Size  | % Finer |
|-------|---------|
| 20 µm | 23      |
| 6 µm  | 10      |
| 2 µm  | 4       |

| Uniformity Coefficient  |                   |
|-------------------------|-------------------|
| 854.67                  |                   |
| Sieving Method          |                   |
| Wet sieve               |                   |
| Fine Particle Analysis  |                   |
| Method                  | Pipette           |
| Pre-treated with        | Hydrogen Peroxide |
| % loss on Pre-treatment | 0.32              |
| Particle Density        | 2.65 (Assumed)    |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016  
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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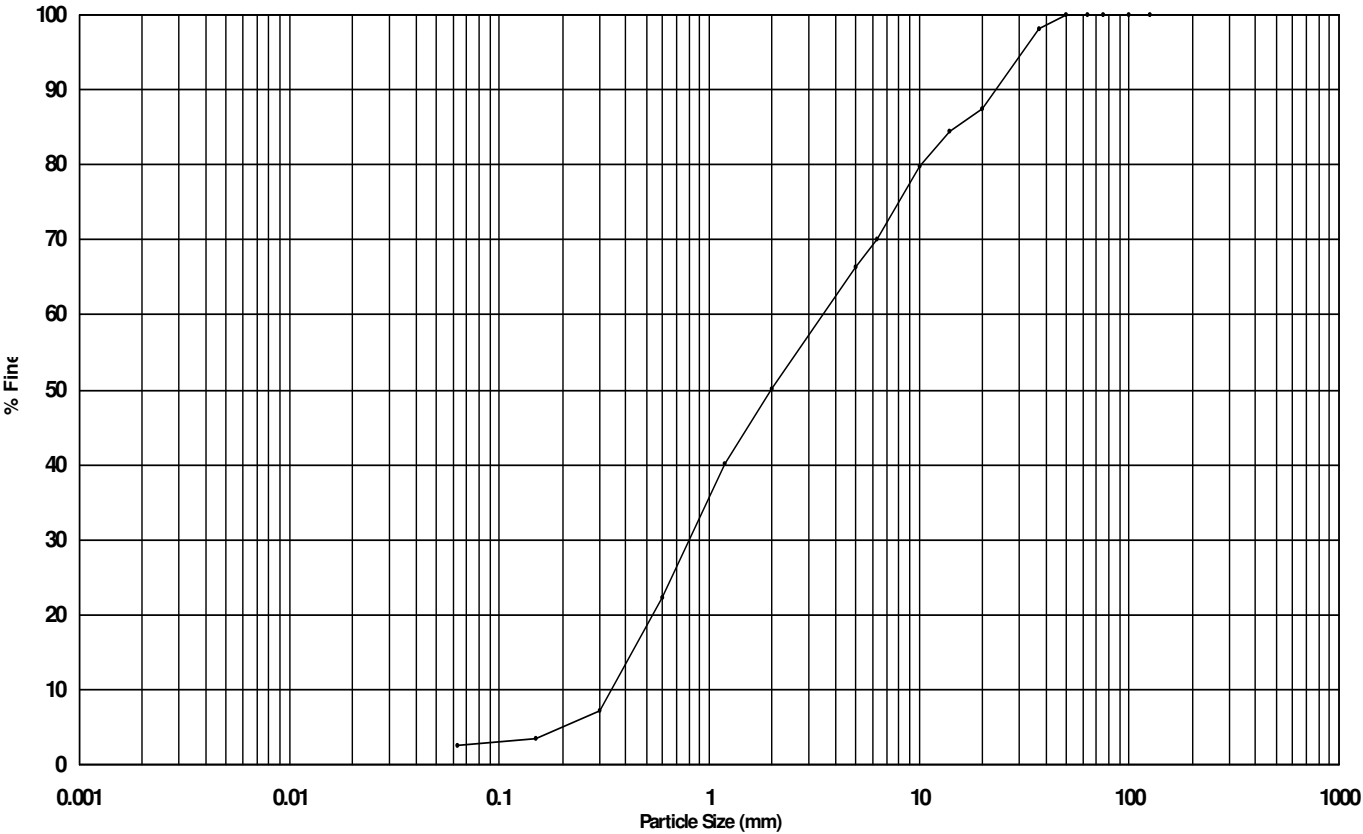
LABORATORY RESULTS - Particle Size Distribution

Project: KRONOSPAN STORAGE BUILDING

Hole BH05  
Sample Depth 8.00-8.45m  
Sample Type B  
Sample Ref N70157

Project No: PN173691

Sample Description  
Multicoloured slightly clayey SAND and GRAVEL.



| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification        | % of each |
|-----------------------|-----------|
| SILT (including CLAY) | 2         |
| SAND                  | 48        |
| GRAVEL                | 50        |
| COBBLES               | 0         |
| BOULDERS              | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 100     |
| 63 mm   | 100     |
| 50 mm   | 100     |
| 37.5 mm | 98      |
| 20 mm   | 88      |
| 14 mm   | 84      |
| 10 mm   | 80      |
| 5 mm    | 66      |
| 2 mm    | 50      |
| 1.18 mm | 40      |
| 600 µm  | 22      |
| 300 µm  | 7       |
| 150 µm  | 4       |
| 63 µm   | 2       |

| Size | % Finer |
|------|---------|
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| Uniformity Coefficient  |  |
|-------------------------|--|
| 10.26                   |  |
| Sieving Method          |  |
| Wet sieve               |  |
| Fine Particle Analysis  |  |
| Method                  |  |
| Pre-treated with        |  |
| % loss on Pre-treatment |  |
| Particle Density        |  |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

05/10/2017

LABORATORY RESULTS - Particle Size Distribution

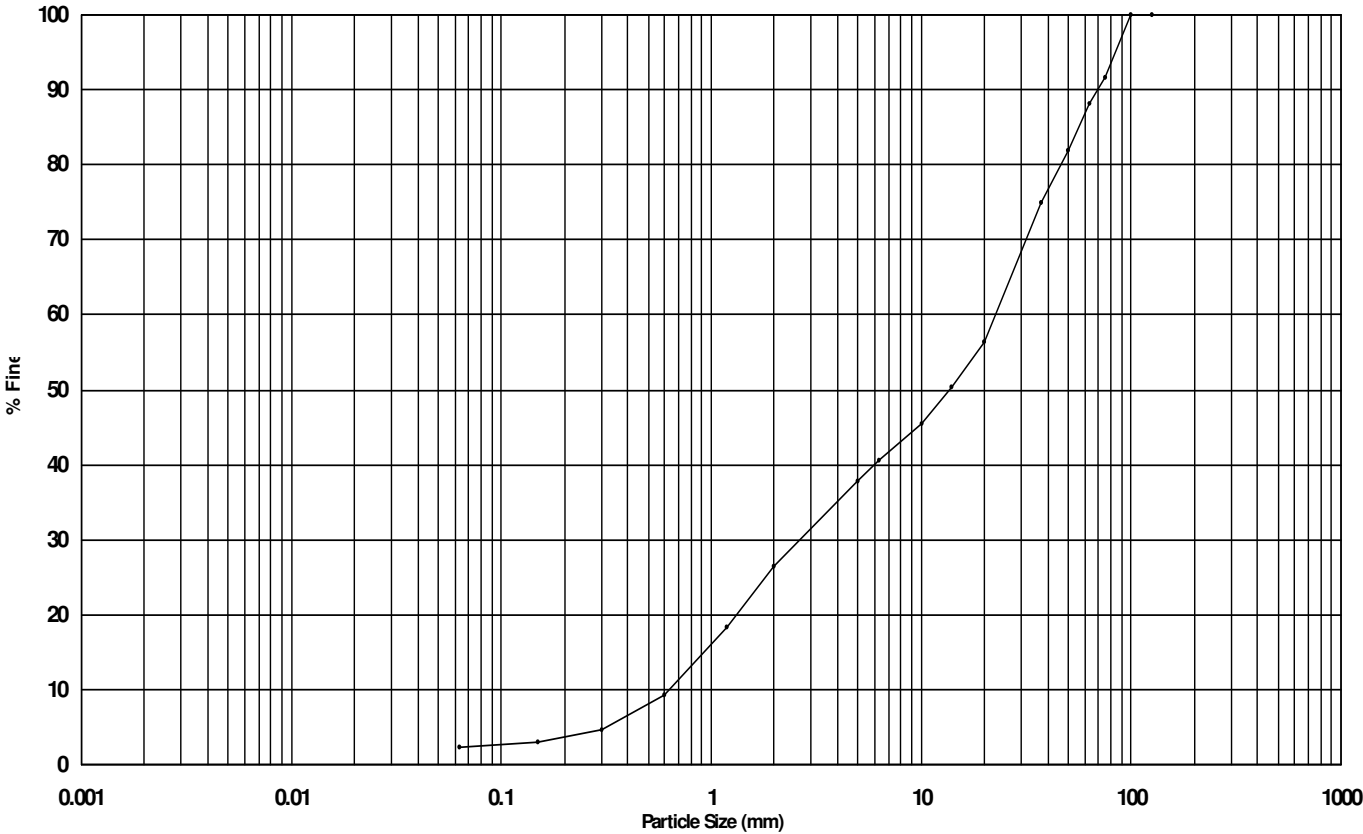
Project: KRONOSPAN STORAGE BUILDING

Project No: PN173691

Hole BH06  
Sample Depth 8.95-9.40m  
Sample Type B  
Sample Ref N70158

Sample Description

Multicoloured very sandy slightly clayey fine to coarse GRAVEL with a medium cobble content.



| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification        | % of each |
|-----------------------|-----------|
| SILT (including CLAY) | 2         |
| SAND                  | 25        |
| GRAVEL                | 61        |
| COBBLES               | 12        |
| BOULDERS              | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 92      |
| 63 mm   | 88      |
| 50 mm   | 82      |
| 37.5 mm | 75      |
| 20 mm   | 56      |
| 14 mm   | 50      |
| 10 mm   | 45      |
| 5 mm    | 38      |
| 2 mm    | 27      |
| 1.18 mm | 18      |
| 600 µm  | 9       |
| 300 µm  | 5       |
| 150 µm  | 3       |
| 63 µm   | 2       |

| Size | % Finer |
|------|---------|
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| Uniformity Coefficient  |  |
|-------------------------|--|
| 35.81                   |  |
| Sieving Method          |  |
| Wet sieve               |  |
| Fine Particle Analysis  |  |
| Method                  |  |
| Pre-treated with        |  |
| % loss on Pre-treatment |  |
| Particle Density        |  |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

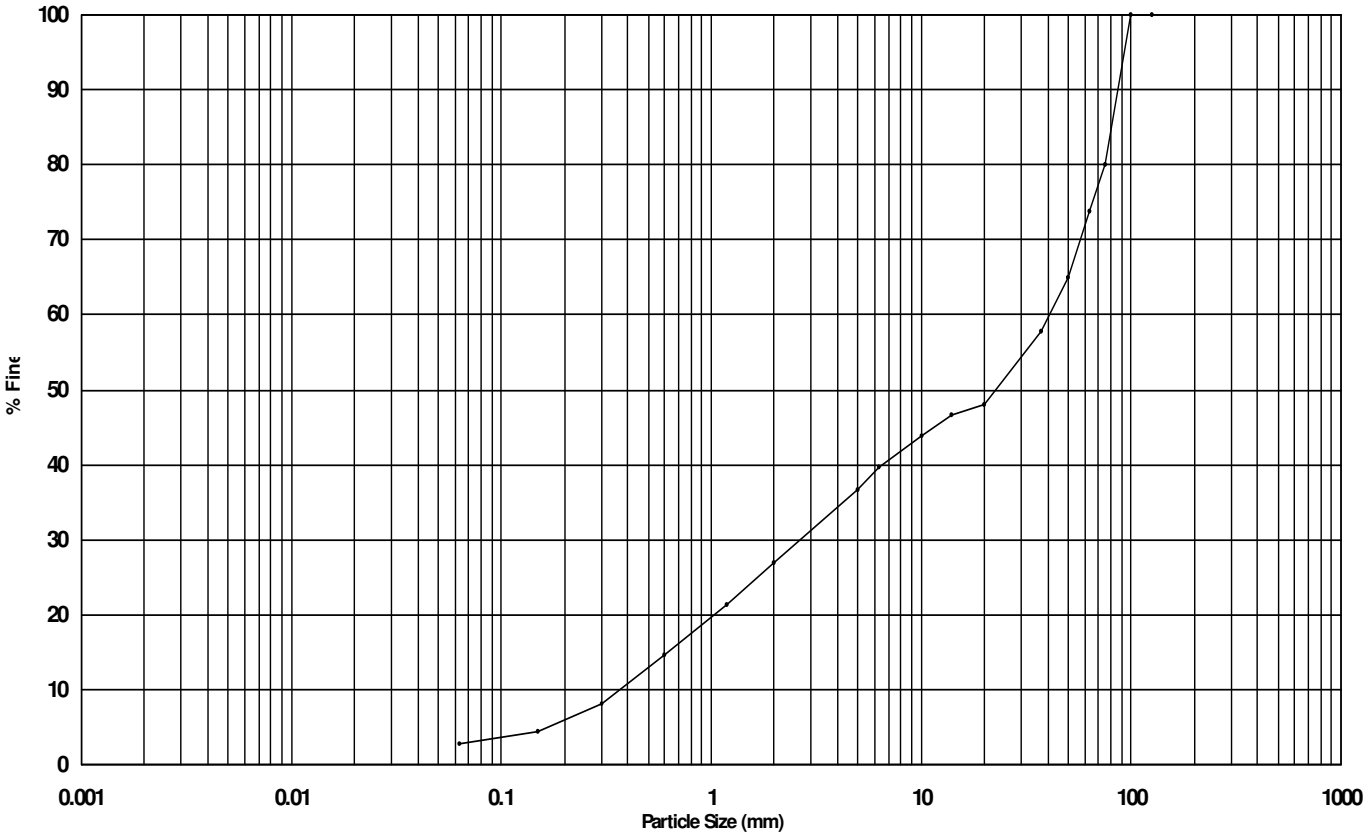
Project: KRONOSPAN STORAGE BUILDING

Project No: PN173691

Hole BH07  
Sample Depth 8.00m  
Sample Type B  
Sample Ref N69887

Sample Description

Multicoloured very sandy slightly clayey fine to coarse GRAVEL with a high cobble content.



| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification        | % of each |
|-----------------------|-----------|
| SILT (including CLAY) | 3         |
| SAND                  | 24        |
| GRAVEL                | 47        |
| COBBLES               | 26        |
| BOULDERS              | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 80      |
| 63 mm   | 74      |
| 50 mm   | 65      |
| 37.5 mm | 58      |
| 20 mm   | 48      |
| 14 mm   | 47      |
| 10 mm   | 44      |
| 5 mm    | 37      |
| 2 mm    | 27      |
| 1.18 mm | 21      |
| 600 µm  | 15      |
| 300 µm  | 8       |
| 150 µm  | 5       |
| 63 µm   | 3       |

| Size | % Finer |
|------|---------|
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| Uniformity Coefficient  |  |
|-------------------------|--|
| 111.12                  |  |
| Sieving Method          |  |
| Wet sieve               |  |
| Fine Particle Analysis  |  |
| Method                  |  |
| Pre-treated with        |  |
| % loss on Pre-treatment |  |
| Particle Density        |  |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

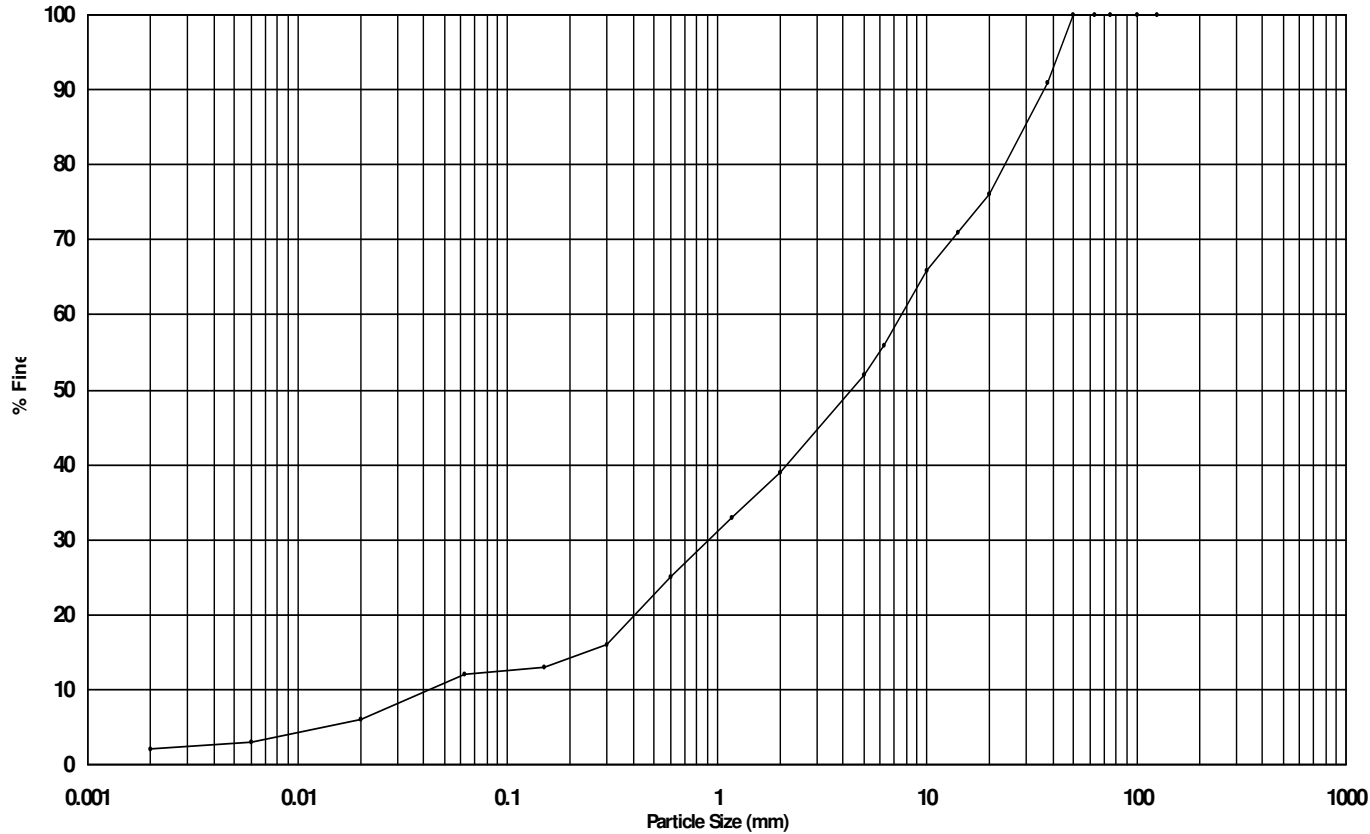
Project: KRONOSPAN STORAGE BUILDING

Project No: PN173691

Hole BH08  
Sample Depth 5.00-5.45m  
Sample Type B  
Sample Ref N70148

Sample Description

Multicoloured very sandy clayey fine to coarse GRAVEL.



|                |      |        |        |      |        |        |        |        |        |         |          |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification | % of each |
|----------------|-----------|
| CLAY           | 2         |
| SILT           | 10        |
| SAND           | 27        |
| GRAVEL         | 61        |
| COBBLES        | 0         |
| BOULDERS       | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 100     |
| 63 mm   | 100     |
| 50 mm   | 100     |
| 37.5 mm | 91      |
| 20 mm   | 76      |
| 14 mm   | 71      |
| 10 mm   | 66      |
| 5 mm    | 52      |
| 2 mm    | 39      |
| 1.18 mm | 33      |
| 600 µm  | 25      |
| 300 µm  | 16      |
| 150 µm  | 13      |
| 63 µm   | 12      |

| Size  | % Finer |
|-------|---------|
| 20 µm | 6       |
| 6 µm  | 3       |
| 2 µm  | 2       |

| Uniformity Coefficient  |                   |
|-------------------------|-------------------|
| 160.84                  |                   |
| Sieving Method          |                   |
| Wet sieve               |                   |
| Fine Particle Analysis  |                   |
| Method                  | Pipette           |
| Pre-treated with        | Hydrogen Peroxide |
| % loss on Pre-treatment | 0.18              |
| Particle Density        | 2.65 (Assumed)    |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016  
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

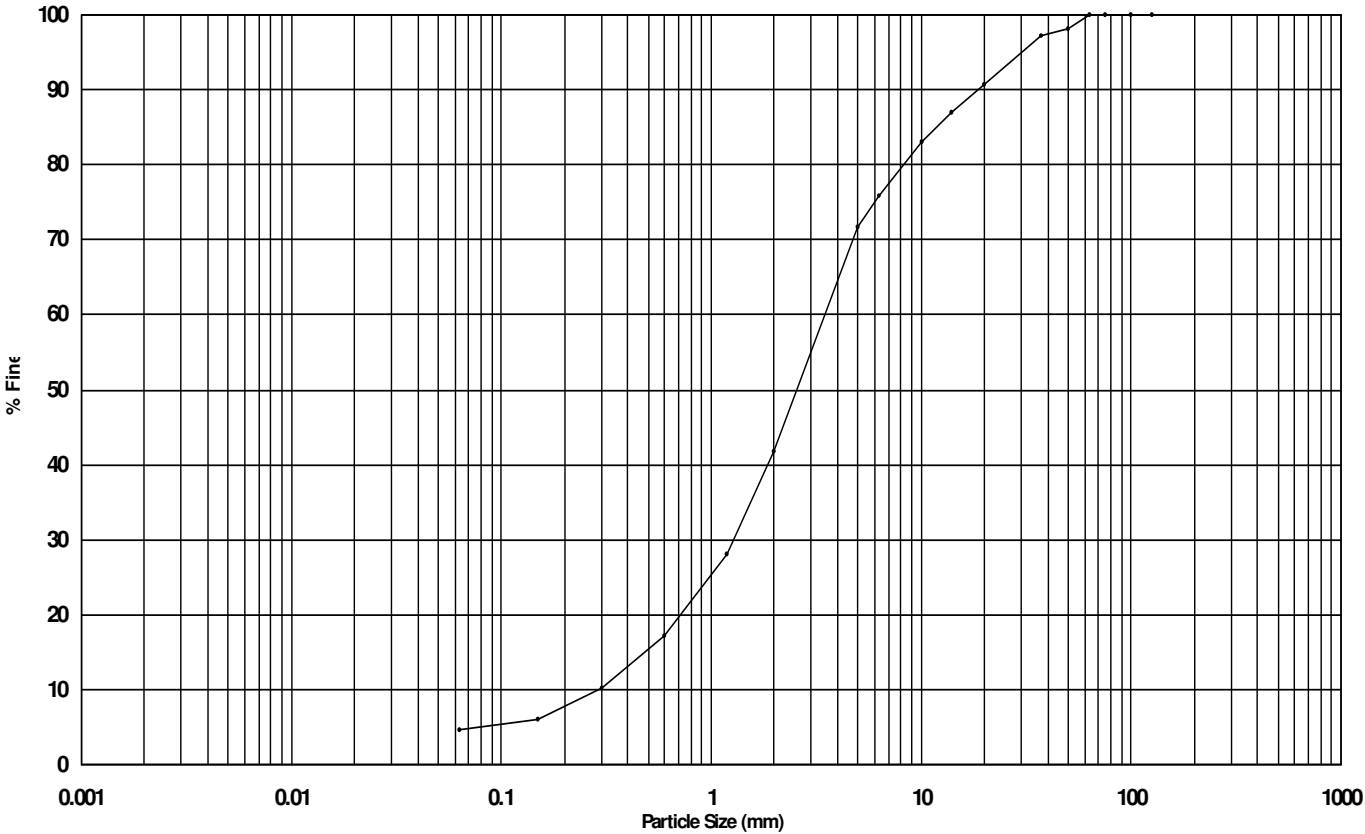
Project: KRONOSPAN STORAGE BUILDING

Project No: PN173691

Hole BH08  
Sample Depth 19.50-19.95m  
Sample Type B  
Sample Ref N70176

Sample Description

Multicoloured very sandy clayey fine to coarse GRAVEL.



| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification        | % of each |
|-----------------------|-----------|
| SILT (including CLAY) | 5         |
| SAND                  | 37        |
| GRAVEL                | 58        |
| COBBLES               | 0         |
| BOULDERS              | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 100     |
| 63 mm   | 100     |
| 50 mm   | 98      |
| 37.5 mm | 97      |
| 20 mm   | 91      |
| 14 mm   | 87      |
| 10 mm   | 83      |
| 5 mm    | 72      |
| 2 mm    | 42      |
| 1.18 mm | 28      |
| 600 µm  | 17      |
| 300 µm  | 10      |
| 150 µm  | 6       |
| 63 µm   | 5       |

| Size | % Finer |
|------|---------|
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| Uniformity Coefficient  |  |
|-------------------------|--|
| 11.86                   |  |
| Sieving Method          |  |
| Wet sieve               |  |
| Fine Particle Analysis  |  |
| Method                  |  |
| Pre-treated with        |  |
| % loss on Pre-treatment |  |
| Particle Density        |  |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

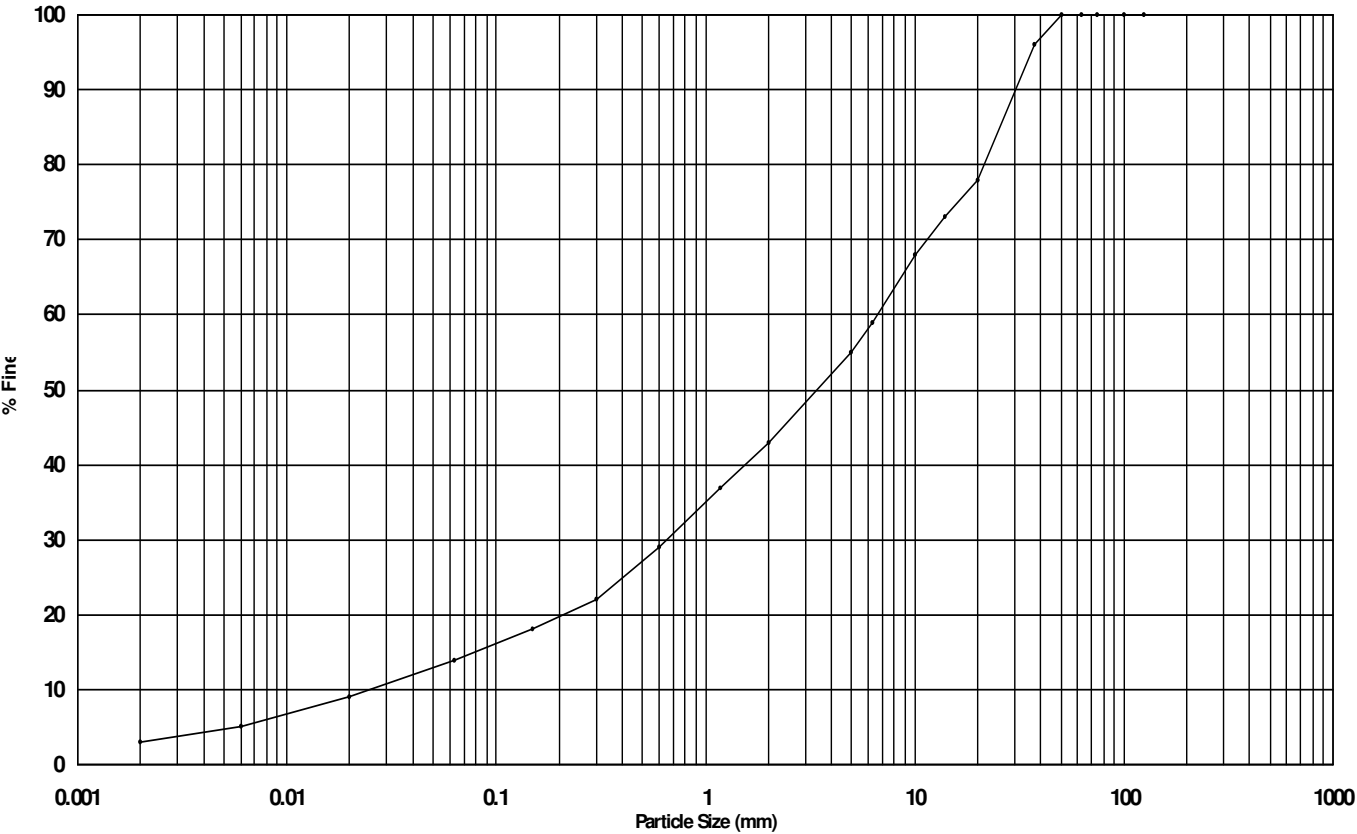
Project: KRONOSPAN STORAGE BUILDING

Project No: PN173691

Hole BH09  
Sample Depth 1.20-1.65m  
Sample Type B  
Sample Ref N70135

Sample Description

POSSIBLE MADE GROUND: Light yellowish brown very sandy clayey fine to coarse gravel.



|                |      |        |        |      |        |        |        |        |        |         |          |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification | % of each |
|----------------|-----------|
| CLAY           | 3         |
| SILT           | 11        |
| SAND           | 29        |
| GRAVEL         | 57        |
| COBBLES        | 0         |
| BOULDERS       | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 100     |
| 63 mm   | 100     |
| 50 mm   | 100     |
| 37.5 mm | 96      |
| 20 mm   | 78      |
| 14 mm   | 73      |
| 10 mm   | 68      |
| 5 mm    | 55      |
| 2 mm    | 43      |
| 1.18 mm | 37      |
| 600 µm  | 29      |
| 300 µm  | 22      |
| 150 µm  | 18      |
| 63 µm   | 14      |

| Size  | % Finer |
|-------|---------|
| 20 µm | 9       |
| 6 µm  | 5       |
| 2 µm  | 3       |

| Uniformity Coefficient  |                   |
|-------------------------|-------------------|
| 244.03                  |                   |
| Sieving Method          |                   |
| Wet sieve               |                   |
| Fine Particle Analysis  |                   |
| Method                  | Pipette           |
| Pre-treated with        | Hydrogen Peroxide |
| % loss on Pre-treatment | 0.02              |
| Particle Density        | 2.65 (Assumed)    |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016  
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

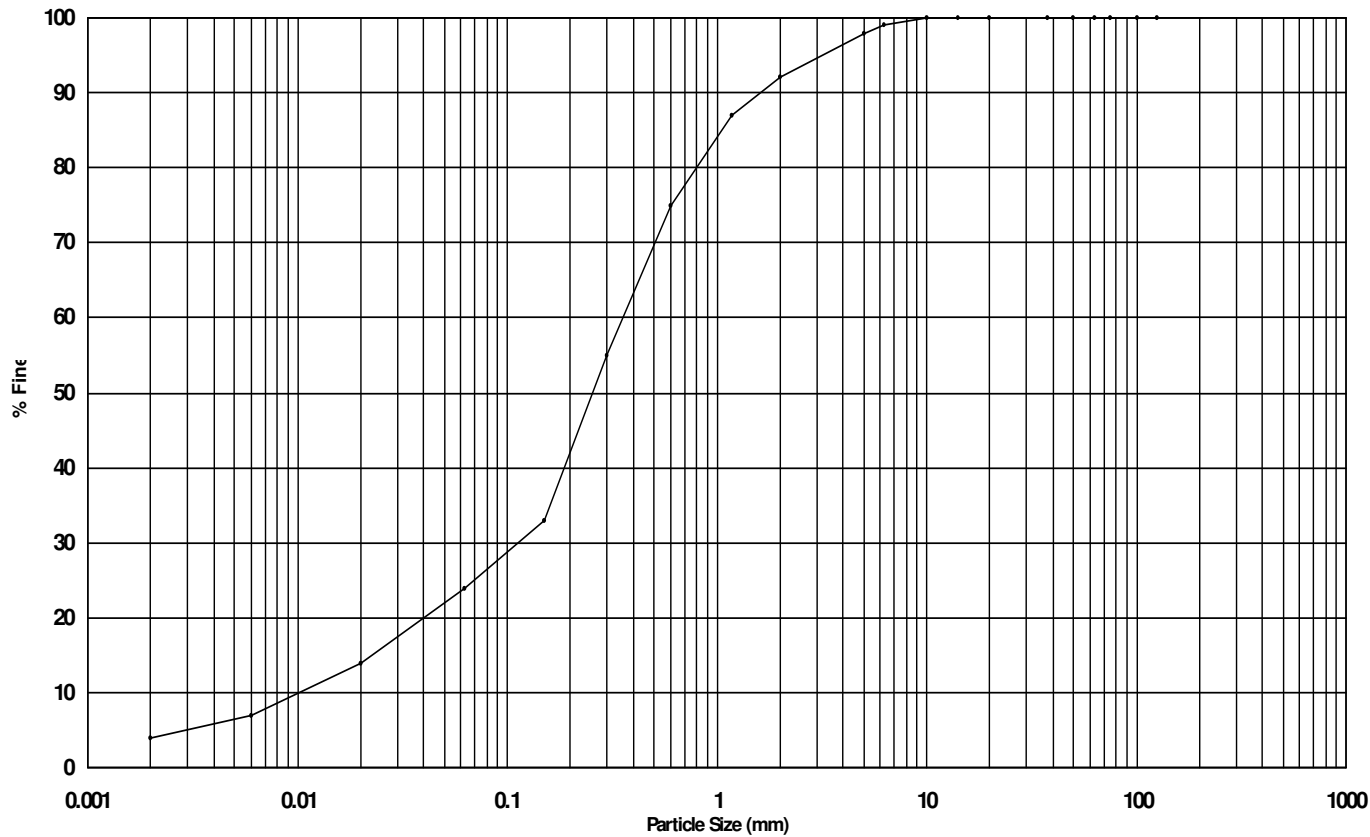
Project: KRONOSPAN STORAGE BUILDING

Hole BH09  
Sample Depth 18.50-18.95m  
Sample Type B  
Sample Ref N70175

Project No: PN173691

Sample Description

Black gravelly very silty fine to coarse SAND.



|                |      |        |        |      |        |        |        |        |        |         |          |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification | % of each |
|----------------|-----------|
| CLAY           | 4         |
| SILT           | 20        |
| SAND           | 68        |
| GRAVEL         | 8         |
| COBBLES        | 0         |
| BOULDERS       | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 100     |
| 63 mm   | 100     |
| 50 mm   | 100     |
| 37.5 mm | 100     |
| 20 mm   | 100     |
| 14 mm   | 100     |
| 10 mm   | 100     |
| 5 mm    | 98      |
| 2 mm    | 92      |
| 1.18 mm | 87      |
| 600 µm  | 75      |
| 300 µm  | 55      |
| 150 µm  | 33      |
| 63 µm   | 24      |

| Size  | % Finer |
|-------|---------|
| 20 µm | 14      |
| 6 µm  | 7       |
| 2 µm  | 4       |

| Uniformity Coefficient  |                   |
|-------------------------|-------------------|
| 34.39                   |                   |
| Sieving Method          |                   |
| Wet sieve               |                   |
| Fine Particle Analysis  |                   |
| Method                  | Pipette           |
| Pre-treated with        | Hydrogen Peroxide |
| % loss on Pre-treatment | 0.03              |
| Particle Density        | 2.65 (Assumed)    |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016  
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

05/10/2017

LABORATORY RESULTS - Particle Size Distribution

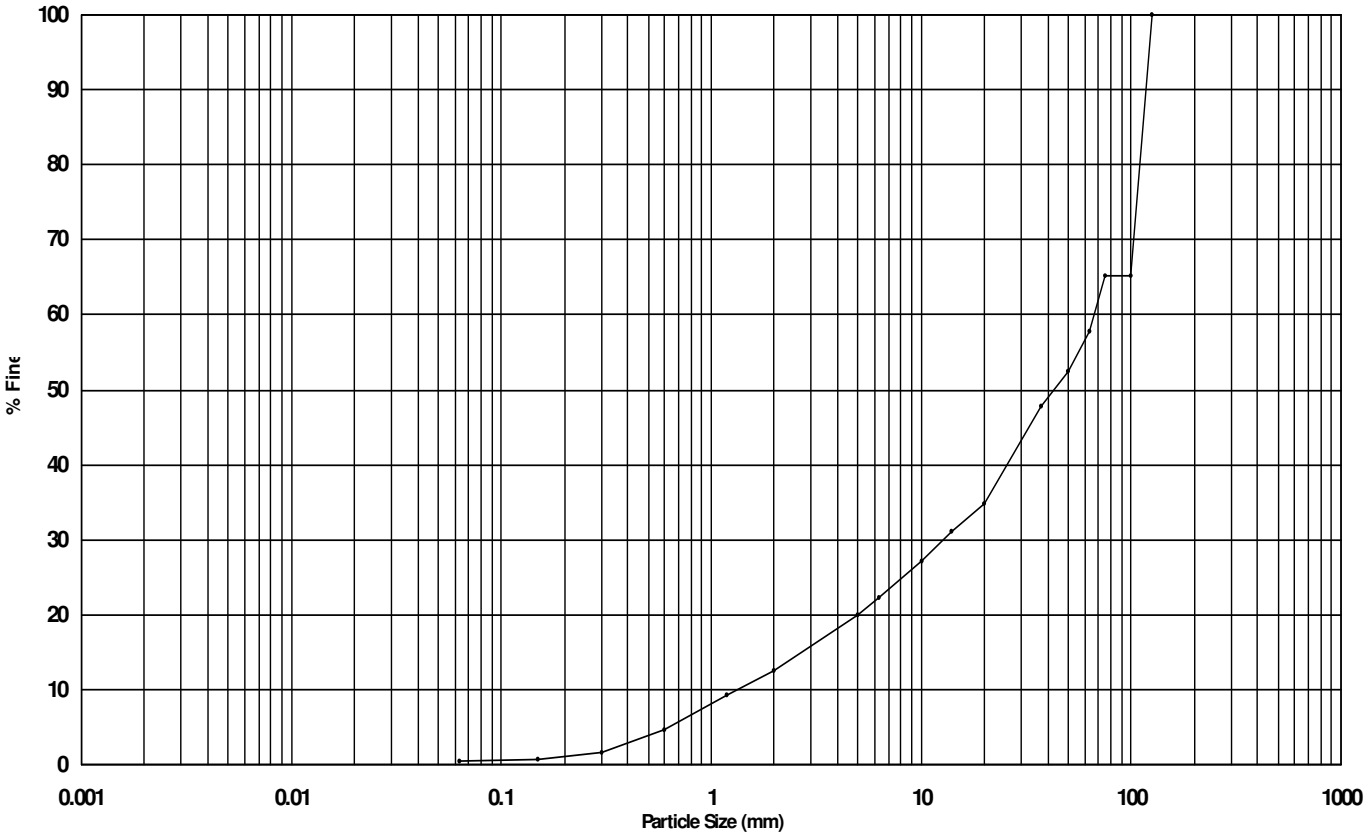
Project: KRONOSPAN STORAGE BUILDING

Project No: PN173691

Hole BH10  
Sample Depth 17.00-17.45m  
Sample Type B  
Sample Ref N70174

Sample Description

Grey very sandy fine to coarse GRAVEL with a high cobble content.



|                |      |        |        |      |        |        |        |        |        |         |          |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification        | % of each |
|-----------------------|-----------|
| SILT (including CLAY) | 0         |
| SAND                  | 13        |
| GRAVEL                | 45        |
| COBBLES               | 42        |
| BOULDERS              | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 65      |
| 75 mm   | 65      |
| 63 mm   | 58      |
| 50 mm   | 52      |
| 37.5 mm | 48      |
| 20 mm   | 35      |
| 14 mm   | 31      |
| 10 mm   | 27      |
| 5 mm    | 20      |
| 2 mm    | 13      |
| 1.18 mm | 9       |
| 600 µm  | 5       |
| 300 µm  | 2       |
| 150 µm  | 1       |
| 63 µm   | 0       |

| Size | % Finer |
|------|---------|
|      |         |
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| Uniformity Coefficient  |  |
|-------------------------|--|
| 53.86                   |  |
| Sieving Method          |  |
| Wet sieve               |  |
| Fine Particle Analysis  |  |
| Method                  |  |
| Pre-treated with        |  |
| % loss on Pre-treatment |  |
| Particle Density        |  |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

05/10/2017

LABORATORY RESULTS - Particle Size Distribution

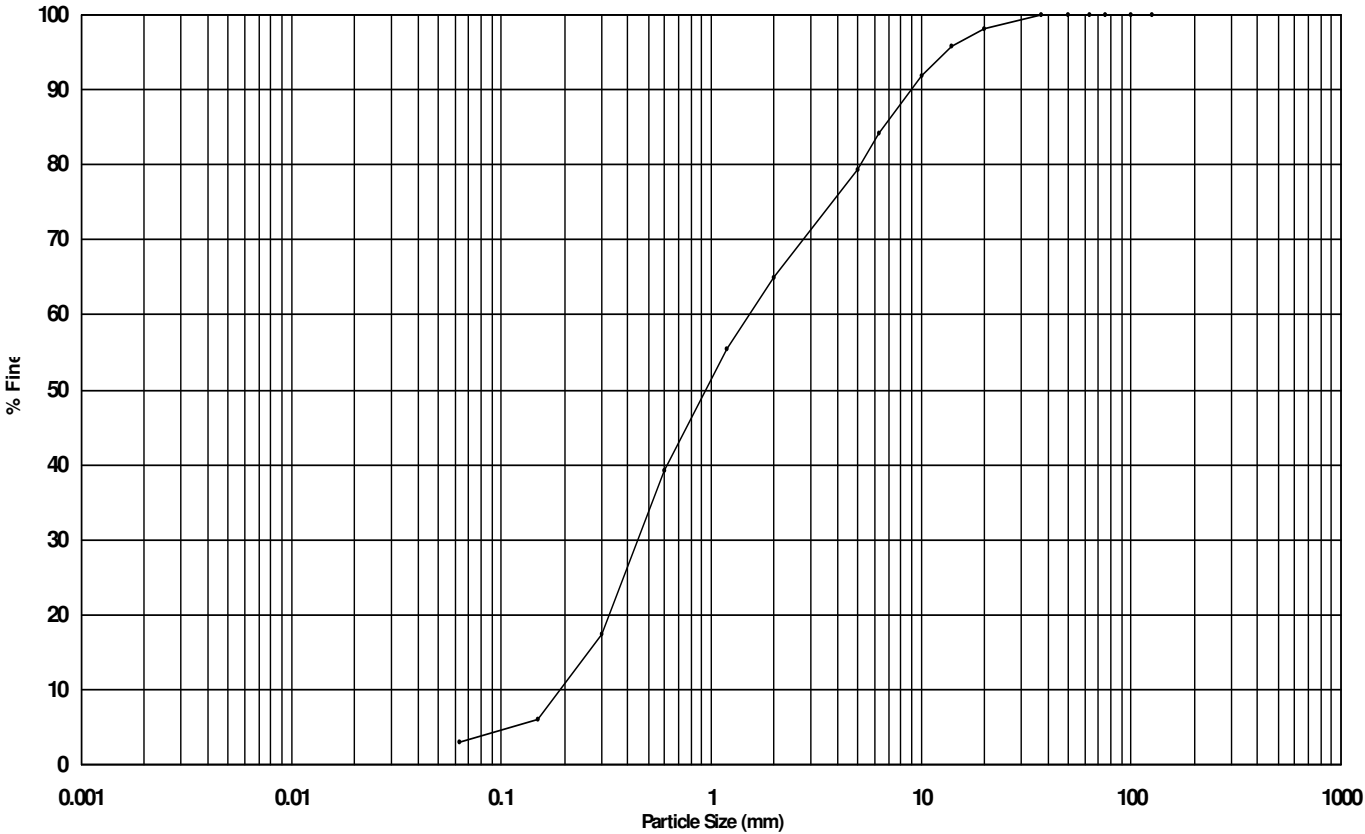
Project: KRONOSPAN STORAGE BUILDING

Project No: PN173691

Hole BH11  
Sample Depth 4.00-4.45m  
Sample Type B  
Sample Ref N70143

Sample Description

Dark grey and black very gravelly slightly clayey fine to coarse SAND.



| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification        | % of each |
|-----------------------|-----------|
| SILT (including CLAY) | 3         |
| SAND                  | 62        |
| GRAVEL                | 35        |
| COBBLES               | 0         |
| BOULDERS              | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 100     |
| 63 mm   | 100     |
| 50 mm   | 100     |
| 37.5 mm | 100     |
| 20 mm   | 98      |
| 14 mm   | 96      |
| 10 mm   | 92      |
| 5 mm    | 79      |
| 2 mm    | 65      |
| 1.18 mm | 55      |
| 600 µm  | 39      |
| 300 µm  | 17      |
| 150 µm  | 6       |
| 63 µm   | 3       |

| Size | % Finer |
|------|---------|
|      |         |
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| Uniformity Coefficient  |  |
|-------------------------|--|
| 7.99                    |  |
| Sieving Method          |  |
| Wet sieve               |  |
| Fine Particle Analysis  |  |
| Method                  |  |
| Pre-treated with        |  |
| % loss on Pre-treatment |  |
| Particle Density        |  |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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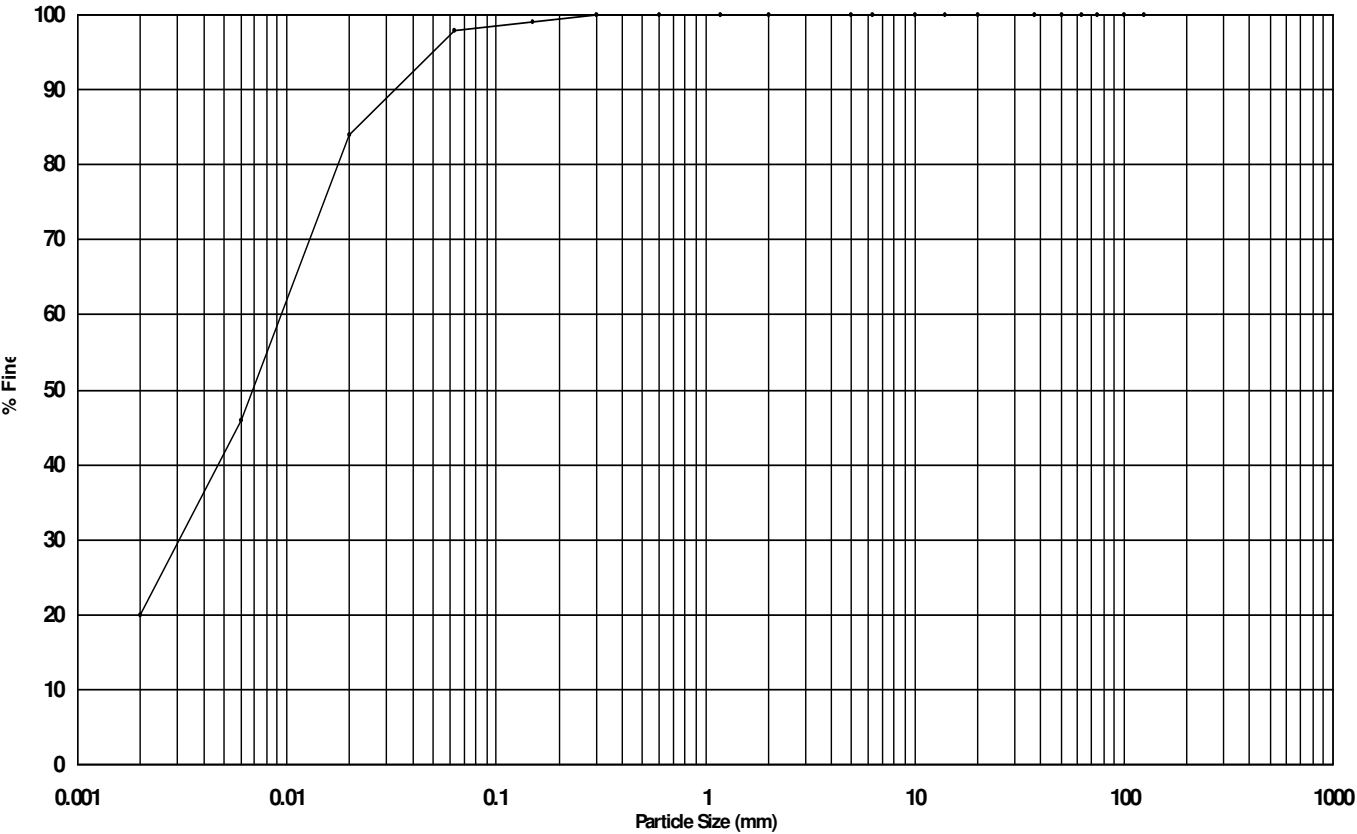
LABORATORY RESULTS - Particle Size Distribution

Project: KRONOSPAN STORAGE BUILDING

Project No: PN173691

Hole BH11  
Sample Depth 7.00-7.45m  
Sample Type B  
Sample Ref N70153

Sample Description  
Soft to firm grey clayey SILT.



|                |      |        |        |      |        |        |        |        |        |         |          |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification | % of each |
|----------------|-----------|
| CLAY           | 20        |
| SILT           | 78        |
| SAND           | 2         |
| GRAVEL         | 0         |
| COBBLES        | 0         |
| BOULDERS       | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 100     |
| 63 mm   | 100     |
| 50 mm   | 100     |
| 37.5 mm | 100     |
| 20 mm   | 100     |
| 14 mm   | 100     |
| 10 mm   | 100     |
| 5 mm    | 100     |
| 2 mm    | 100     |
| 1.18 mm | 100     |
| 600 µm  | 100     |
| 300 µm  | 100     |
| 150 µm  | 99      |
| 63 µm   | 98      |

| Size  | % Finer |
|-------|---------|
| 20 µm | 84      |
| 6 µm  | 46      |
| 2 µm  | 20      |

| Uniformity Coefficient  |                   |
|-------------------------|-------------------|
| Not Available           |                   |
| Sieving Method          |                   |
| Wet sieve               |                   |
| Fine Particle Analysis  |                   |
| Method                  | Pipette           |
| Pre-treated with        | Hydrogen Peroxide |
| % loss on Pre-treatment | 0.53              |
| Particle Density        | 2.65 (Assumed)    |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016  
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

05/10/2017

LABORATORY RESULTS - Particle Size Distribution

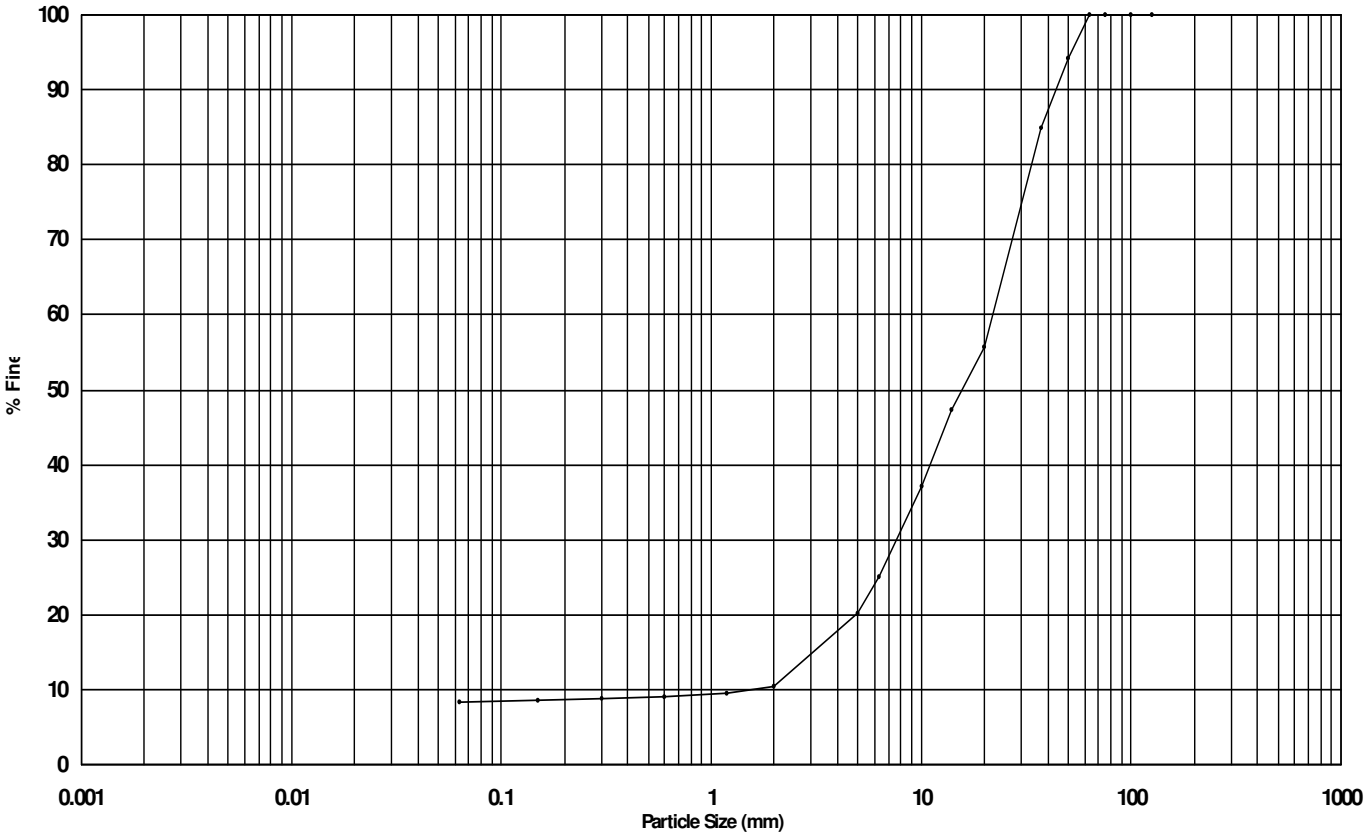
Project: KRONOSPAN STORAGE BUILDING

Project No: PN173691

Hole BH11  
Sample Depth 16.50-16.95m  
Sample Type B  
Sample Ref N70173

Sample Description

Multicoloured slightly sandy clayey fine to coarse GRAVEL.



| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification        | % of each |
|-----------------------|-----------|
| SILT (including CLAY) | 8         |
| SAND                  | 2         |
| GRAVEL                | 90        |
| COBBLES               | 0         |
| BOULDERS              | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 100     |
| 63 mm   | 100     |
| 50 mm   | 94      |
| 37.5 mm | 85      |
| 20 mm   | 56      |
| 14 mm   | 47      |
| 10 mm   | 37      |
| 5 mm    | 20      |
| 2 mm    | 10      |
| 1.18 mm | 9       |
| 600 µm  | 9       |
| 300 µm  | 9       |
| 150 µm  | 9       |
| 63 µm   | 8       |

| Size | % Finer |
|------|---------|
|      |         |
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| Uniformity Coefficient  |  |
|-------------------------|--|
| 13.34                   |  |
| Sieving Method          |  |
| Wet sieve               |  |
| Fine Particle Analysis  |  |
| Method                  |  |
| Pre-treated with        |  |
| % loss on Pre-treatment |  |
| Particle Density        |  |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

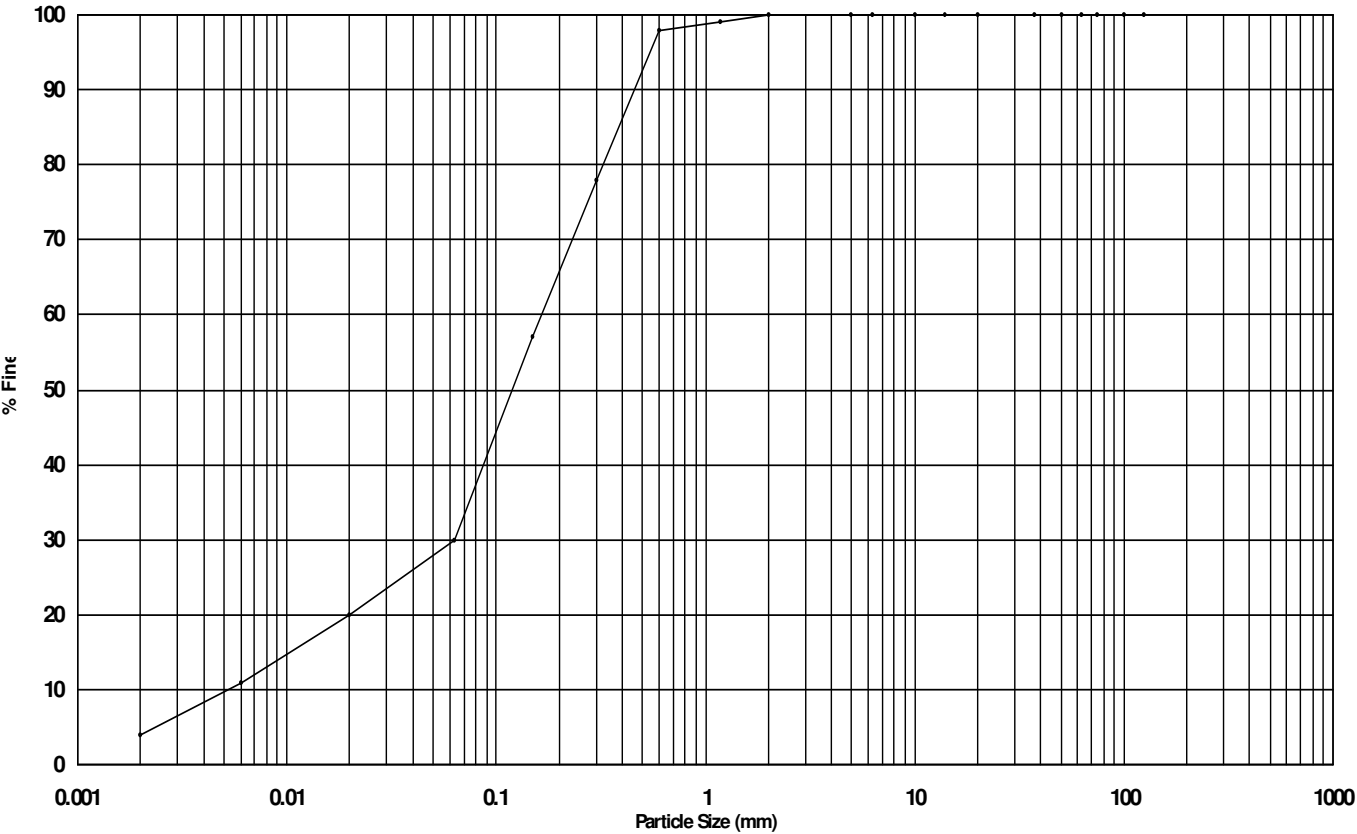
Project: KRONOSPAN STORAGE BUILDING

Project No: PN173691

Hole BH11  
Sample Depth 19.50-19.95m  
Sample Type B  
Sample Ref N70177

Sample Description

Brown very silty fine to medium SAND.



|                |      |        |        |      |        |        |        |        |        |         |          |
|----------------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|----------|
| Classification | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine   | Medium | Coarse | Cobbles | Boulders |
| CLAY           | SILT |        |        | SAND |        |        | Gravel |        |        |         |          |

| Classification | % of each |
|----------------|-----------|
| CLAY           | 4         |
| SILT           | 26        |
| SAND           | 70        |
| GRAVEL         | 0         |
| COBBLES        | 0         |
| BOULDERS       | 0         |

| Size    | % Finer |
|---------|---------|
| 125 mm  | 100     |
| 100 mm  | 100     |
| 75 mm   | 100     |
| 63 mm   | 100     |
| 50 mm   | 100     |
| 37.5 mm | 100     |
| 20 mm   | 100     |
| 14 mm   | 100     |
| 10 mm   | 100     |
| 5 mm    | 100     |
| 2 mm    | 100     |
| 1.18 mm | 99      |
| 600 µm  | 98      |
| 300 µm  | 78      |
| 150 µm  | 57      |
| 63 µm   | 30      |

| Size  | % Finer |
|-------|---------|
| 20 µm | 20      |
| 6 µm  | 11      |
| 2 µm  | 4       |

| Uniformity Coefficient  |                   |
|-------------------------|-------------------|
| 30.47                   |                   |
| Sieving Method          |                   |
| Wet sieve               |                   |
| Fine Particle Analysis  |                   |
| Method                  | Pipette           |
| Pre-treated with        | Hydrogen Peroxide |
| % loss on Pre-treatment | 0.44              |
| Particle Density        | 2.65 (Assumed)    |

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016  
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

05/10/2017

# LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: KRONOSPAN STORAGE BUILDING

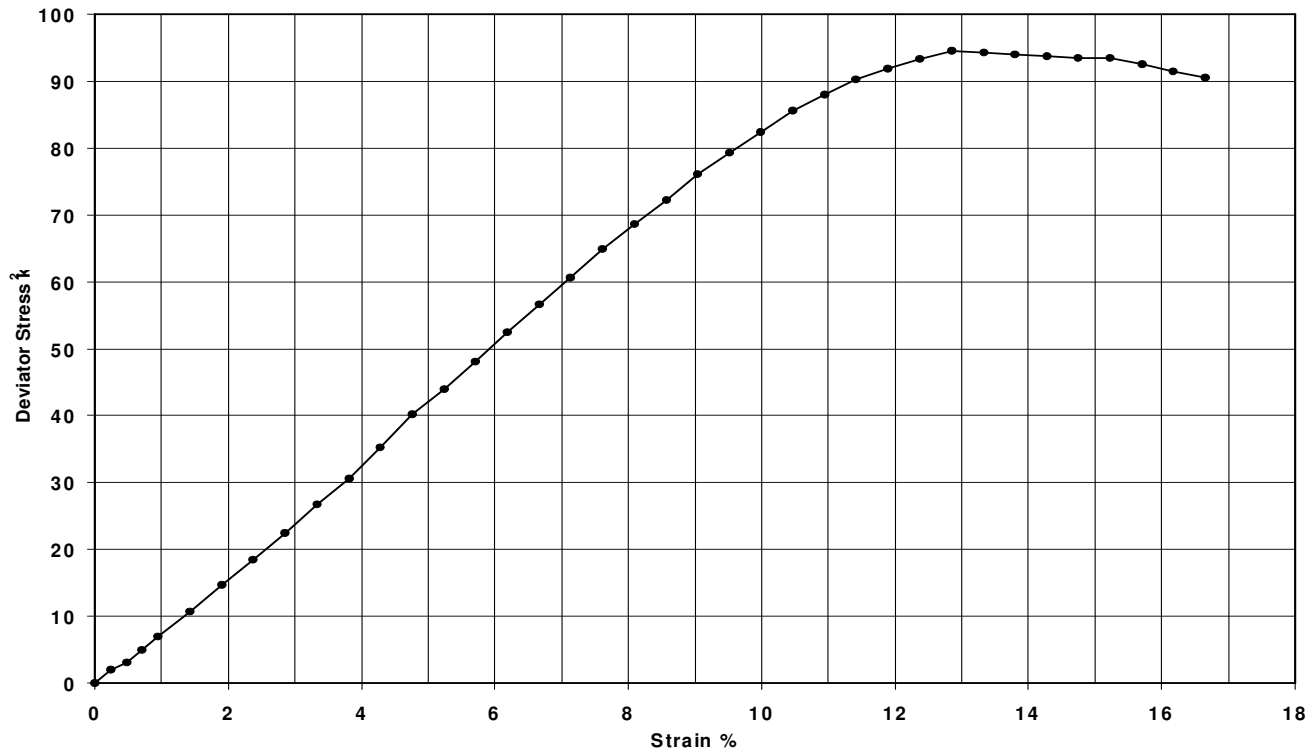
Hole BH01  
Sample Depth 7.05-7.50m  
Sample Type UT  
Sample Ref N69883

Project No: PN173691

## Sample Description

Soft thinly laminated grey CLAY.

BS1377 Part 8 1990 : Clause 9.0



|                                        | Stage 1      | Stage 2      | Stage 3      | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> |
|----------------------------------------|--------------|--------------|--------------|----------|---------------------------------------------|----------|---------------------------------------------|
| Sample Condition                       | Undisturbed  |              |              | 0.2      | 1.9                                         | 9.5      | 79.3                                        |
| Orientation of sample                  | Vertical     |              |              | 0.5      | 3.1                                         | 10.0     | 82.4                                        |
| Diameter (mm)                          | 102.28       | 102.28       | 102.28       | 0.7      | 4.9                                         | 10.5     | 85.6                                        |
| Length (mm)                            | 210.11       | 210.11       | 210.11       | 1.0      | 6.9                                         | 10.9     | 87.9                                        |
| Water Content (%)                      | 29.5         | 29.5         | 29.5         | 1.4      | 10.7                                        | 11.4     | 90.3                                        |
| Bulk Density (Mg/m <sup>3</sup> )      | 2.02         | 2.02         | 2.02         | 1.9      | 14.6                                        | 11.9     | 91.9                                        |
| Dry Density (Mg/m <sup>3</sup> )       | 1.56         | 1.56         | 1.56         | 2.4      | 18.5                                        | 12.4     | 93.4                                        |
| Cell Pressure (kPa)                    | 100.0        | 200.0        | 400.0        | 2.9      | 22.5                                        | 12.9     | 94.5                                        |
| Membrane Thickness/Correction (mm/kPa) | 0.30 / 0.78  | 0.30 / 0.89  | 0.30 / 0.89  | 3.3      | 26.7                                        | 13.3     | 94.3                                        |
| Rate of Strain (%/min)                 | 1.95         | 1.95         | 1.95         | 3.8      | 30.6                                        | 13.8     | 94.0                                        |
| Corrected Deviator Stress (kPa)        | 94           | 94           | 94           | 4.3      | 35.3                                        | 14.3     | 93.7                                        |
| Undrained Shear Strength (kPa)         | 47           | 47           | 47           | 4.8      | 40.2                                        | 14.8     | 93.4                                        |
| Strain at Failure (%)                  | 12.9         | 14.3         | 15.2         | 5.2      | 43.9                                        | 15.2     | 93.5                                        |
| Mode of Failure                        | Intermediate | Intermediate | Intermediate | 5.7      | 48.0                                        | 15.7     | 92.5                                        |
|                                        |              |              |              | 6.2      | 52.4                                        | 16.2     | 91.5                                        |
|                                        |              |              |              | 6.7      | 56.6                                        | 16.7     | 90.5                                        |
|                                        |              |              |              | 7.1      | 60.6                                        |          |                                             |
|                                        |              |              |              | 7.6      | 64.9                                        |          |                                             |
|                                        |              |              |              | 8.1      | 68.6                                        |          |                                             |
|                                        |              |              |              | 8.6      | 72.2                                        |          |                                             |
|                                        |              |              |              | 9.0      | 76.1                                        |          |                                             |

Remarks AGS

06/10/2017

GEOTECHNICS

# LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

**Project:** KRONOSPAN STORAGE BUILDING

**Hole** BH01

**Sample Depth** 19.05-19.50m

**Project No:** PN173691

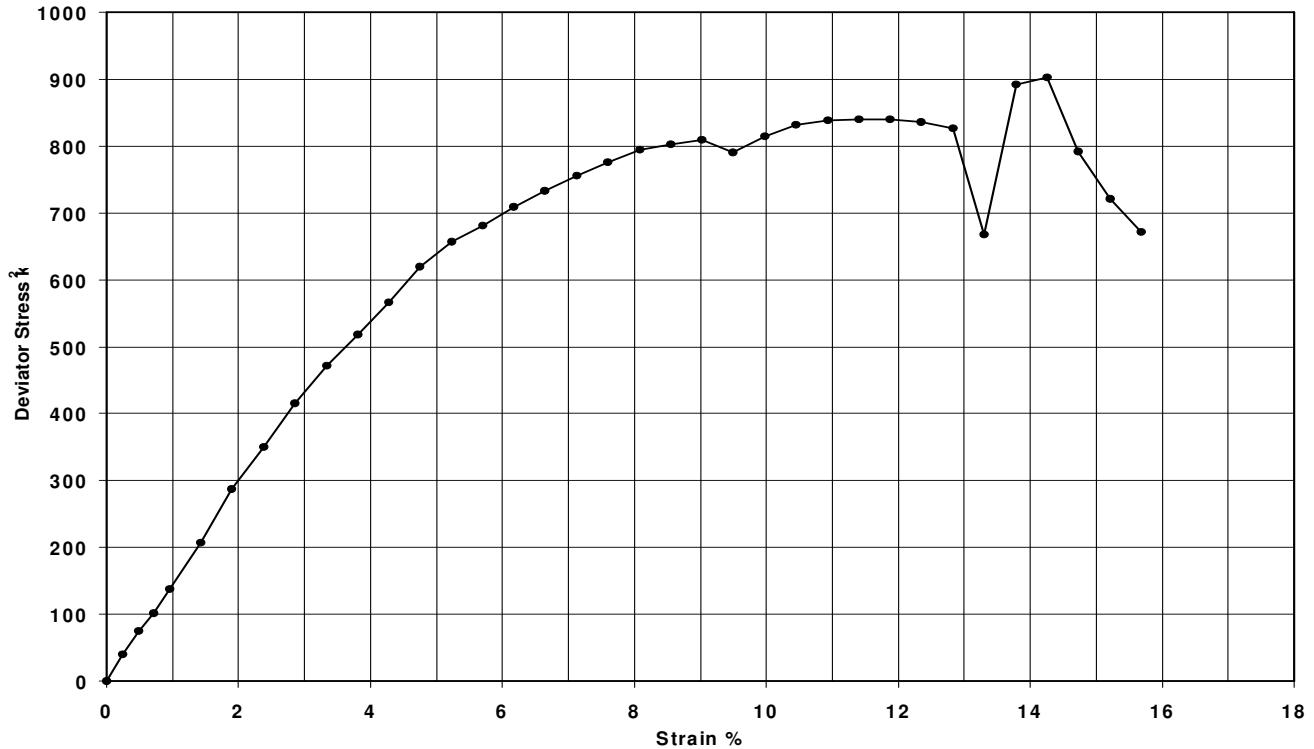
**Sample Type** UT

**Sample Ref** N69898

## Sample Description

Very stiff brown slightly sandy slightly gravelly CLAY.

BS1377 Part 8 1990 : Clause 9.0



|                                        | Stage 1      | Stage 2      | Stage 3      | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> |
|----------------------------------------|--------------|--------------|--------------|----------|---------------------------------------------|----------|---------------------------------------------|
| Sample Condition                       | Undisturbed  |              |              | 0.2      | 40.4                                        | 9.5      | 790.9                                       |
| Orientation of sample                  | Vertical     |              |              | 0.5      | 74.9                                        | 10.0     | 814.5                                       |
| Diameter (mm)                          | 102.89       | 102.89       | 102.89       | 0.7      | 101.2                                       | 10.5     | 832.3                                       |
| Length (mm)                            | 210.45       | 210.45       | 210.45       | 1.0      | 137.0                                       | 10.9     | 838.9                                       |
| Water Content (%)                      | 12.9         | 12.9         | 12.9         | 1.4      | 207.5                                       | 11.4     | 840.0                                       |
| Bulk Density (Mg/m <sup>3</sup> )      | 2.32         | 2.32         | 2.32         | 1.9      | 287.4                                       | 11.9     | 839.2                                       |
| Dry Density (Mg/m <sup>3</sup> )       | 2.05         | 2.05         | 2.05         | 2.4      | 349.7                                       | 12.4     | 835.7                                       |
| Cell Pressure (kPa)                    | 200.0        | 400.0        | 800.0        | 2.9      | 415.9                                       | 12.8     | 826.7                                       |
| Membrane Thickness/Correction (mm/kPa) | 0.30 / 0.61  | 0.30 / 0.72  | 0.30 / 0.89  | 3.3      | 471.7                                       | 13.3     | 667.3                                       |
| Rate of Strain (%/min)                 | 1.95         | 1.95         | 1.95         | 3.8      | 517.7                                       | 13.8     | 891.5                                       |
| Corrected Deviator Stress (kPa)        | 809          | 840          | 903          | 4.3      | 566.4                                       | 14.3     | 903.1                                       |
| Undrained Shear Strength (kPa)         | 404          | 420          | 452          | 4.8      | 618.8                                       | 14.7     | 792.3                                       |
| Strain at Failure (%)                  | 9.0          | 11.4         | 14.3         | 5.2      | 657.0                                       | 15.2     | 721.5                                       |
| Mode of Failure                        | Intermediate | Intermediate | Intermediate | 5.7      | 680.9                                       | 15.7     | 671.3                                       |

Remarks

06/10/2017

**GEOTECHNICS**

# LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

**Project:** KRONOSPAN STORAGE BUILDING

**Hole** BH02

**Sample Depth** 5.00-5.45m

**Project No:** PN173691

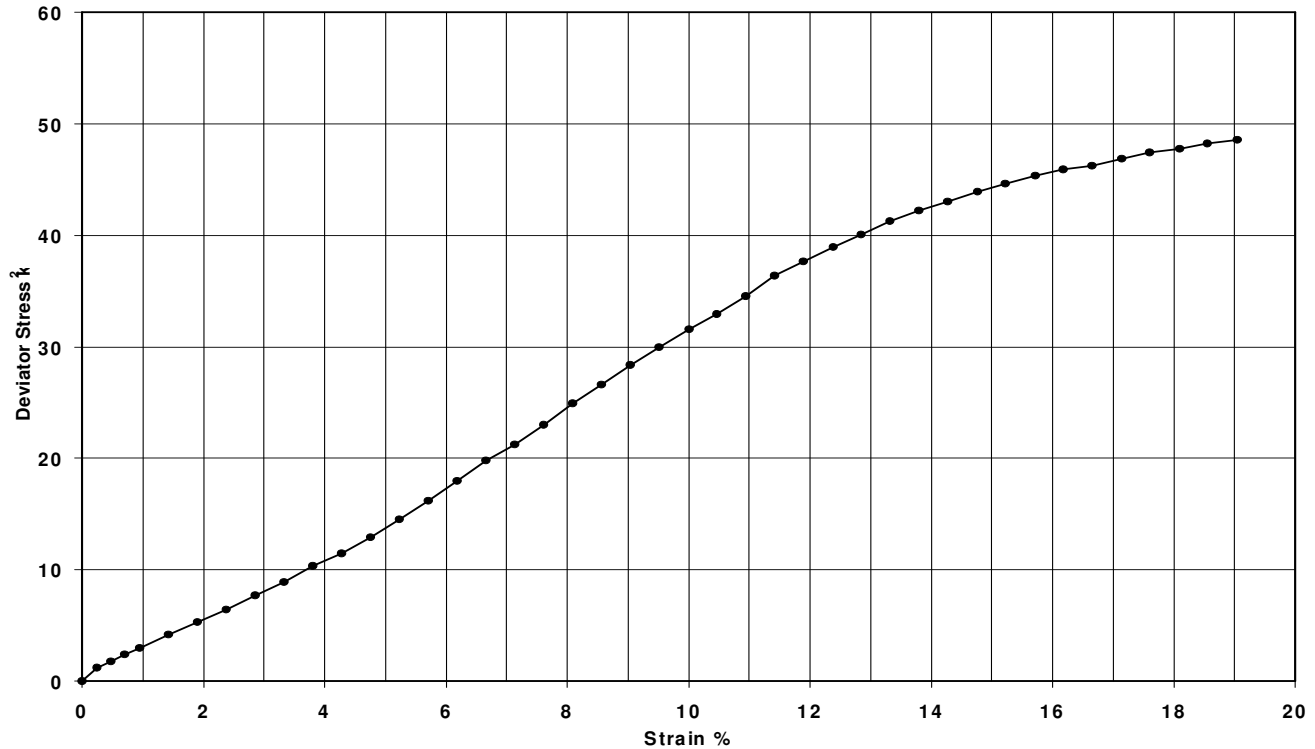
**Sample Type** UT

**Sample Ref** N69881

## Sample Description

Soft thickly laminated grey silty CLAY.

BS1377 Part 8 1990 : Clause 9.0



|                                        | Stage 1     | Stage 2 | Stage 3 | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> |
|----------------------------------------|-------------|---------|---------|----------|---------------------------------------------|----------|---------------------------------------------|
| Sample Condition                       | Undisturbed |         |         | 0.2      | 1.2                                         | 9.5      | 29.9                                        |
| Orientation of sample                  | Vertical    |         |         | 0.5      | 1.8                                         | 10.0     | 31.6                                        |
| Diameter (mm)                          | 101.72      | 101.72  | 101.72  | 0.7      | 2.4                                         | 10.5     | 32.9                                        |
| Length (mm)                            | 210.09      | 210.09  | 210.09  | 1.0      | 2.9                                         | 10.9     | 34.6                                        |
| Water Content (%)                      | 34.4        | 34.4    | 34.4    | 1.4      | 4.1                                         | 11.4     | 36.3                                        |
| Bulk Density (Mg/m <sup>3</sup> )      | 2.08        | 2.08    | 2.08    | 1.9      | 5.3                                         | 11.9     | 37.6                                        |
| Dry Density (Mg/m <sup>3</sup> )       | 1.55        | 1.55    | 1.55    | 2.4      | 6.4                                         | 12.4     | 38.9                                        |
| Cell Pressure (kPa)                    | 100.0       | 200.0   | 400.0   | 2.9      | 7.7                                         | 12.9     | 40.1                                        |
| Membrane Thickness/Correction (mm/kPa) | 0.30 / 1.06 | 0.30 /  | 0.30 /  | 3.3      | 8.9                                         | 13.3     | 41.3                                        |
| Rate of Strain (%/min)                 | 1.95        | 1.95    | 1.95    | 3.8      | 10.3                                        | 13.8     | 42.2                                        |
| Corrected Deviator Stress (kPa)        | 49          |         |         | 4.3      | 11.4                                        | 14.3     | 43.0                                        |
| Undrained Shear Strength (kPa)         | 24          |         |         | 4.8      | 12.9                                        | 14.8     | 43.9                                        |
| Strain at Failure (%)                  | 19 (excess) |         |         | 5.2      | 14.5                                        | 15.2     | 44.6                                        |
| Mode of Failure                        | Plastic     | Plastic | Plastic | 5.7      | 16.2                                        | 15.7     | 45.3                                        |
|                                        |             |         |         | 6.2      | 17.9                                        | 16.2     | 45.9                                        |
|                                        |             |         |         | 6.7      | 19.8                                        | 16.7     | 46.2                                        |
|                                        |             |         |         | 7.1      | 21.2                                        | 17.1     | 46.9                                        |
|                                        |             |         |         | 7.6      | 23.0                                        | 17.6     | 47.5                                        |
|                                        |             |         |         | 8.1      | 24.9                                        | 18.1     | 47.8                                        |
|                                        |             |         |         | 8.6      | 26.6                                        | 18.6     | 48.2                                        |
|                                        |             |         |         | 9.0      | 28.4                                        | 19.0     | 48.5                                        |

Remarks

06/10/2017

**GEOTECHNICS**

# LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: KRONOSPAN STORAGE BUILDING

Hole BH03

Sample Depth 4.00-4.45m

Project No: PN173691

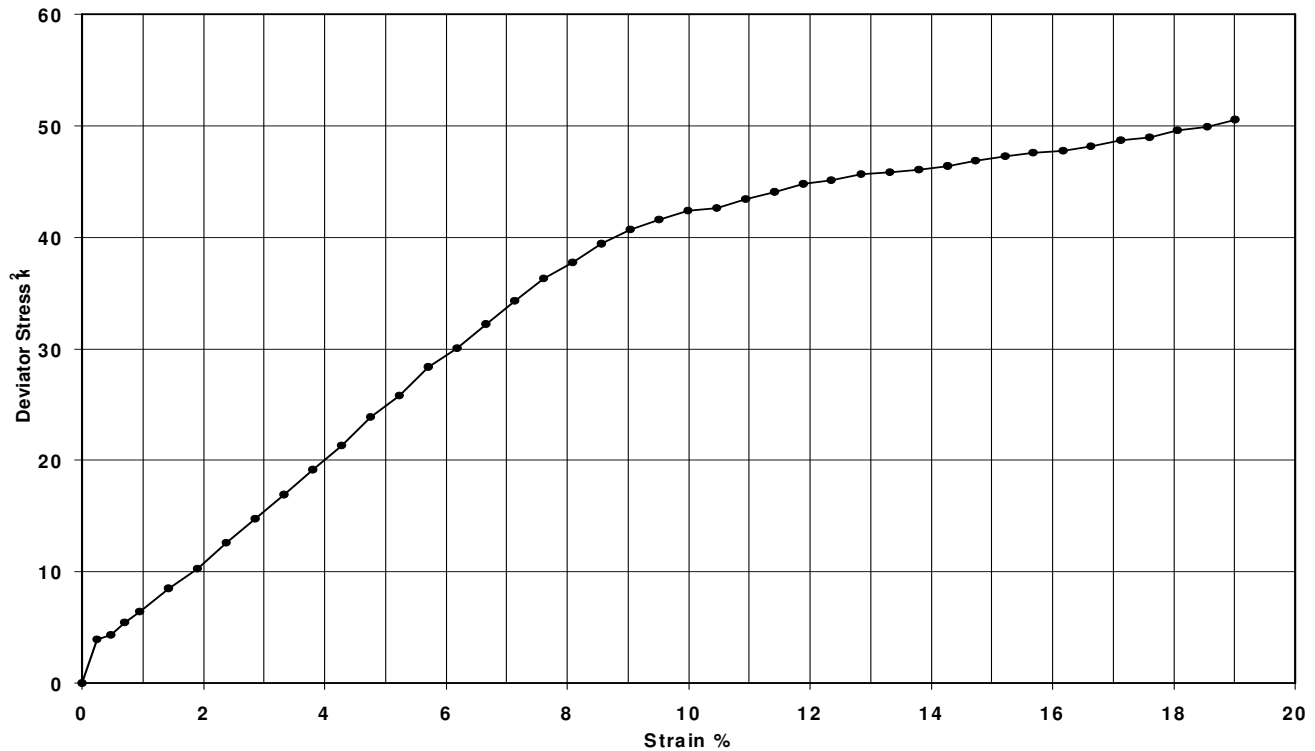
Sample Type UT

Sample Ref N70141

## Sample Description

Soft grey silty CLAY with laminae of clayey silt.

BS1377 Part 8 1990 : Clause 8.0



|                                        | Stage 1     | Stage 2 | Stage 3 | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> |
|----------------------------------------|-------------|---------|---------|----------|---------------------------------------------|----------|---------------------------------------------|
| Sample Condition                       | Undisturbed |         |         | 0.2      | 3.9                                         | 9.5      | 41.5                                        |
| Orientation of sample                  | Vertical    |         |         | 0.5      | 4.3                                         | 10.0     | 42.4                                        |
| Diameter (mm)                          | 105.17      |         |         | 0.7      | 5.4                                         | 10.5     | 42.6                                        |
| Length (mm)                            | 210.28      |         |         | 1.0      | 6.4                                         | 10.9     | 43.4                                        |
| Water Content (%)                      | 30.3        |         |         | 1.4      | 8.5                                         | 11.4     | 44.1                                        |
| Bulk Density (Mg/m <sup>3</sup> )      | 2.01        |         |         | 1.9      | 10.2                                        | 11.9     | 44.7                                        |
| Dry Density (Mg/m <sup>3</sup> )       | 1.54        |         |         | 2.4      | 12.5                                        | 12.4     | 45.1                                        |
| Cell Pressure (kPa)                    | 80.0        |         |         | 2.9      | 14.8                                        | 12.8     | 45.7                                        |
| Membrane Thickness/Correction (mm/kPa) | 0.30 / 1.03 |         |         | 3.3      | 16.9                                        | 13.3     | 45.8                                        |
| Rate of Strain (%/min)                 | 1.95        |         |         | 3.8      | 19.2                                        | 13.8     | 46.0                                        |
| Corrected Deviator Stress (kPa)        | 51          |         |         | 4.3      | 21.3                                        | 14.3     | 46.4                                        |
| Undrained Shear Strength (kPa)         | 25          |         |         | 4.8      | 23.9                                        | 14.7     | 46.8                                        |
| Strain at Failure (%)                  | 19 (excess) |         |         | 5.2      | 25.8                                        | 15.2     | 47.2                                        |
| Mode of Failure                        | Plastic     |         |         | 5.7      | 28.4                                        | 15.7     | 47.6                                        |
|                                        |             |         |         | 6.2      | 30.0                                        | 16.2     | 47.7                                        |
|                                        |             |         |         | 6.7      | 32.2                                        | 16.6     | 48.1                                        |
|                                        |             |         |         | 7.1      | 34.3                                        | 17.1     | 48.7                                        |
|                                        |             |         |         | 7.6      | 36.3                                        | 17.6     | 48.9                                        |
|                                        |             |         |         | 8.1      | 37.8                                        | 18.1     | 49.6                                        |
|                                        |             |         |         | 8.6      | 39.4                                        | 18.5     | 49.9                                        |
|                                        |             |         |         | 9.0      | 40.7                                        | 19.0     | 50.5                                        |

Remarks AGS

06/10/2017

GEOTECHNICS

# LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

**Project:** KRONOSPAN STORAGE BUILDING

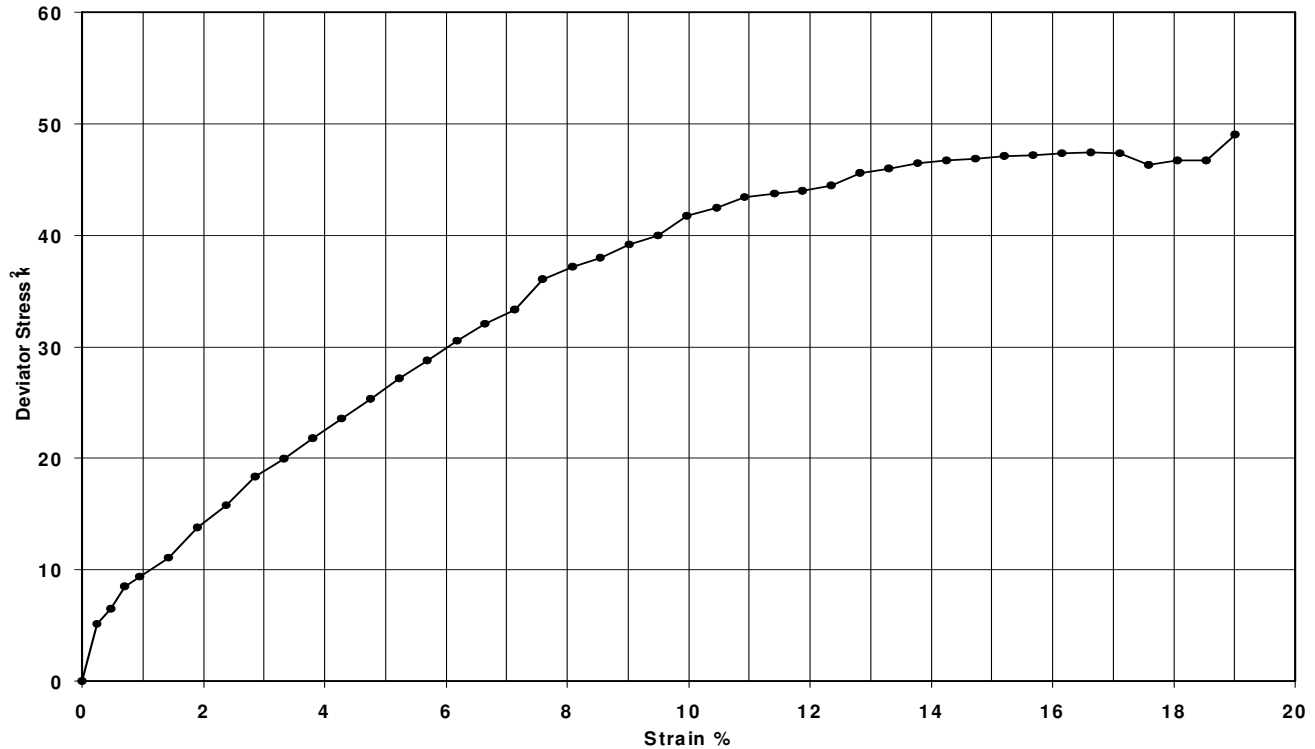
**Hole** BH04  
**Sample Depth** 3.00-3.45m  
**Sample Type** UT  
**Sample Ref** N69876

**Project No:** PN173691

## Sample Description

Soft to firm thinly laminated brown CLAY with laminae of silt.

BS1377 Part 8 1990 : Clause 9.0



|                                        | Stage 1     | Stage 2     | Stage 3     | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> |
|----------------------------------------|-------------|-------------|-------------|----------|---------------------------------------------|----------|---------------------------------------------|
| Sample Condition                       | Undisturbed |             |             | 0.2      | 5.1                                         | 9.5      | 40.0                                        |
| Orientation of sample                  | Vertical    |             |             | 0.5      | 6.5                                         | 10.0     | 41.7                                        |
| Diameter (mm)                          | 102.28      | 102.28      | 102.28      | 0.7      | 8.5                                         | 10.5     | 42.5                                        |
| Length (mm)                            | 210.42      | 210.42      | 210.42      | 1.0      | 9.4                                         | 10.9     | 43.4                                        |
| Water Content (%)                      | 28.6        | 28.6        | 28.6        | 1.4      | 11.0                                        | 11.4     | 43.7                                        |
| Bulk Density (Mg/m <sup>3</sup> )      | 2.00        | 2.00        | 2.00        | 1.9      | 13.8                                        | 11.9     | 44.0                                        |
| Dry Density (Mg/m <sup>3</sup> )       | 1.56        | 1.56        | 1.56        | 2.4      | 15.8                                        | 12.4     | 44.4                                        |
| Cell Pressure (kPa)                    | 50.0        |             |             | 2.9      | 18.3                                        | 12.8     | 45.6                                        |
| Membrane Thickness/Correction (mm/kPa) | 0.30 / 0.95 | 0.30 / 1.00 | 0.30 / 1.06 | 3.3      | 20.0                                        | 13.3     | 46.0                                        |
| Rate of Strain (%/min)                 | 1.95        | 1.95        | 1.95        | 3.8      | 21.8                                        | 13.8     | 46.5                                        |
| Corrected Deviator Stress (kPa)        | 47          | 47          | 49          | 4.3      | 23.5                                        | 14.3     | 46.7                                        |
| Undrained Shear Strength (kPa)         | 24          | 23          | 25          | 4.8      | 25.3                                        | 14.7     | 46.8                                        |
| Strain at Failure (%)                  | 16.6        | 18.5        | 19.0        | 5.2      | 27.2                                        | 15.2     | 47.1                                        |
| Mode of Failure                        | Plastic     | Plastic     | Plastic     | 5.7      | 28.8                                        | 15.7     | 47.2                                        |
|                                        |             |             |             | 6.2      | 30.5                                        | 16.2     | 47.3                                        |
|                                        |             |             |             | 6.7      | 32.0                                        | 16.6     | 47.5                                        |
|                                        |             |             |             | 7.1      | 33.3                                        | 17.1     | 47.4                                        |
|                                        |             |             |             | 7.6      | 36.0                                        | 17.6     | 46.3                                        |
|                                        |             |             |             | 8.1      | 37.1                                        | 18.1     | 46.7                                        |
|                                        |             |             |             | 8.6      | 38.0                                        | 18.5     | 46.7                                        |
|                                        |             |             |             | 9.0      | 39.1                                        | 19.0     | 49.0                                        |

Remarks 

06/10/2017

**GEOTECHNICS**

# LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

**Project:** KRONOSPAN STORAGE BUILDING

**Hole** BH05

**Sample Depth** 4.00-4.45m

**Project No:** PN173691

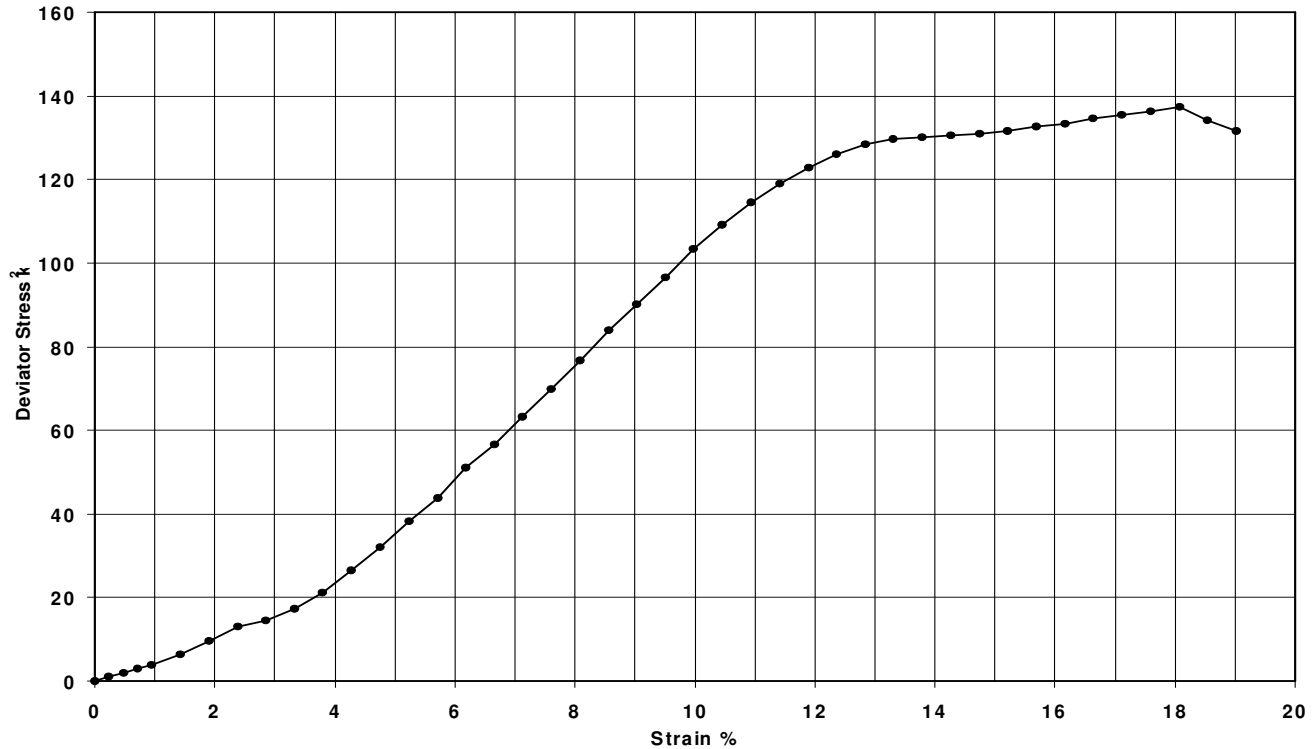
**Sample Type** UT

**Sample Ref** N70142

## Sample Description

Soft thickly laminated grey silty CLAY.

BS1377 Part 8 1990 : Clause 8.0



|                                        | Stage 1     | Stage 2 | Stage 3 | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> |
|----------------------------------------|-------------|---------|---------|----------|---------------------------------------------|----------|---------------------------------------------|
| Sample Condition                       | Undisturbed |         |         | 0.2      | 1.1                                         | 9.5      | 96.6                                        |
| Orientation of sample                  | Vertical    |         |         | 0.5      | 1.9                                         | 10.0     | 103.4                                       |
| Diameter (mm)                          | 104.03      |         |         | 0.7      | 3.0                                         | 10.5     | 109.2                                       |
| Length (mm)                            | 210.33      |         |         | 1.0      | 3.9                                         | 10.9     | 114.4                                       |
| Water Content (%)                      | 28.0        |         |         | 1.4      | 6.5                                         | 11.4     | 119.0                                       |
| Bulk Density (Mg/m <sup>3</sup> )      | 2.05        |         |         | 1.9      | 9.5                                         | 11.9     | 122.9                                       |
| Dry Density (Mg/m <sup>3</sup> )       | 1.60        |         |         | 2.4      | 13.0                                        | 12.4     | 126.0                                       |
| Cell Pressure (kPa)                    | 80.0        |         |         | 2.9      | 14.5                                        | 12.8     | 128.4                                       |
| Membrane Thickness/Correction (mm/kPa) | 0.30 / 0.99 |         |         | 3.3      | 17.2                                        | 13.3     | 129.6                                       |
| Rate of Strain (%/min)                 | 1.95        |         |         | 3.8      | 21.2                                        | 13.8     | 130.1                                       |
| Corrected Deviator Stress (kPa)        | 137         |         |         | 4.3      | 26.5                                        | 14.3     | 130.6                                       |
| Undrained Shear Strength (kPa)         | 69          |         |         | 4.8      | 32.1                                        | 14.7     | 130.9                                       |
| Strain at Failure (%)                  | 18.1        |         |         | 5.2      | 38.3                                        | 15.2     | 131.7                                       |
| Mode of Failure                        | Plastic     |         |         | 5.7      | 43.9                                        | 15.7     | 132.6                                       |
|                                        |             |         |         | 6.2      | 51.1                                        | 16.2     | 133.3                                       |
|                                        |             |         |         | 6.7      | 56.7                                        | 16.6     | 134.6                                       |
|                                        |             |         |         | 7.1      | 63.2                                        | 17.1     | 135.4                                       |
|                                        |             |         |         | 7.6      | 69.8                                        | 17.6     | 136.2                                       |
|                                        |             |         |         | 8.1      | 76.8                                        | 18.1     | 137.4                                       |
|                                        |             |         |         | 8.6      | 83.8                                        | 18.5     | 134.1                                       |
|                                        |             |         |         | 9.0      | 90.2                                        | 19.0     | 131.5                                       |

Remarks 

06/10/2017

**GEOTECHNICS**

# LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

**Project:** KRONOSPAN STORAGE BUILDING

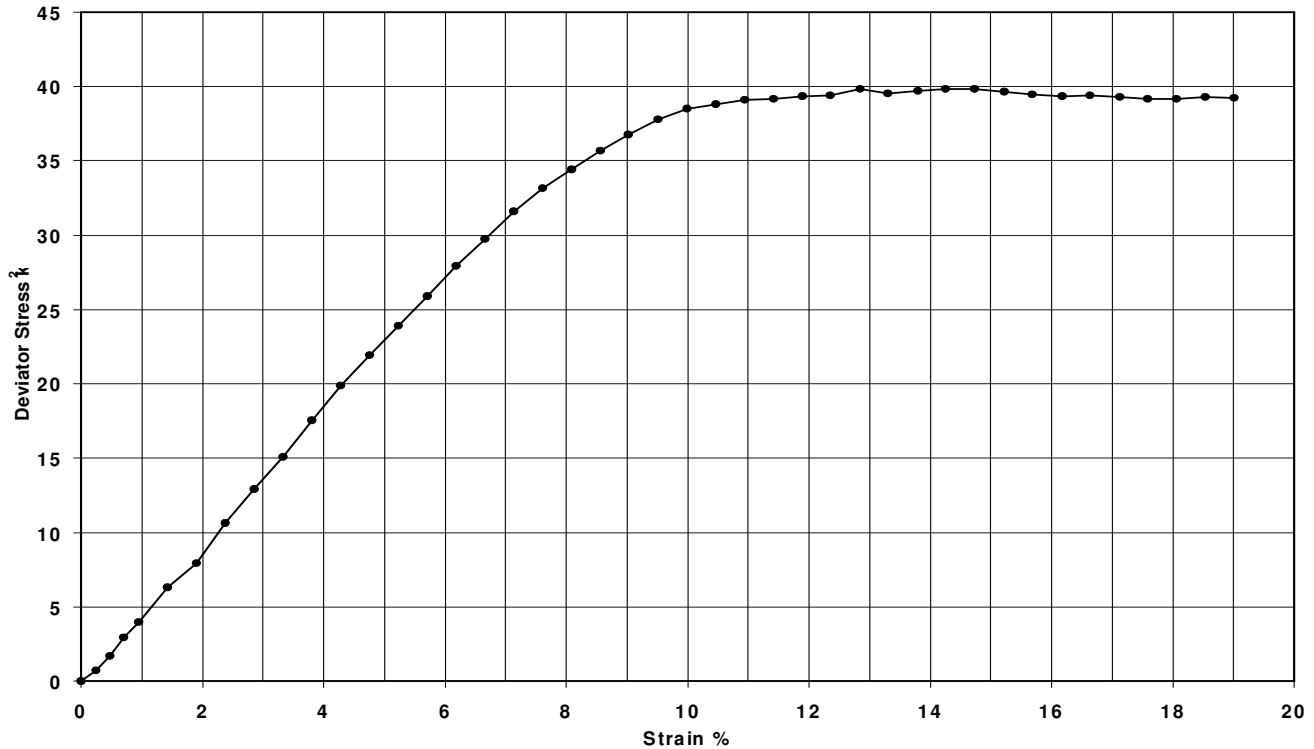
**Hole** BH06  
**Sample Depth** 4.45-4.90m  
**Sample Type** UT  
**Sample Ref** N70145

**Project No:** PN173691

## Sample Description

Very soft to soft grey silty CLAY.

BS1377 Part 8 1990 : Clause 8.0



|                                        | Stage 1     | Stage 2 | Stage 3 | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> |
|----------------------------------------|-------------|---------|---------|----------|---------------------------------------------|----------|---------------------------------------------|
| Sample Condition                       | Undisturbed |         |         | 0.2      | 0.7                                         | 9.5      | 37.8                                        |
| Orientation of sample                  | Vertical    |         |         | 0.5      | 1.7                                         | 10.0     | 38.5                                        |
| Diameter (mm)                          | 104.47      |         |         | 0.7      | 3.0                                         | 10.5     | 38.8                                        |
| Length (mm)                            | 210.31      |         |         | 1.0      | 3.9                                         | 10.9     | 39.1                                        |
| Water Content (%)                      | 31.6        |         |         | 1.4      | 6.3                                         | 11.4     | 39.2                                        |
| Bulk Density (Mg/m <sup>3</sup> )      | 1.99        |         |         | 1.9      | 8.0                                         | 11.9     | 39.4                                        |
| Dry Density (Mg/m <sup>3</sup> )       | 1.51        |         |         | 2.4      | 10.7                                        | 12.4     | 39.4                                        |
| Cell Pressure (kPa)                    | 90.0        |         |         | 2.9      | 12.9                                        | 12.8     | 39.8                                        |
| Membrane Thickness/Correction (mm/kPa) | 0.30 / 0.87 |         |         | 3.3      | 15.1                                        | 13.3     | 39.5                                        |
| Rate of Strain (%/min)                 | 1.95        |         |         | 3.8      | 17.5                                        | 13.8     | 39.7                                        |
| Corrected Deviator Stress (kPa)        | 40          |         |         | 4.3      | 19.9                                        | 14.3     | 39.8                                        |
| Undrained Shear Strength (kPa)         | 20          |         |         | 4.8      | 21.9                                        | 14.7     | 39.8                                        |
| Strain at Failure (%)                  | 14.3        |         |         | 5.2      | 23.9                                        | 15.2     | 39.7                                        |
| Mode of Failure                        | Plastic     |         |         | 5.7      | 25.9                                        | 15.7     | 39.5                                        |
|                                        |             |         |         | 6.2      | 27.9                                        | 16.2     | 39.4                                        |
|                                        |             |         |         | 6.7      | 29.7                                        | 16.6     | 39.4                                        |
|                                        |             |         |         | 7.1      | 31.6                                        | 17.1     | 39.3                                        |
|                                        |             |         |         | 7.6      | 33.1                                        | 17.6     | 39.2                                        |
|                                        |             |         |         | 8.1      | 34.4                                        | 18.1     | 39.2                                        |
|                                        |             |         |         | 8.6      | 35.7                                        | 18.5     | 39.3                                        |
|                                        |             |         |         | 9.0      | 36.8                                        | 19.0     | 39.2                                        |

Remarks

06/10/2017

**GEOTECHNICS**

# LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

**Project:** KRONOSPAN STORAGE BUILDING

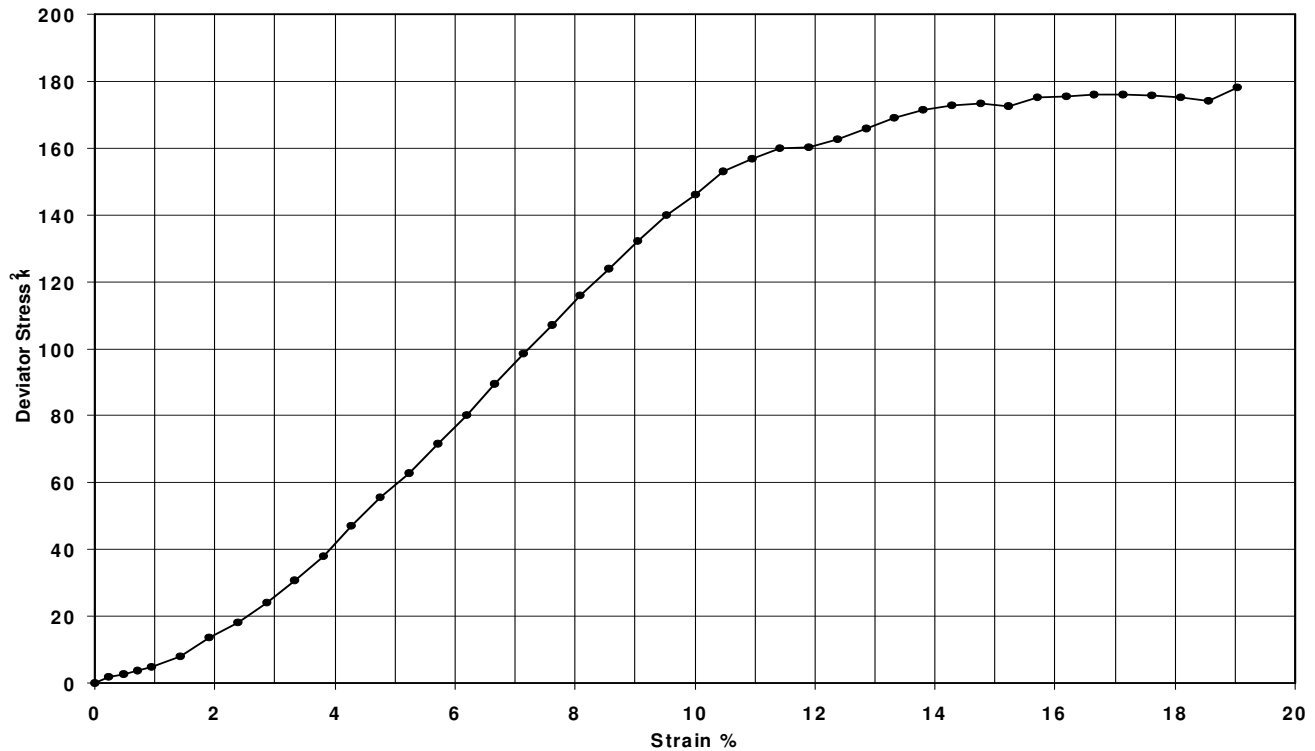
**Hole** BH07  
**Sample Depth** 3.00-3.45m  
**Sample Type** UT  
**Sample Ref** N69877

**Project No:** PN173691

## Sample Description

Soft thinly laminated greyish brown slightly gravelly clayey SILT.

BS1377 Part 8 1990 : Clause 9.0



|                                        | Stage 1     | Stage 2     | Stage 3     | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> |
|----------------------------------------|-------------|-------------|-------------|----------|---------------------------------------------|----------|---------------------------------------------|
| Sample Condition                       | Undisturbed |             |             | 0.2      | 1.9                                         | 9.5      | 139.8                                       |
| Orientation of sample                  | Vertical    |             |             | 0.5      | 2.6                                         | 10.0     | 146.0                                       |
| Diameter (mm)                          | 103.25      | 103.25      | 103.25      | 0.7      | 3.6                                         | 10.5     | 153.1                                       |
| Length (mm)                            | 210.09      | 210.09      | 210.09      | 1.0      | 4.9                                         | 10.9     | 156.7                                       |
| Water Content (%)                      | 27.2        | 27.2        | 27.2        | 1.4      | 7.9                                         | 11.4     | 160.0                                       |
| Bulk Density (Mg/m <sup>3</sup> )      | 2.02        | 2.02        | 2.02        | 1.9      | 13.5                                        | 11.9     | 160.3                                       |
| Dry Density (Mg/m <sup>3</sup> )       | 1.59        | 1.59        | 1.59        | 2.4      | 18.1                                        | 12.4     | 162.5                                       |
| Cell Pressure (kPa)                    | 50.0        | 100.0       | 200.0       | 2.9      | 23.9                                        | 12.9     | 165.8                                       |
| Membrane Thickness/Correction (mm/kPa) | 0.30 / 0.88 | 0.30 / 0.94 | 0.30 / 1.05 | 3.3      | 30.8                                        | 13.3     | 169.0                                       |
| Rate of Strain (%/min)                 | 1.95        | 1.95        | 1.95        | 3.8      | 38.0                                        | 13.8     | 171.3                                       |
| Corrected Deviator Stress (kPa)        | 173         | 176         | 178         | 4.3      | 47.1                                        | 14.3     | 172.8                                       |
| Undrained Shear Strength (kPa)         | 87          | 88          | 89          | 4.8      | 55.5                                        | 14.8     | 173.3                                       |
| Strain at Failure (%)                  | 14.8        | 16.7        | 19 (excess) | 5.2      | 62.7                                        | 15.2     | 172.4                                       |
| Mode of Failure                        | Plastic     | Plastic     | Plastic     | 5.7      | 71.5                                        | 15.7     | 175.0                                       |
|                                        |             |             |             | 6.2      | 80.2                                        | 16.2     | 175.3                                       |
|                                        |             |             |             | 6.7      | 89.4                                        | 16.7     | 176.0                                       |
|                                        |             |             |             | 7.1      | 98.4                                        | 17.1     | 176.0                                       |
|                                        |             |             |             | 7.6      | 107.0                                       | 17.6     | 175.6                                       |
|                                        |             |             |             | 8.1      | 116.0                                       | 18.1     | 175.1                                       |
|                                        |             |             |             | 8.6      | 124.0                                       | 18.6     | 174.2                                       |
|                                        |             |             |             | 9.0      | 132.1                                       | 19.0     | 178.0                                       |

Remarks 

06/10/2017

**GEOTECHNICS**

# LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: KRONOSPAN STORAGE BUILDING

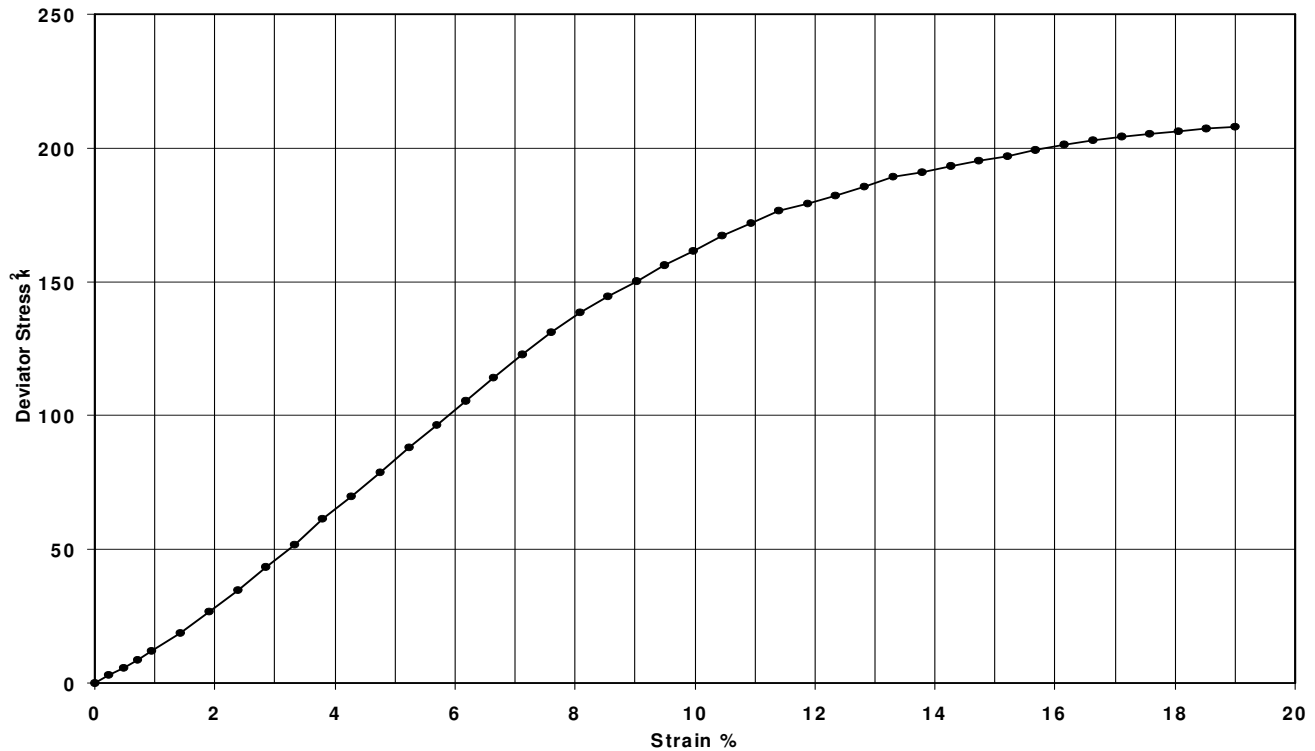
Hole BH09  
Sample Depth 6.50-6.95m  
Sample Type UT  
Sample Ref N70150

Project No: PN173691

## Sample Description

Firm laminated grey slightly gravelly silty CLAY.

BS1377 Part 8 1990 : Clause 8.0



|                                        | Stage 1     | Stage 2 | Stage 3 | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> |
|----------------------------------------|-------------|---------|---------|----------|---------------------------------------------|----------|---------------------------------------------|
| Sample Condition                       | Undisturbed |         |         | 0.2      | 3.1                                         | 9.5      | 156.1                                       |
| Orientation of sample                  | Vertical    |         |         | 0.5      | 5.7                                         | 10.0     | 161.7                                       |
| Diameter (mm)                          | 103.02      |         |         | 0.7      | 8.8                                         | 10.5     | 167.2                                       |
| Length (mm)                            | 210.45      |         |         | 1.0      | 12.0                                        | 10.9     | 172.0                                       |
| Water Content (%)                      | 26.9        |         |         | 1.4      | 18.8                                        | 11.4     | 176.5                                       |
| Bulk Density (Mg/m <sup>3</sup> )      | 2.02        |         |         | 1.9      | 26.7                                        | 11.9     | 179.3                                       |
| Dry Density (Mg/m <sup>3</sup> )       | 1.59        |         |         | 2.4      | 34.6                                        | 12.4     | 182.3                                       |
| Cell Pressure (kPa)                    | 130.0       |         |         | 2.9      | 43.4                                        | 12.8     | 185.7                                       |
| Membrane Thickness/Correction (mm/kPa) | 0.30 / 1.05 |         |         | 3.3      | 51.6                                        | 13.3     | 189.3                                       |
| Rate of Strain (%/min)                 | 1.95        |         |         | 3.8      | 61.3                                        | 13.8     | 191.0                                       |
| Corrected Deviator Stress (kPa)        | 208         |         |         | 4.3      | 69.8                                        | 14.3     | 193.1                                       |
| Undrained Shear Strength (kPa)         | 104         |         |         | 4.8      | 78.6                                        | 14.7     | 195.4                                       |
| Strain at Failure (%)                  | 19 (excess) |         |         | 5.2      | 88.0                                        | 15.2     | 197.1                                       |
| Mode of Failure                        | Plastic     |         |         | 5.7      | 96.6                                        | 15.7     | 199.2                                       |
|                                        |             |         |         | 6.2      | 105.5                                       | 16.2     | 201.1                                       |
|                                        |             |         |         | 6.7      | 114.0                                       | 16.6     | 203.0                                       |
|                                        |             |         |         | 7.1      | 122.7                                       | 17.1     | 204.2                                       |
|                                        |             |         |         | 7.6      | 131.1                                       | 17.6     | 205.2                                       |
|                                        |             |         |         | 8.1      | 138.6                                       | 18.1     | 206.1                                       |
|                                        |             |         |         | 8.6      | 144.4                                       | 18.5     | 207.3                                       |
|                                        |             |         |         | 9.0      | 150.3                                       | 19.0     | 208.0                                       |

Remarks AGS

06/10/2017

GEOTECHNICS

# LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: KRONOSPAN STORAGE BUILDING

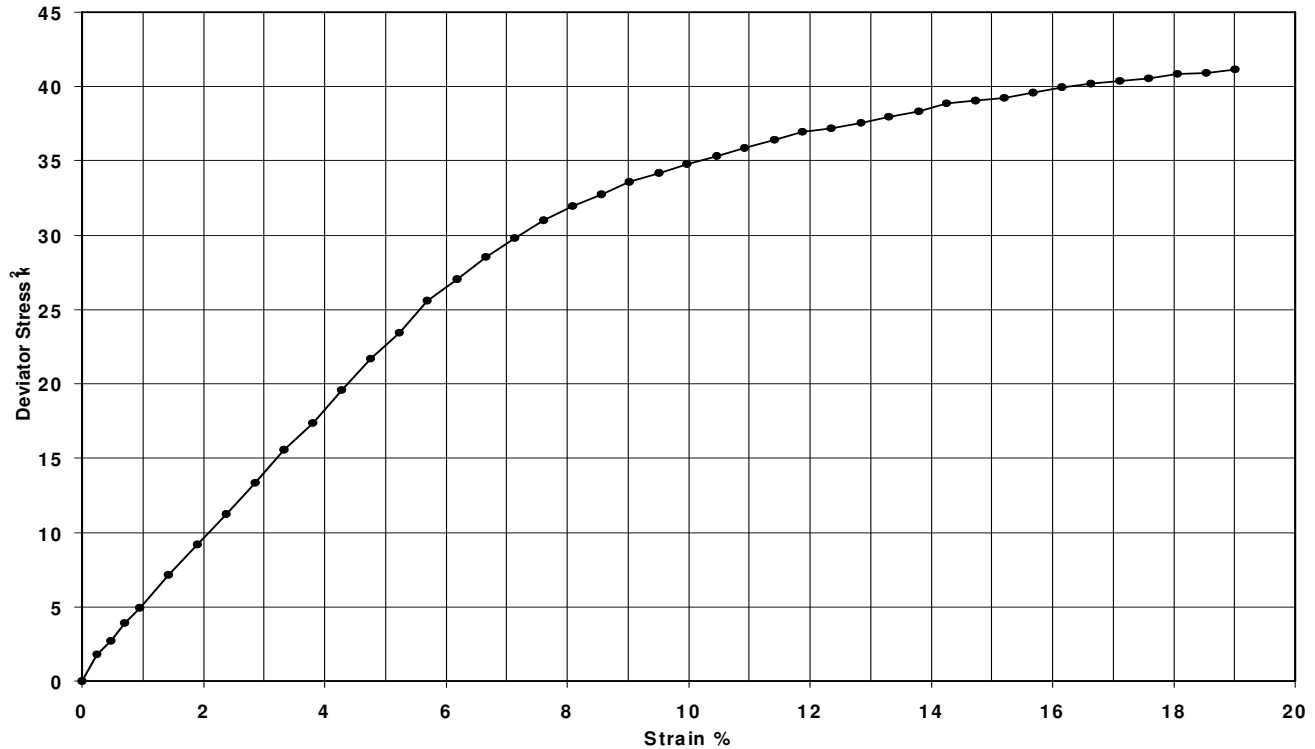
Hole BH09  
Sample Depth 12.50-12.95m  
Sample Type UT  
Sample Ref N70167

Project No: PN173691

## Sample Description

Soft laminated grey slightly gravelly silty CLAY.

BS1377 Part 8 1990 : Clause 8.0



|                                        | Stage 1     | Stage 2 | Stage 3 | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> |
|----------------------------------------|-------------|---------|---------|----------|---------------------------------------------|----------|---------------------------------------------|
| Sample Condition                       | Undisturbed |         |         | 0.2      | 1.8                                         | 9.5      | 34.2                                        |
| Orientation of sample                  | Vertical    |         |         | 0.5      | 2.7                                         | 10.0     | 34.8                                        |
| Diameter (mm)                          | 102.83      |         |         | 0.7      | 3.9                                         | 10.5     | 35.3                                        |
| Length (mm)                            | 210.36      |         |         | 1.0      | 4.9                                         | 10.9     | 35.9                                        |
| Water Content (%)                      | 33.7        |         |         | 1.4      | 7.1                                         | 11.4     | 36.4                                        |
| Bulk Density (Mg/m <sup>3</sup> )      | 1.99        |         |         | 1.9      | 9.2                                         | 11.9     | 36.9                                        |
| Dry Density (Mg/m <sup>3</sup> )       | 1.49        |         |         | 2.4      | 11.2                                        | 12.4     | 37.2                                        |
| Cell Pressure (kPa)                    | 250.0       |         |         | 2.9      | 13.3                                        | 12.8     | 37.5                                        |
| Membrane Thickness/Correction (mm/kPa) | 0.30 / 1.05 |         |         | 3.3      | 15.6                                        | 13.3     | 38.0                                        |
| Rate of Strain (%/min)                 | 1.95        |         |         | 3.8      | 17.4                                        | 13.8     | 38.3                                        |
| Corrected Deviator Stress (kPa)        | 41          |         |         | 4.3      | 19.6                                        | 14.3     | 38.9                                        |
| Undrained Shear Strength (kPa)         | 21          |         |         | 4.8      | 21.7                                        | 14.7     | 39.1                                        |
| Strain at Failure (%)                  | 19 (excess) |         |         | 5.2      | 23.5                                        | 15.2     | 39.2                                        |
| Mode of Failure                        | Plastic     |         |         | 5.7      | 25.6                                        | 15.7     | 39.6                                        |
|                                        |             |         |         | 6.2      | 27.0                                        | 16.2     | 39.9                                        |
|                                        |             |         |         | 6.7      | 28.6                                        | 16.6     | 40.2                                        |
|                                        |             |         |         | 7.1      | 29.8                                        | 17.1     | 40.4                                        |
|                                        |             |         |         | 7.6      | 31.0                                        | 17.6     | 40.6                                        |
|                                        |             |         |         | 8.1      | 32.0                                        | 18.1     | 40.8                                        |
|                                        |             |         |         | 8.6      | 32.8                                        | 18.5     | 40.9                                        |
|                                        |             |         |         | 9.0      | 33.6                                        | 19.0     | 41.2                                        |

Remarks 

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GEOTECHNICS

# LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

**Project:** KRONOSPAN STORAGE BUILDING

**Hole** BH10

**Sample Depth** 6.50-6.95m

**Project No:** PN173691

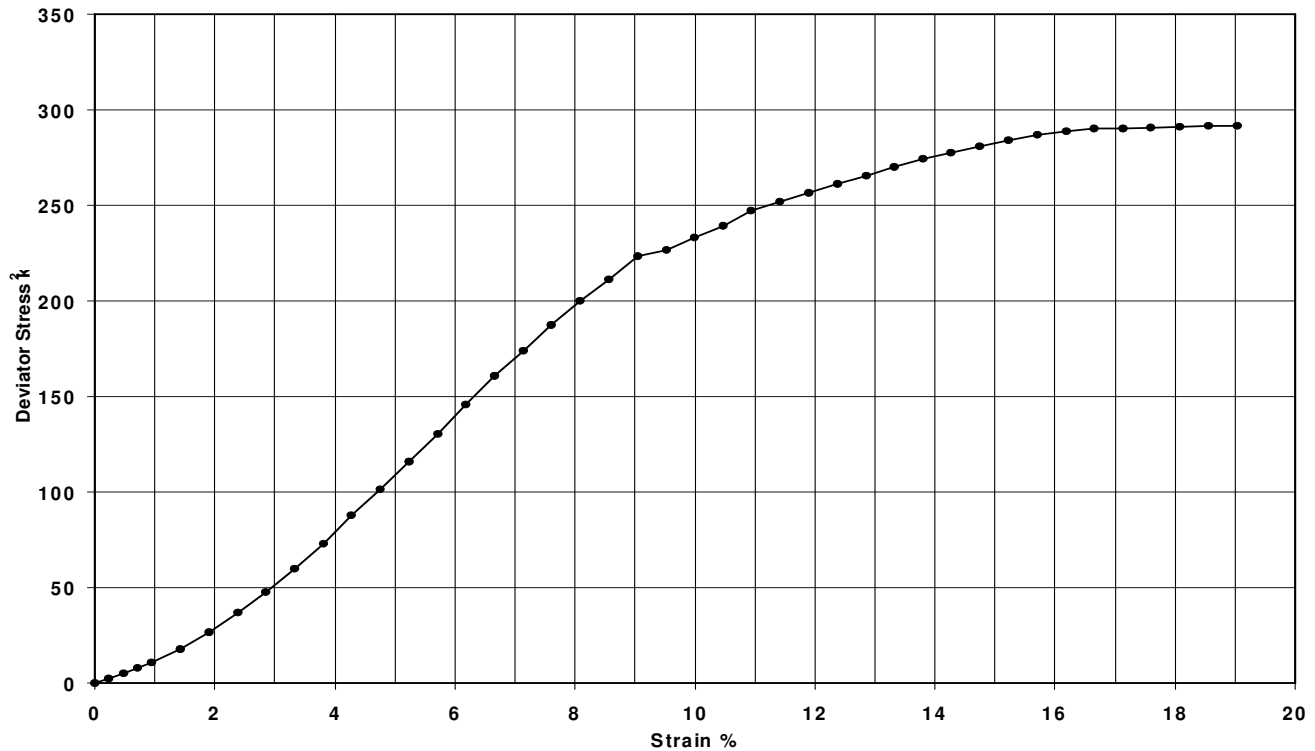
**Sample Type** UT

**Sample Ref** N70151

## Sample Description

Firm dark grey silty CLAY.

BS1377 Part 8 1990 : Clause 8.0



|                                        | Stage 1     | Stage 2 | Stage 3 | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> |
|----------------------------------------|-------------|---------|---------|----------|---------------------------------------------|----------|---------------------------------------------|
| Sample Condition                       | Undisturbed |         |         | 0.2      | 2.5                                         | 9.5      | 226.6                                       |
| Orientation of sample                  | Vertical    |         |         | 0.5      | 4.9                                         | 10.0     | 233.2                                       |
| Diameter (mm)                          | 103.47      |         |         | 0.7      | 8.0                                         | 10.5     | 239.1                                       |
| Length (mm)                            | 210.19      |         |         | 1.0      | 10.6                                        | 10.9     | 247.0                                       |
| Water Content (%)                      | 19.5        |         |         | 1.4      | 17.9                                        | 11.4     | 252.0                                       |
| Bulk Density (Mg/m <sup>3</sup> )      | 2.19        |         |         | 1.9      | 26.8                                        | 11.9     | 256.4                                       |
| Dry Density (Mg/m <sup>3</sup> )       | 1.83        |         |         | 2.4      | 37.0                                        | 12.4     | 261.3                                       |
| Cell Pressure (kPa)                    | 130.0       |         |         | 2.9      | 47.7                                        | 12.8     | 265.4                                       |
| Membrane Thickness/Correction (mm/kPa) | 0.30 / 1.05 |         |         | 3.3      | 59.9                                        | 13.3     | 270.2                                       |
| Rate of Strain (%/min)                 | 1.95        |         |         | 3.8      | 72.9                                        | 13.8     | 274.3                                       |
| Corrected Deviator Stress (kPa)        | 292         |         |         | 4.3      | 87.7                                        | 14.3     | 277.7                                       |
| Undrained Shear Strength (kPa)         | 146         |         |         | 4.8      | 101.3                                       | 14.7     | 280.8                                       |
| Strain at Failure (%)                  | 19 (excess) |         |         | 5.2      | 115.7                                       | 15.2     | 283.9                                       |
| Mode of Failure                        | Plastic     |         |         | 5.7      | 130.5                                       | 15.7     | 286.8                                       |
|                                        |             |         |         | 6.2      | 145.7                                       | 16.2     | 288.6                                       |
|                                        |             |         |         | 6.7      | 160.7                                       | 16.7     | 290.1                                       |
|                                        |             |         |         | 7.1      | 173.8                                       | 17.1     | 290.4                                       |
|                                        |             |         |         | 7.6      | 187.5                                       | 17.6     | 290.8                                       |
|                                        |             |         |         | 8.1      | 199.8                                       | 18.1     | 291.3                                       |
|                                        |             |         |         | 8.6      | 211.3                                       | 18.6     | 291.6                                       |
|                                        |             |         |         | 9.0      | 223.2                                       | 19.0     | 291.6                                       |

Remarks

06/10/2017

**GEOTECHNICS**

# LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: KRONOSPAN STORAGE BUILDING

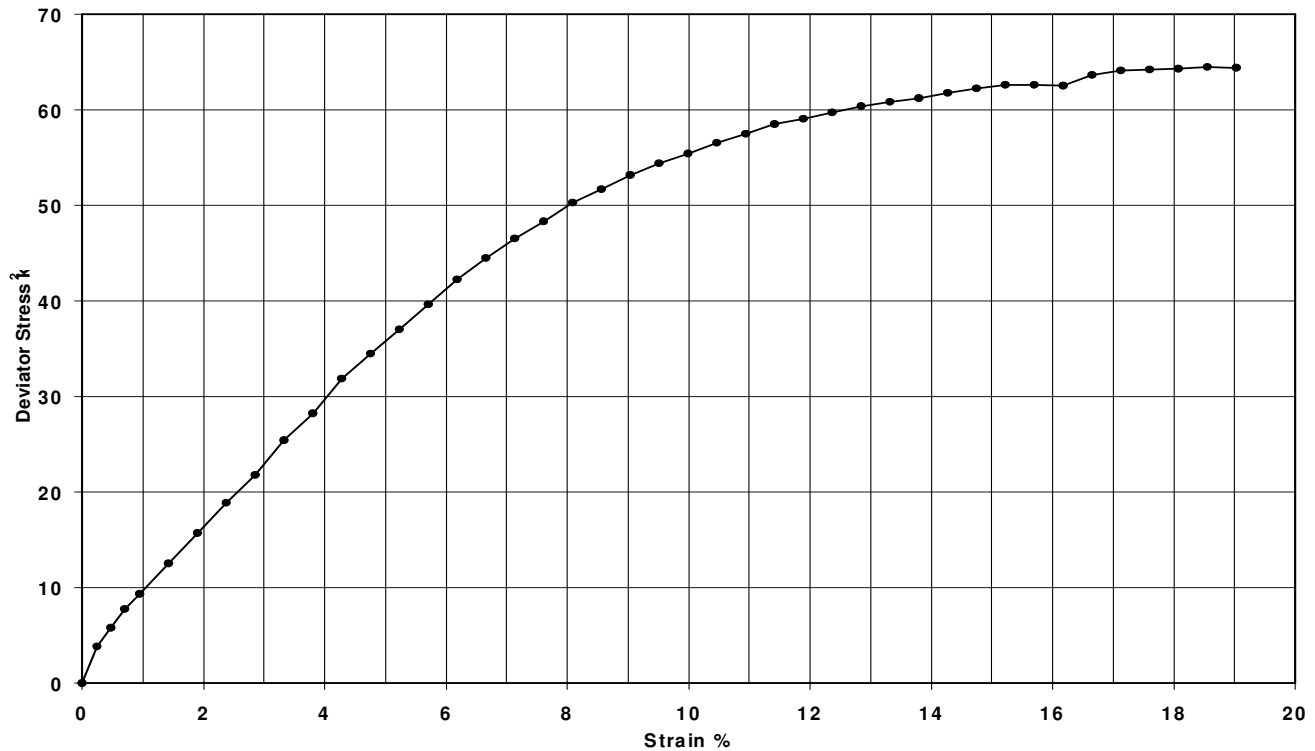
Hole BH10  
Sample Depth 12.50-12.95m  
Sample Type UT  
Sample Ref N70168

Project No: PN173691

## Sample Description

Soft dark grey silty CLAY.

BS1377 Part 8 1990 : Clause 8.0



|                                        | Stage 1     | Stage 2 | Stage 3 | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> | Strain % | Corrected Deviator Stress kN/m <sup>2</sup> |
|----------------------------------------|-------------|---------|---------|----------|---------------------------------------------|----------|---------------------------------------------|
| Sample Condition                       | Undisturbed |         |         | 0.2      | 3.9                                         | 9.5      | 54.4                                        |
| Orientation of sample                  | Vertical    |         |         | 0.5      | 5.8                                         | 10.0     | 55.4                                        |
| Diameter (mm)                          | 102.59      |         |         | 0.7      | 7.8                                         | 10.5     | 56.5                                        |
| Length (mm)                            | 210.17      |         |         | 1.0      | 9.4                                         | 10.9     | 57.5                                        |
| Water Content (%)                      | 31.1        |         |         | 1.4      | 12.5                                        | 11.4     | 58.5                                        |
| Bulk Density (Mg/m <sup>3</sup> )      | 2.04        |         |         | 1.9      | 15.7                                        | 11.9     | 59.1                                        |
| Dry Density (Mg/m <sup>3</sup> )       | 1.56        |         |         | 2.4      | 18.8                                        | 12.4     | 59.8                                        |
| Cell Pressure (kPa)                    | 250.0       |         |         | 2.9      | 21.8                                        | 12.8     | 60.4                                        |
| Membrane Thickness/Correction (mm/kPa) | 0.30 / 1.00 |         |         | 3.3      | 25.5                                        | 13.3     | 60.8                                        |
| Rate of Strain (%/min)                 | 1.95        |         |         | 3.8      | 28.2                                        | 13.8     | 61.2                                        |
| Corrected Deviator Stress (kPa)        | 65          |         |         | 4.3      | 31.9                                        | 14.3     | 61.8                                        |
| Undrained Shear Strength (kPa)         | 32          |         |         | 4.8      | 34.5                                        | 14.7     | 62.2                                        |
| Strain at Failure (%)                  | 19 (excess) |         |         | 5.2      | 37.0                                        | 15.2     | 62.6                                        |
| Mode of Failure                        | Plastic     |         |         | 5.7      | 39.6                                        | 15.7     | 62.6                                        |
|                                        |             |         |         | 6.2      | 42.2                                        | 16.2     | 62.5                                        |
|                                        |             |         |         | 6.7      | 44.5                                        | 16.7     | 63.7                                        |
|                                        |             |         |         | 7.1      | 46.6                                        | 17.1     | 64.1                                        |
|                                        |             |         |         | 7.6      | 48.3                                        | 17.6     | 64.2                                        |
|                                        |             |         |         | 8.1      | 50.3                                        | 18.1     | 64.3                                        |
|                                        |             |         |         | 8.6      | 51.7                                        | 18.6     | 64.5                                        |
|                                        |             |         |         | 9.0      | 53.2                                        | 19.0     | 64.4                                        |

Remarks AGS

06/10/2017

GEOTECHNICS

# LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: KRONOSPAN STORAGE BUILDING

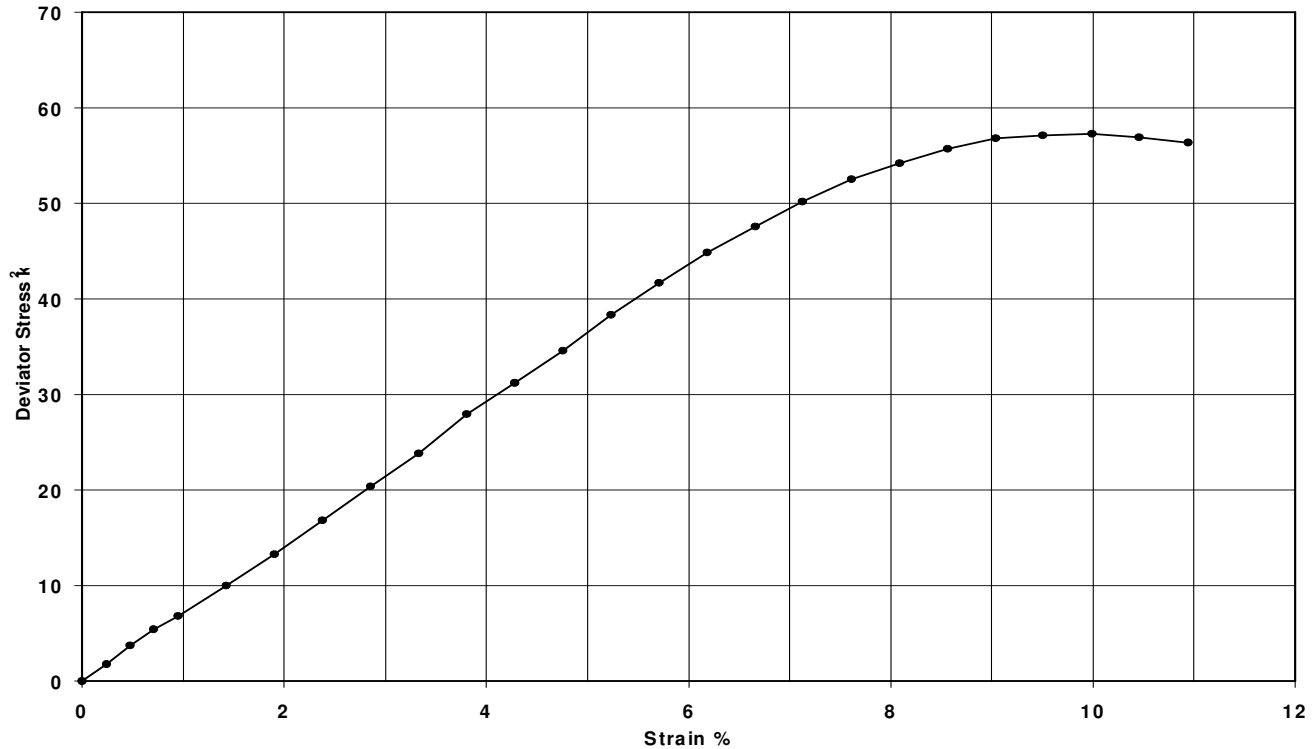
Hole BH11  
Sample Depth 9.00-9.45m  
Sample Type UT  
Sample Ref N70159

Project No: PN173691

## Sample Description

Soft laminated grey silty CLAY.

BS1377 Part 8 1990 : Clause 8.0



|                                        | Stage 1      | Stage 2 | Stage 3 | Strain % | Corrected Deviator Stress $\text{kN/m}^2$ | Strain % | Corrected Deviator Stress $\text{kN/m}^2$ |
|----------------------------------------|--------------|---------|---------|----------|-------------------------------------------|----------|-------------------------------------------|
| Sample Condition                       | Undisturbed  |         |         | 0.2      | 1.8                                       | 9.5      | 57.1                                      |
| Orientation of sample                  | Vertical     |         |         | 0.5      | 3.7                                       | 10.0     | 57.3                                      |
| Diameter (mm)                          | 103.37       |         |         | 0.7      | 5.4                                       | 10.5     | 57.0                                      |
| Length (mm)                            | 210.24       |         |         | 1.0      | 6.9                                       | 10.9     | 56.4                                      |
| Water Content (%)                      | 28.0         |         |         | 1.4      | 10.0                                      |          |                                           |
| Bulk Density ( $\text{Mg/m}^3$ )       | 2.04         |         |         | 1.9      | 13.3                                      |          |                                           |
| Dry Density ( $\text{Mg/m}^3$ )        | 1.59         |         |         | 2.4      | 16.8                                      |          |                                           |
| Cell Pressure (kPa)                    | 180.0        |         |         | 2.9      | 20.4                                      |          |                                           |
| Membrane Thickness/Correction (mm/kPa) | 0.30 / 0.66  |         |         | 3.3      | 23.8                                      |          |                                           |
| Rate of Strain (%/min)                 | 1.95         |         |         | 3.8      | 28.0                                      |          |                                           |
| Corrected Deviator Stress (kPa)        | 57           |         |         | 4.3      | 31.3                                      |          |                                           |
| Undrained Shear Strength (kPa)         | 29           |         |         | 4.8      | 34.6                                      |          |                                           |
| Strain at Failure (%)                  | 10.0         |         |         | 5.2      | 38.3                                      |          |                                           |
| Mode of Failure                        | Intermediate |         |         | 5.7      | 41.6                                      |          |                                           |
|                                        |              |         |         | 6.2      | 44.8                                      |          |                                           |
|                                        |              |         |         | 6.7      | 47.6                                      |          |                                           |
|                                        |              |         |         | 7.1      | 50.2                                      |          |                                           |
|                                        |              |         |         | 7.6      | 52.6                                      |          |                                           |
|                                        |              |         |         | 8.1      | 54.2                                      |          |                                           |
|                                        |              |         |         | 8.6      | 55.7                                      |          |                                           |
|                                        |              |         |         | 9.0      | 56.8                                      |          |                                           |

Remarks

06/10/2017

GEOTECHNICS

# LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: KRONOSPAN STORAGE BUILDING

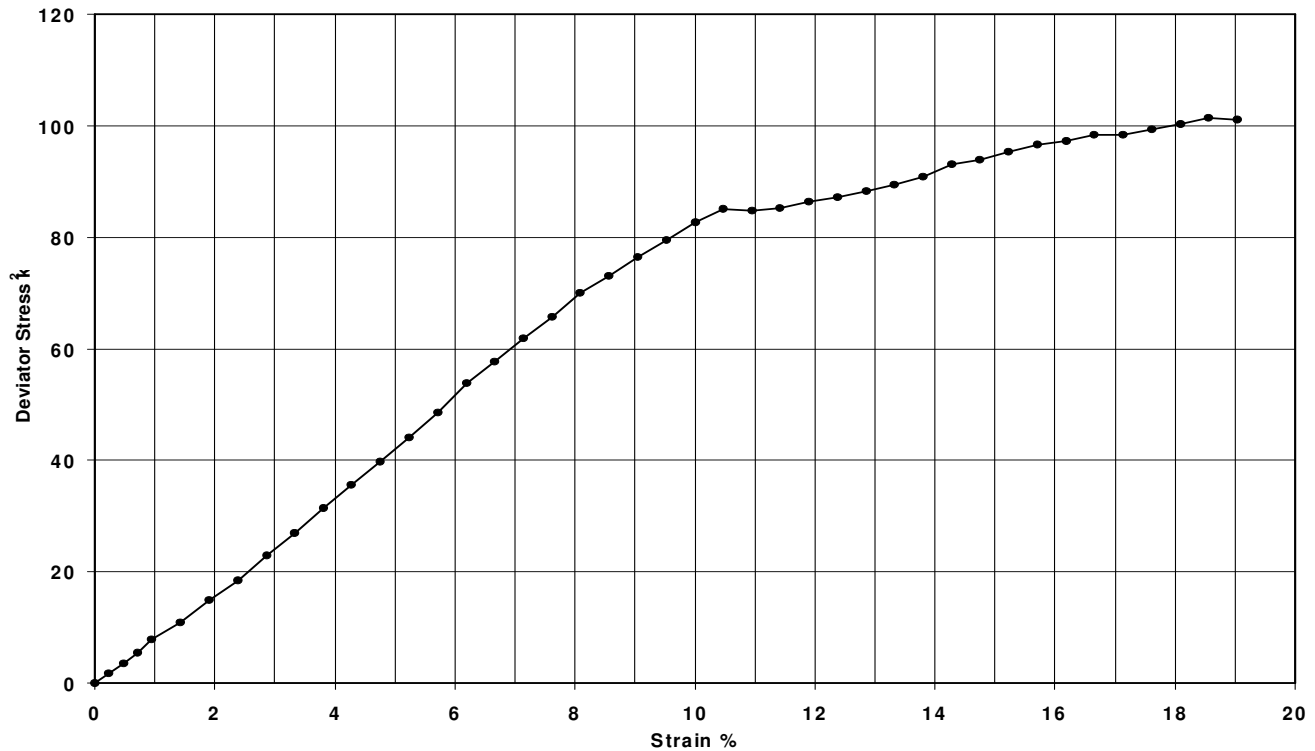
Hole BH11  
Sample Depth 12.00-12.45m  
Sample Type UT  
Sample Ref N70165

Project No: PN173691

## Sample Description

Soft to firm laminated grey silty CLAY.

BS1377 Part 8 1990 : Clause 8.0



|                                        | Stage 1     | Stage 2 | Stage 3 | Strain % | Corrected Deviator Stress $\text{kN/m}^2$ | Strain % | Corrected Deviator Stress $\text{kN/m}^2$ |
|----------------------------------------|-------------|---------|---------|----------|-------------------------------------------|----------|-------------------------------------------|
| Sample Condition                       | Undisturbed |         |         | 0.2      | 1.8                                       | 9.5      | 79.4                                      |
| Orientation of sample                  | Vertical    |         |         | 0.5      | 3.5                                       | 10.0     | 82.7                                      |
| Diameter (mm)                          | 103.30      |         |         | 0.7      | 5.4                                       | 10.5     | 85.1                                      |
| Length (mm)                            | 210.10      |         |         | 1.0      | 7.8                                       | 10.9     | 84.8                                      |
| Water Content (%)                      | 31.2        |         |         | 1.4      | 10.9                                      | 11.4     | 85.3                                      |
| Bulk Density ( $\text{Mg/m}^3$ )       | 2.02        |         |         | 1.9      | 14.8                                      | 11.9     | 86.3                                      |
| Dry Density ( $\text{Mg/m}^3$ )        | 1.54        |         |         | 2.4      | 18.4                                      | 12.4     | 87.2                                      |
| Cell Pressure (kPa)                    | 240.0       |         |         | 2.9      | 23.0                                      | 12.9     | 88.2                                      |
| Membrane Thickness/Correction (mm/kPa) | 0.30 / 0.99 |         |         | 3.3      | 26.9                                      | 13.3     | 89.4                                      |
| Rate of Strain (%/min)                 | 1.95        |         |         | 3.8      | 31.3                                      | 13.8     | 90.9                                      |
| Corrected Deviator Stress (kPa)        | 101         |         |         | 4.3      | 35.5                                      | 14.3     | 93.1                                      |
| Undrained Shear Strength (kPa)         | 51          |         |         | 4.8      | 39.7                                      | 14.8     | 93.8                                      |
| Strain at Failure (%)                  | 19 (excess) |         |         | 5.2      | 44.1                                      | 15.2     | 95.3                                      |
| Mode of Failure                        | Plastic     |         |         | 5.7      | 48.6                                      | 15.7     | 96.6                                      |
|                                        |             |         |         | 6.2      | 53.8                                      | 16.2     | 97.2                                      |
|                                        |             |         |         | 6.7      | 57.7                                      | 16.7     | 98.3                                      |
|                                        |             |         |         | 7.1      | 61.8                                      | 17.1     | 98.4                                      |
|                                        |             |         |         | 7.6      | 65.6                                      | 17.6     | 99.4                                      |
|                                        |             |         |         | 8.1      | 70.0                                      | 18.1     | 100.4                                     |
|                                        |             |         |         | 8.6      | 73.0                                      | 18.6     | 101.4                                     |
|                                        |             |         |         | 9.0      | 76.4                                      | 19.0     | 101.1                                     |

Remarks AGS

06/10/2017

GEOTECHNICS

### LABORATORY RESULTS - Test Remarks

**Project** KRONOSPAN STORAGE BUILDING

**Project No:** PN173691

| Sample |                                      |      |               | Laboratory Remark                                                            |
|--------|--------------------------------------|------|---------------|------------------------------------------------------------------------------|
| Hole   | Depth<br>(Specimen<br>Depth)<br>m    | Type | Sample<br>Ref |                                                                              |
| BH02   | 14.00-<br>14.45<br>(14.00-<br>14.45) | UT   | N69893        | Quick Undrained Triaxial Test - NST=                                         |
| BH09   | 21.50-<br>21.95<br>(21.50-<br>21.95) | UT   | N70178        | Quick Undrained Triaxial Test - NST= Due to insufficient sampl left in tube. |
|        |                                      |      |               |                                                                              |

Remarks



GEOTECHNICS

geotechnical and geoenvironmental specialists



# LABORATORY REPORT



4043

**Contract Number: PSL17/4724**

Report Date: 04 October 2017  
Client's Reference: PN173691  
Client Name: Geotechnics Limited  
Unit 1, Borders Industrial Park  
River Lane  
Saltney  
Chester  
CH4 8RJ

**For the attention of: Collin Dodd**

Contract Title: Kronospan storage buildings  
Date Received: 28/9/2017  
Date Commenced: 28/9/2017  
Date Completed: 3/10/2017

**Notes: Opinions and Interpretations are outside the UKAS Accreditation**

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

  
R Gunson  
(Director)

A Watkins  
(Director)

R Berriman  
(Quality Manager)

L Knight  
(Senior Technician)

S Eyre  
(Senior Technician)

A Fry  
(Senior Technician)

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[awatkins@prosoils.co.uk](mailto:awatkins@prosoils.co.uk)

Page 1 of

# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Description of Sample                                   |
|-------------|---------------|-------------|-------------|--------------|---------------------------------------------------------|
| BH03        |               | D           | 4.45        |              | Grey sandy very clayey SILT.                            |
| BH05        |               | B           | 1.20        | 1.65         | Brown slightly gravelly very sandy very silty CLAY.     |
| BH05        |               | D           | 4.50        |              | Grey SILT.                                              |
| BH06        |               | B           | 1.90        | 2.50         | Brown slightly gravelly sandy very silty CLAY.          |
| BH06        |               | D           | 4.90        |              | Grey sandy very clayey SILT.                            |
| BH06        |               | B           | 16.50       | 16.95        | Brown slightly gravelly very sandy CLAY.                |
| BH08        |               | B           | 1.20        | 1.65         | Greyish brown very gravelly very sandy very silty CLAY. |
| BH08        |               | B           | 6.50        | 6.95         | Grey very sandy very clayey SILT.                       |
| BH08        |               | D           | 9.50        | 9.95         | Grey very sandy very clayey SILT.                       |
| BH08        |               | B           | 13.00       |              | Grey very sandy very clayey SILT.                       |
| BH08        |               | D           | 15.50       | 15.95        | Grey very sandy clayey SILT.                            |
| BH08        |               | D           | 22.50       | 22.95        | Brown slightly gravelly very sandy CLAY.                |
| BH09        |               | D           | 7.50        |              | Grey very sandy very clayey SILT.                       |
| BH09        |               | D           | 15.00       |              | Grey sandy very clayey SILT.                            |
| BH10        |               | B           | 1.20        | 1.65         | Brown very sandy very clayey silty GRAVEL.              |
| BH10        |               | D           | 7.50        | 8.00         | Grey very sandy very clayey SILT.                       |
| BH10        |               | B           | 10.00       | 10.50        | Grey very sandy very clayey SILT.                       |
| BH11        |               | D           | 22.50       | 22.95        | Brown slightly gravelly very sandy CLAY.                |
|             |               |             |             |              |                                                         |



Kronospan Storage Building

Contract No:

PSL17/4724

Client Ref:

PN173691

# SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Moisture Content %<br>Clause 3.2 | Linear Shrinkage %<br>Clause 6.5 | Particle Density Mg/m <sup>3</sup><br>Clause 8.2 | Liquid Limit %<br>Clause 4.3/4 | Plastic Limit %<br>Clause 5.3 | Plasticity Index %<br>Clause 5.4 | Passing .425mm % | Remarks                     |
|-------------|---------------|-------------|-------------|--------------|----------------------------------|----------------------------------|--------------------------------------------------|--------------------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| BH03        |               | D           | 4.45        |              | 36                               |                                  |                                                  | 41                             | 27                            | 14                               | 100              | Intermediate plasticity MI. |
| BH05        |               | B           | 1.20        | 1.65         | 20                               |                                  |                                                  | 32                             | 18                            | 14                               | 76               | Low plasticity CL.          |
| BH05        |               | D           | 4.50        |              | 28                               |                                  |                                                  |                                | NP                            |                                  |                  |                             |
| BH06        |               | B           | 1.90        | 2.50         | 25                               |                                  |                                                  | 33                             | 21                            | 12                               | 95               | Low plasticity CL.          |
| BH06        |               | D           | 4.90        |              | 38                               |                                  |                                                  | 43                             | 28                            | 15                               | 100              | Intermediate plasticity MI. |
| BH06        |               | B           | 16.50       | 16.95        | 13                               |                                  |                                                  | 28                             | 15                            | 13                               | 95               | Low plasticity CL.          |
| BH08        |               | B           | 1.20        | 1.65         | 16                               |                                  |                                                  | 33                             | 21                            | 12                               | 60               | Low plasticity CL.          |
| BH08        |               | B           | 6.50        | 6.95         | 28                               |                                  |                                                  | 34                             | 24                            | 10                               | 100              | Low plasticity ML.          |
| BH08        |               | D           | 9.50        | 9.95         | 28                               |                                  |                                                  | 32                             | 24                            | 8                                | 100              | Low plasticity ML.          |
| BH08        |               | B           | 13.00       |              | 27                               |                                  |                                                  | 31                             | 23                            | 8                                | 100              | Low plasticity ML.          |
| BH08        |               | D           | 15.50       | 15.95        | 28                               |                                  |                                                  | 33                             | 24                            | 9                                | 100              | Low plasticity ML.          |
| BH08        |               | D           | 22.50       | 22.95        | 12                               |                                  |                                                  | 28                             | 15                            | 13                               | 90               | Low plasticity CL.          |
| BH09        |               | D           | 7.50        |              | 29                               |                                  |                                                  | 37                             | 26                            | 11                               | 100              | Intermediate plasticity MI. |
| BH09        |               | D           | 15.00       |              | 36                               |                                  |                                                  | 42                             | 28                            | 14                               | 100              | Intermediate plasticity MI. |
| BH10        |               | B           | 1.20        | 1.65         | 12                               |                                  |                                                  | 33                             | 19                            | 14                               | 31               | Low plasticity CL.          |
| BH10        |               | D           | 7.50        | 8.00         | 31                               |                                  |                                                  | 37                             | 25                            | 12                               | 100              | Intermediate plasticity MI. |
| BH10        |               | B           | 10.00       | 10.50        | 31                               |                                  |                                                  | 34                             | 27                            | 7                                | 100              | Low plasticity ML.          |
| BH11        |               | D           | 22.50       | 22.95        | 19                               |                                  |                                                  | 31                             | 15                            | 16                               | 92               | Low plasticity CL.          |
|             |               |             |             |              |                                  |                                  |                                                  |                                |                               |                                  |                  |                             |

SYMBOLS : NP : Non Plastic

\* : Liquid Limit and Plastic Limit Wet Sieved.



**PSL**  
Professional Soils Laboratory

Kronospan Storage Building

Contract No:

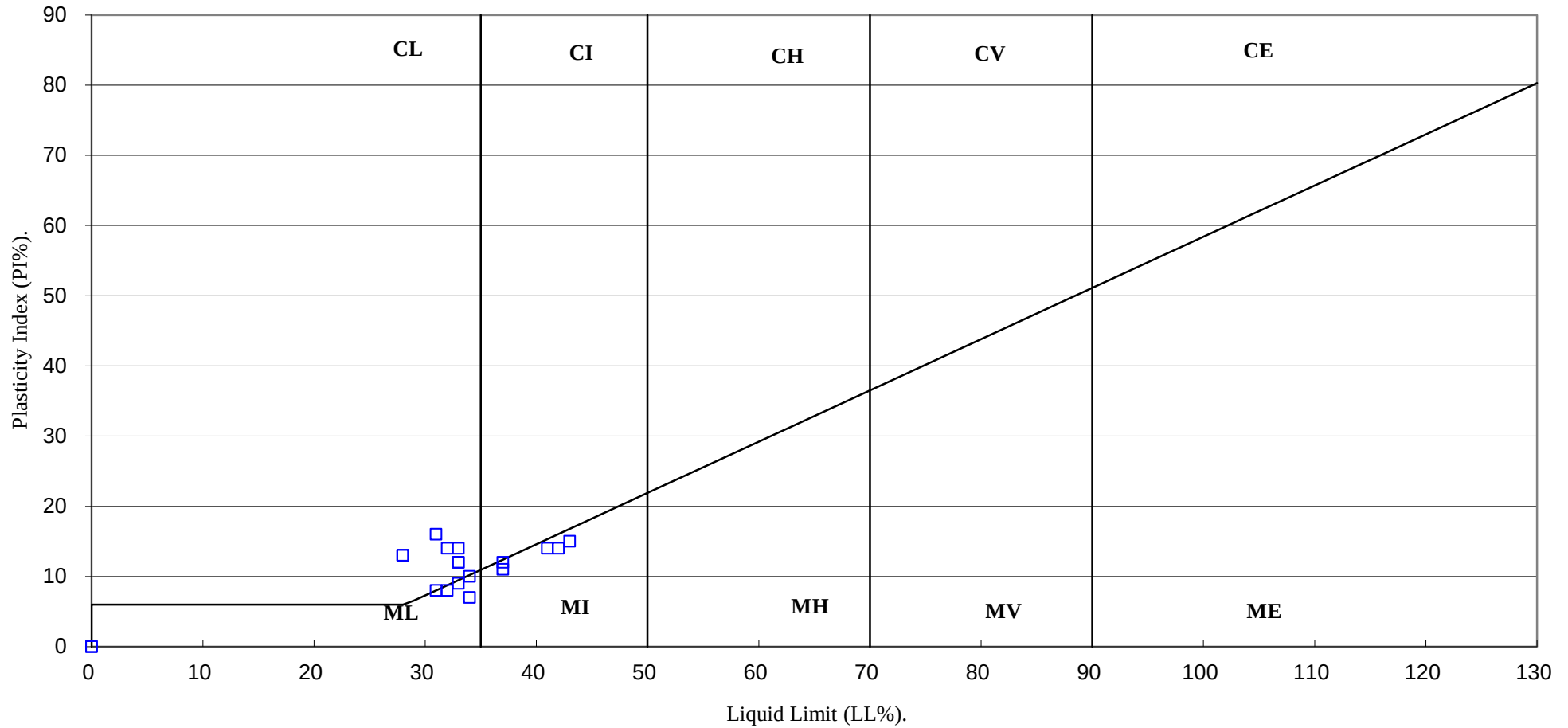
PSL17/4724

Client Ref:

PN173691

# PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(BS5930 :2015)



4043

**PSL**  
Professional Soils Laboratory

**Kronospan Storage Building**

**Contract No:**

**PSL17/4724**

**Client Ref:**

**PN173691**



## Certificate of Analysis

*Certificate Number* 17-10454

20-Sep-17

*Client* Geotechnics LTD  
203 Torrington Avenue  
Tile Hill  
Coventry  
CV4 9AP

*Our Reference* 17-10454

*Client Reference* PN173691

*Order No* AUTH-OC17155

*Contract Title* PN173691 KRONOSPAN STORAGE BUILDING

*Description* 7 Soil samples.

*Date Received* 15-Sep-17

*Date Started* 15-Sep-17

*Date Completed* 20-Sep-17

*Test Procedures* Identified by prefix DETSn (details on request).

*Notes* Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

*Approved By*

Adam Fenwick  
Contracts Manager



## Summary of Chemical Analysis

### Soil Samples

Our Ref 17-10454

Client Ref PN173691

Contract Title PN173691 KRONOSPAN STORAGE BUILDING

| Lab No        | 1230210  | 1230211  | 1230212     | 1230213   | 1230214  | 1230215   | 1230216   |
|---------------|----------|----------|-------------|-----------|----------|-----------|-----------|
| Sample ID     | BH01     | BH04     | BH04        | BH07      | BH07     | BH01      | BH02      |
| Depth         | 8.00     | 3.50     | 12.00-12.45 | 3.00-3.45 | 8.00     | 1.85-2.30 | 1.20-1.65 |
| Other ID      |          |          |             |           |          |           |           |
| Sample Type   | D        | D        | B           | D         | B        | B         | D         |
| Sampling Date | 12/09/17 | 12/09/17 | 12/09/17    | 12/09/17  | 12/09/17 | 12/09/17  | 12/09/17  |
| Sampling Time | n/s      | n/s      | n/s         | n/s       | n/s      | n/s       | n/s       |

| Test                            | Method      | LOD | Units |     |     |     |     |     |     |      |
|---------------------------------|-------------|-----|-------|-----|-----|-----|-----|-----|-----|------|
| <b>Inorganics</b>               |             |     |       |     |     |     |     |     |     |      |
| pH                              | DETSC 2008# |     |       | 8.2 | 8.2 | 8.4 | 8.2 | 8.3 | 7.9 | 8.1  |
| Sulphate Aqueous Extract as SO4 | DETSC 2076# | 10  | mg/l  | 100 | 140 | 47  | 40  | 49  | 51  | < 10 |

## Information in Support of the Analytical Results

Our Ref 17-10454  
 Client Ref PN173691  
 Contract PN173691 KRONOSPAN STORAGE BUILDING

### Containers Received & Deviating Samples

| Lab No  | Sample ID             | Date Sampled | Containers Received | Holding time exceeded for tests | Inappropriate container for tests |
|---------|-----------------------|--------------|---------------------|---------------------------------|-----------------------------------|
| 1230210 | BH01 8.00 SOIL        | 12/09/17     | PT 1L               |                                 |                                   |
| 1230211 | BH04 3.50 SOIL        | 12/09/17     | PT 1L               |                                 |                                   |
| 1230212 | BH04 12.00-12.45 SOIL | 12/09/17     | PT 1L               |                                 |                                   |
| 1230213 | BH07 3.00-3.45 SOIL   | 12/09/17     | PT 1L               |                                 |                                   |
| 1230214 | BH07 8.00 SOIL        | 12/09/17     | PT 1L               |                                 |                                   |
| 1230215 | BH01 1.85-2.30 SOIL   | 12/09/17     | PT 1L               |                                 |                                   |
| 1230216 | BH02 1.20-1.65 SOIL   | 12/09/17     | PT 1L               |                                 |                                   |

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

### Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

### Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months



## Certificate of Analysis

*Certificate Number* 17-11395

03-Oct-17

*Client* Geotechnics Limited  
The Geotechnical Centre  
Unit 1B Borders Ind. Park  
River Lane  
Saltney  
Chester  
CH4 8RJ

*Our Reference* 17-11395

*Client Reference* PN173691

*Order No* AUTH-ON16347

*Contract Title* PN173691 KRONOSPAN STORAGE BUILDING

*Description* 6 Soil samples.

*Date Received* 27-Sep-17

*Date Started* 27-Sep-17

*Date Completed* 03-Oct-17

*Test Procedures* Identified by prefix DETSn (details on request).

*Notes* Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

*Approved By*

Adam Fenwick  
Contracts Manager



## Summary of Chemical Analysis

### Soil Samples

Our Ref 17-11395

Client Ref PN173691

Contract Title PN173691 KRONOSPAN STORAGE BUILDING

| Lab No        | 1235164 | 1235165   | 1235166 | 1235167   | 1235168 | 1235169   |
|---------------|---------|-----------|---------|-----------|---------|-----------|
| Sample ID     | BH03    | BH05      | BH06    | BH08      | BH09    | BH11      |
| Depth         | 0.90    | 0.60-1.20 | 1.05    | 1.20-1.65 | 1.80    | 1.20-1.65 |
| Other ID      |         |           |         |           |         |           |
| Sample Type   | SOIL    | SOIL      | SOIL    | SOIL      | SOIL    | SOIL      |
| Sampling Date | n/s     | n/s       | n/s     | n/s       | n/s     | n/s       |
| Sampling Time | n/s     | n/s       | n/s     | n/s       | n/s     | n/s       |

| Test                            | Method      | LOD | Units |     |     |     |       |      |       |
|---------------------------------|-------------|-----|-------|-----|-----|-----|-------|------|-------|
| <b>Metals</b>                   |             |     |       |     |     |     |       |      |       |
| Magnesium Aqueous Extract       | DETSC 2076* | 10  | mg/l  |     |     |     | < 10  | < 10 | < 10  |
| <b>Inorganics</b>               |             |     |       |     |     |     |       |      |       |
| pH                              | DETSC 2008# |     |       | 7.6 | 8.5 | 8.2 | 7.4   | 8.7  | 7.9   |
| Chloride Aqueous Extract        | DETSC 2055  | 1   | mg/l  |     |     |     | 5.0   | 7.2  | 3.0   |
| Nitrate Aqueous Extract as NO3  | DETSC 2055  | 1   | mg/l  |     |     |     | < 1.0 | 15   | < 1.0 |
| Sulphate Aqueous Extract as SO4 | DETSC 2076# | 10  | mg/l  | 37  | 45  | 92  | 29    | 40   | 12    |

## Information in Support of the Analytical Results

Our Ref 17-11395  
 Client Ref PN173691  
 Contract PN173691 KRONOSPAN STORAGE BUILDING

### Containers Received & Deviating Samples

| Lab No  | Sample ID           | Date Sampled | Containers Received | Holding time exceeded for tests                                             | Inappropriate container for tests |
|---------|---------------------|--------------|---------------------|-----------------------------------------------------------------------------|-----------------------------------|
| 1235164 | BH03 0.90 SOIL      |              | PT 1L               | Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days) |                                   |
| 1235165 | BH05 0.60-1.20 SOIL |              | PT 1L               | Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days) |                                   |
| 1235166 | BH06 1.05 SOIL      |              | PT 1L               | Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days) |                                   |
| 1235167 | BH08 1.20-1.65 SOIL |              | PT 1L               | Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days) |                                   |
| 1235168 | BH09 1.80 SOIL      |              | PT 1L               | Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days) |                                   |
| 1235169 | BH11 1.20-1.65 SOIL |              | PT 1L               | Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days) |                                   |

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

### Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

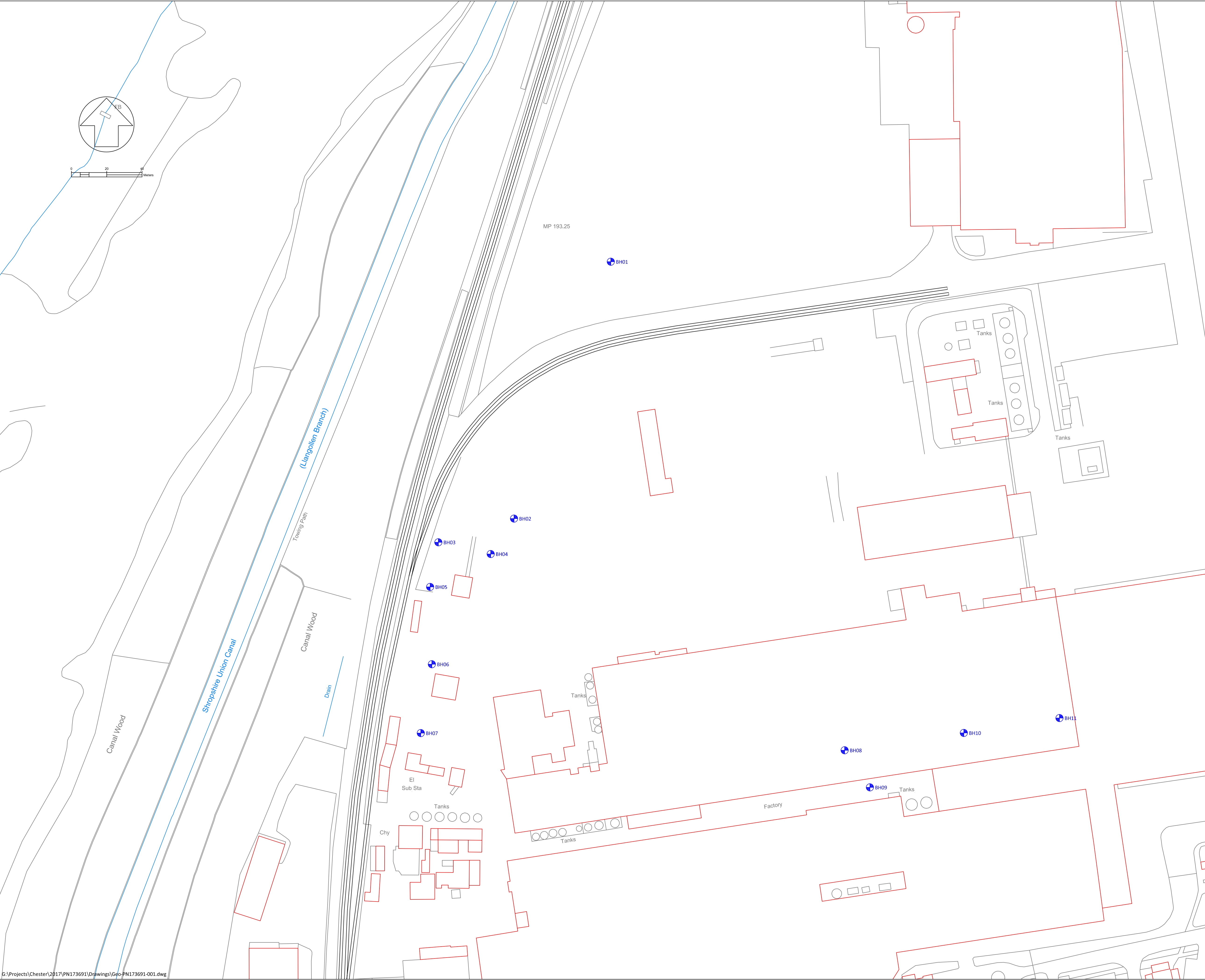
### Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

# **APPENDIX 5**

## **Exploratory Hole Location Plan**



Key

Borehole

| Hole ID | Easting (mE) | Northing (mN) | Level (mOD) |
|---------|--------------|---------------|-------------|
| BH01    | 328524.5     | 338672.6      | 99.09       |
| BH02    | 328469.7     | 338527.1      | 101.28      |
| BH03    | 328426.9     | 338513.7      | 101.35      |
| BH04    | 328456.5     | 338507.1      | 101.37      |
| BH05    | 328422.2     | 338488.4      | 101.29      |
| BH06    | 328423.2     | 338444.6      | 101.40      |
| BH07    | 328416.9     | 338405.7      | 101.42      |
| BH08    | 328656.9     | 338395.9      | 101.13      |
| BH09    | 328671.2     | 338374.9      | 100.83      |
| BH10    | 328724.3     | 338405.7      | 101.12      |
| BH11    | 328778.5     | 338414.2      | 101.06      |

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Engineer:  
Ramboll UK

Client:  
Kronospan Limited

Project:  
Kronospan Storage Building

Drawing Title:  
Exploratory Hole Location Plan

Scale: 1:1000@A1

Date:  
October 2017

Project No:  
PN173691

File Name:  
Geo-PN173691-001(1)

## **APPENDIX 6**

### **Investigation Techniques and General Notes**

## INTRODUCTION

The following brief review of Ground Investigation techniques, generally used as part of most Site Investigations in the UK, summarises their methodology, advantages and limitations. Detailed descriptions of the techniques are available and can be provided on request. This review should be read in conjunction with the accompanying General Notes.

## TRIAL PITS

The trial pit is amongst the simplest yet most effective means of identifying shallow ground conditions on a site. Its advantages include simplicity, speed, potential accuracy and cost-effectiveness. The trial pit is most commonly formed using a back-acting excavator which can typically determine ground conditions to some 4 metres below ground level. Hand excavation is often used to locate, expose and detail existing foundations, features or services. In general, it is difficult to extend pits significantly below the water table in predominantly granular soils, where flows can cause instability. Unless otherwise stated, the trial pits will not have been provided with temporary side support during their construction. Under such circumstances, entrance into the pit is not permitted and hence observations will have been made from the ground surface and samples taken from the excavator bucket.

Where access for personnel is required to allow close observation of the exposed strata, the taking of samples and the carrying out of in situ tests, the sides of the trial pits (Observation Pits in BS 5930:2015) will be made safe using temporary supports or the sides battered back to a stable angle. Some limited access to such Trial Pits (Observation Pits) at depths less than 1m may be allowed in stable conditions or where the sides are benched or battered back to a safe angle.

Trends in strata type, level and thickness can be determined, shear surfaces identified and the behaviour of plant, excavation sides and excavated materials can be related to the construction process. They are particularly valuable in land slip investigations. Some types of in situ test can be undertaken in such pits and large disturbed or block samples obtained.

## CABLE PERCUSSION BORING

The light Cable Percussion technique of soft ground boring, typically at a diameter of 150mm, is a well-established simple and flexible method of boring vertical holes and generally allows data to be obtained in respect of strata conditions other than rock. A tubular cutter (for cohesive soils) or shell with a flap valve (for granular soils) is repeatedly lifted and dropped using a winch and rope operating from an "A" frame. Soil which enters these tools is regularly removed and either sampled for subsequent examination or test, or laid to one side for later removal off site and licensed disposal or, if permitted by the Client, use as backfill. Steel casing will have been used to prevent collapse of the borehole sides where necessary. A degree of disturbance of soil and mixing of layers is inevitable and the presence of very thin layers of different soils within a particular stratum may not be identified. Changes in strata type can only be detected on recognition of a change in soil samples at the surface, after the interface has been passed. For the foregoing reasons, depth measurements should not be considered to be more accurate than 0.10 metre. The technique can determine ground conditions to depths in excess of 30 metres under suitable circumstances and usually causes less surface disturbance than trial pitting.

In cohesive soils cylindrical samples are retrieved by driving or pushing in 100mm nominal diameter tubes. In soft soils, piston sampling or vane testing may be undertaken. In granular soils and often in cohesive materials, in situ Standard Penetration Tests (SPTs) are performed. The SPT records the number of standard blows required to drive a 50mm diameter open or cone ended probe for 300mm after an initial 150mm penetration. A modified method of recording is used in denser strata. Small disturbed samples are obtained throughout.

## ROTARY DRILLING

Rotary Drilling to produce cores by rotating an annular diamond-impregnated tube or barrel into the ground is the technique most appropriate to the forming of site investigation boreholes through rock or other hard strata. It has the advantage of being able to be used vertically or at an angle. Core diameters of less than 100mm are most common for site investigation purposes. Core is normally retrieved in plastic lining tubes. A flushing fluid such as air, water or foam is used to cool the bit and carry cuttings to the surface. Depths in excess of 60 metres can be achieved under suitable circumstances using rotary techniques, with minimal surface disturbance.

Examination of cores allows detailed rock description and generally enables angled discontinuity surfaces to be observed. However, vertical holes do not necessarily reveal the presence of vertical or near-vertical fissures or joint discontinuities. The core type and/or techniques used will depend on the ground conditions. Where open hole rotary drilling is employed, descriptions of strata result from examination at the surface of small particles ejected from the borehole in the flushing medium. In consequence, no indication of fissuring, bedding, consistency or degree of weathering can be obtained.

## DYNAMIC SAMPLING

This technique involves the driving of an open-ended tube into the ground and retrieval of the soil which enters the tube. It was previously called window or windowless sampling. The term "window sample" arose from the original device which had a "window" or slot cut into the side of the tube through which samples were taken. This was superseded by the use of a thin-walled plastic liner to retrieve the soil sample from within a sampler (windowless sampling) which has a solid wall. Line diameters range from 36 to 86mm. Such samples can be used for qualitative logging, selection of samples for classification and chemical analysis and for obtaining a rudimentary assessment of strength.

Driving devices can be hand-held or machine mounted and the drive tubes are typically in 1m lengths. Depending on the type of rig used, the hole formed can be cased to prevent collapse of the borehole sides. Where the type of rig does not allow the insertion of casing, the success of this technique can be limited when soils and groundwater conditions are such that the sides of the hole collapse on withdrawal of the sampler. Obstructions within the ground, the density of the material or its strength can also limit the depth and rate of penetration of this light-weight investigation technique. Nevertheless, it is a valuable tool where access is constrained such as within buildings or on embankments. Depths of up to 10m can be achieved in suitable circumstances depending on the rig type but depths of 5m to 6m are more common.

## EXPLORATORY HOLE RECORDS

The data obtained by these techniques are generally presented on Trial Pit, Borehole, Drillhole or Dynamic Sample Records. The descriptions of strata result from information gathered from a number of sources which may include published geological data, preliminary field observations and descriptions, in situ test results, laboratory test results and specimen descriptions. A key to the symbols and abbreviations used accompanies the records. The descriptions on the exploratory hole records accommodate but may not necessarily be identical to those on any preliminary records or the laboratory summaries.

The records show ground conditions at the exploratory hole locations. The degree to which they can be used to represent conditions between or beyond such holes, however, is a matter for geological interpretation rather than factual reporting and the associated uncertainties must be recognised.

## DYNAMIC PROBING

This technique typically measures the number of blows of a standard weight falling over a standard height to advance a cone-ended rod over sequential standard distances (typically 100mm). Some devices measure the penetration of the probe per standard blow. It is essentially a profiling tool and is best used in conjunction with other investigation techniques where site-specific correlation can be used to delineate the distribution of soft or loose soils or the upper horizon of a dense or strong layer such as rock.

Both machine-driven and hand-driven equipment is available, the selection depending upon access restrictions and the depth of penetration required. It is particularly useful where access for larger equipment is not available, disturbance is to be minimised or where there are cost constraints. No samples are recovered and some techniques leave a sacrificial cone head in the ground. As with other lightweight techniques, progress is limited in strong or dense soils. The results are presented both numerically and graphically. Depths of up to 10m are commonly achieved in suitable circumstances.

The hand-driven DCP probing device has been calibrated by the Highways Agency to provide a profile of CBR values over a range of depths.

## INSTRUMENTATION

The most common form of instrument used in site investigation is either the standpipe or else the standpipe piezometer which can be installed in investigation holes. They are used to facilitate monitoring of groundwater levels and water sampling over a period of time following site work. Normally a standpipe would be formed using rigid plastic tubing which has been perforated or slotted over much of its length whilst a standpipe piezometer would have a filter tip which would be placed at a selected level and the hole sealed above and sometimes below to isolate the zone of interest. Groundwater levels are determined using an electronic "dip meter" to measure the depth to the water surface from ground level. Piezometers can also be used to measure permeability. They are simple and inexpensive instruments for long term monitoring but response times can limit their use in tidal areas and access to the ground surface at each instrument is necessary. Remote reading requires more sophisticated hydraulic, electronic or pneumatic equipment.

Settlement can be monitored using surface or buried target plates whilst lateral movement over a range of depths is monitored using slip indicator or inclinometer equipment.

1. The report is prepared for the exclusive use of the Client named in the document and copyright subsists with Geotechnics Limited. Prior written permission must be obtained to reproduce all or part of the report. It is prepared on the understanding that its contents are only disclosed to parties directly involved in the current investigation, preparation and development of the site.
2. Further copies may be obtained with the Client's written permission, from Geotechnics Limited with whom the master copy of the document will be retained.
3. The report and/or opinion is prepared for the specific purpose stated in the document and in relation to the nature and extent of proposals made available to Geotechnics Limited at that time. Re-consideration will be necessary should those details change. The recommendations should not be used for other schemes on or adjacent to the site without further reference to Geotechnics Limited.
4. The assessment of the significance of the factual data, where called for, is provided to assist the Client and their Engineer and/or Advisers in the preparation of their designs.
5. The report is based on the ground conditions encountered in the exploratory holes together with the results of field and laboratory testing in the context of the proposed development. The data from any commissioned desk study and site reconnaissance are also drawn upon. There may be special conditions appertaining to the site, however, which are not revealed by the investigation and which may not be taken into account in the report.
6. Methods of construction and/or design other than those proposed by the designers or referred to in the report may require consideration during the evolution of the proposals and further assessment of the geotechnical and any geoenvironmental data would be required to provide discussion and evaluations appropriate to these methods.
7. The accuracy of results reported depends upon the technique of measurement, investigation and test used and these values should not be regarded necessarily as characteristics of the strata as a whole (see accompanying notes on Investigation Techniques). Where such measurements are critical, the technique of investigation will need to be reviewed and supplementary investigation undertaken in accordance with the advice of the Company where necessary.
8. The samples selected for laboratory test are prepared and tested in accordance with the relevant Clauses and Parts of BS EN ISO 17892 and BS 1377 Parts 1 to 8, where appropriate, in Geotechnics Limited's UKAS accredited Laboratory, where possible. A list of tests is given.
9. Tests requiring the use of another laboratory having UKAS accreditation where possible are identified.
10. Any unavoidable variations from specified procedures are identified in the report.
11. Specimens are cut vertically, where this is relevant and can be identified, unless otherwise stated
12. All the data required by the test procedures are recorded on individual test sheets but the results in the report are presented in summary form to aid understanding and assimilation for design purposes. Where all details are required, these can be made available.
13. Whilst the report may express an opinion on possible configurations of strata between or beyond exploratory holes, or on the possible presence of features based on either visual, verbal, written, cartographical, photographic or published evidence, this is for guidance only and no liability can be accepted for its accuracy.
14. The Code of Practice for Ground Investigations – BS 5930:2015 calls for man-made soils to be described as Anthropogenic Ground with soils placed in an un-controlled manner classified as Made Ground and soils placed in a controlled manner as Fill. In view of the difficulty in always accurately determining the origin of man-made soils in exploratory holes, Geotechnics Limited classify such materials as Made Ground. Where soils can be clearly identified as being placed in a controlled manner then further classification of the soils as Fill has been added to the Exploratory Hole Records.
15. Classification of man-made soils is based on the inspection of retrieved samples or exposed excavations. Where it is obvious that foreign matter such as paper, plastic or metal is present, classification is clear. Frequently, however, for man-made soils that arise from the adjacent ground or from the backfilling of excavations, their visual characteristics can closely resemble those of undisturbed ground. Other evidence such as site history, exploratory hole location or other tests may need to be drawn upon to provide clarification. For these reasons, classification of soils on the exploratory hole records as either Made Ground or naturally occurring strata, the boundary between them and any interpretation that this gives rise to should be regarded as provisional and subject to re-evaluation in the light of further data.
16. The classification of materials as Topsoil is generally based on visual description and should not be interpreted to mean that the material so described complies with the criteria for Topsoil used in BS 3882:2015. Specific testing would be necessary where such a definition is a requirement.
17. Ground conditions should be monitored during the construction of the works and the report should be re-evaluated in the light of these data by the supervising geotechnical engineers.
18. Any comments on groundwater conditions are based on observations made at the time of the investigation, unless specifically stated otherwise. It should be noted, however, that the observations are subject to the method and speed of boring, drilling or excavation and that groundwater levels will vary due to seasonal or other effects.
19. Any bearing capacities for conventional spread foundations which are given in the report and interpreted from the investigation are for bases at a minimum depth of 1m below finished ground level in naturally occurring strata and at broadly similar levels throughout individual structures, unless otherwise stated. Typically they are based on serviceability criteria taking account of an assessment of the shear strength and/or density data obtained by the investigation. The foundations should be designed in accordance with the good practice embodied in BS 8004:2015 - Foundations, supplemented for housing by NHBC Standards. Foundation design is an iterative process and bearing pressures may need adjustment or other measures may need to be taken in the context of final layouts and levels prior to finalisation of proposals.
20. Unless specifically stated, the investigation does not take account of the possible effects of mineral extraction or of gases from fill or natural sources within, below or outside the site.
21. The costs or economic viability of the proposals referred to in the report, or of the solutions put forward to any problems encountered, will depend on very many factors in addition to geotechnical or geoenvironmental considerations and hence their evaluation is outside the scope of the report.