KIBWORTH RECYCLING AND HOUSEHOLD WASTE SITE

GEO-TECHNICAL & GEO-ENVIRONMENTAL ASSESSMENT

WILLMOTT DIXON CONSTRUCTION LTD

MARCH 2021

IVY HOUSE environmental

SUMMARY TABLE: PRELIMINARY RISK ASSESSMENT & GEO-ENVIRONMENTAL ASSESSMENT	
SITE:	Geo-technical and Geo-environmental Assessment
CLIENT:	Willmott Dixon
DATE:	April 2021
REFERENCE:	IV.293.20
DEVELOPMENT PROPOSAL:	Demolition of existing House Household waste recycling centre and construction of a larger household waste recycling centre with associated earthworks and landscaping.
HUMAN HEALTH:	No risk to end-users. There is a hotspot of Asbestos within the Former Composting Facility that will require encapsulation to protect construction workers during the redevelopment.
CONTROLLED WATERS:	No potential risk to controlled waters has been identified at the site. The leachate within the Old Landfill appears to be contained by the upper clay layers of the Charnworth Mudstone and has not migrated in sufficient quantities to adversely affect the underlying groundwater. The contaminant concentrations in the upstream and downstream boreholes are generally consistent and do not exhibit the marker contaminants or concentrations contained within the Old Landfill Leachate.
CONTAMINANT LOAD:	The risk posed by the migration of contaminants from the Former Composting Facility material to the underlying Old Landfill and subsequent increase to the concentrations of the inherent leachate is considered to be negligible.
GAS RISK:	CS3 Gas Protection measures required for the proposed building due to elevated carbon dioxide as indicated in the AECOM report (Dated 2019).
HARDSTANDING/FLOOR SLABS:	Existing Made Ground has a CBR value of >5%. Sub-base thickness of 225-250mm can be assumed.
LANDFILL CAP	The Landfill Clay cap is absent within the central areas of the composting facility and across the whole of the active HWRC. The Landfill Clay cap, where present, comprised of an upper and lower geomembrane encapsulating a 100-150mm thick homogeneous clay. The Landfill Clay cap will need to be reinstated, where absent, in the composting area. The Landfill Clay cap may not require placement in the active HWRC and instead rely upon hardstanding as a potential capping layer, subject to regulatory approval.
RECCOMENDATIONS:	• Site won granular material should be stockpiled with physical and chemical classification testing undertaken prior to re-use. • Concrete hardstanding from the existing HWRC could be processed on site and re-used subject to classification testing. • Segregation of the Former Composting Facility and 'Trafficking' Layer should be undertaken with the potential for the Organic Rich Former Composting Material to be re-used

	in landscaping areas on site, subject to regulatory approval. • Following demolition/clearance of the current HWRC and prior to construction, it is recommended that further Plate Load Tests (PLTs) are conducted to confirm the assumed shallow CBR values in Zone B. • An asbestos survey should be undertaken for all buildings prior to any redevelopment works and any ACMs dealt with in a safe and controlled manner, with appropriate method statements and risk assessment to ensure safety to groundworkers, future residents and adjacent site users. • Additional, unidentified localised areas of contamination may exist at the Site and an appropriate 'hotspot' protocol should be in place for groundworkers to act upon should such contamination be identified during the construction process. • Should any signs of contamination be evident during construction activities, a qualified environmental specialist should be consulted to assess the risk posed to end users and the environment.

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1.0 INTRODUCTION

1.1 PREAMBLE

This Risk Assessment and Geo-Environmental Assessment has been produced for Willmott Dixon to provide a contamination and geotechnical assessment of the site's known as Kibworth Household Waste Recycling Centre (HWRC) and Kibworth Composting Facility. This is to satisfy the Environment Agency (EA) that the sites are in a satisfactory state to allow the surrender of the sites Environment Agency permits and to provide a baseline for the redevelopment of the site.

The site development is to include the demolition, reconfiguration and expansion of the current waste transfer facility. This will involve the assessment of contamination levels across the former composting facility and the current waste transfer station, as well as an investigation into the state of the landfill cap upon which the composting facility is situated.

This report has been used to inform the development of a Remediation Method Statement (RMS) to ensure that the site meets with the above 'satisfactory state' requirements as set out by the Environment Agency's Regulatory Guidance Note RGN9 - Surrender.

This report should be read in conjunction with the Geo-environmental & Geotechnical Ground Investigation Interpretative Report conducted by AECOM (ref: Section 2.4) and builds upon the conclusions and recommendations detailed therein.

1.2 SITE LOCATION

The site is located approximately 0.5km south-east of Kibworth town centre, comprising an area of approximately 2.0 Ha. The National Grid Reference (NGR) for the approximate centre of the site is SP 697 932. The site location, development proposal and site layout are illustrated in **Appendix A**.

1.3 PROJECT BRIEF

The purpose of this report is to build upon the previous site investigation but to specifically target the shallow ground conditions within the upper 1m of the site.

The brief for the Additional Geotechnical and Geo-Environmental Assessment incorporates:

- A site inspection.
- An appraisal of previous reports.
- Geo-environmental assessment of the Former Composting facility in the east of the site.
- Assessment of the presence, integrity and extent of the Landfill Clay Cap placed over the former Landfill.
- Targeted assessment of specific sources of potential contamination within the active Household Waste Recycling Centre.
- A strategy for the development and implementation of a Remediation Method Statement (RMS), and a Materials Management Plan (MMP) with regulatory sign off for the proposed development.
- Identification of potential natural cohesive strata for potential re-use on site.
- Installation of groundwater monitoring boreholes to determine the potential groundwater impact from leachate arising from the site area.
- Development of a Conceptual Model.
- Recommendations to mitigate against environmental risks.
- Geotechnical considerations for the proposed development.

1.4 DATA REFERENCES

- British Geological Survey Online Geological Mapping.
- Zetica Online Risk Mapping.

- Information provided by Leicestershire County Council
- BRE (2005), Special Digest 1: Concrete in aggressive ground.
- BSI (2013), BS 8576:2013 Guidance on investigations for Ground Gas - Permanent Gases and Volatile Organic Compounds (VOCs).
- BSI (2011), BS 10175:2011+A2:2017 Investigation of Potentially Contaminated Sites – Code of Practice.
- BSI (2015), BS 5930:2015+A1:2020 Code of practice for ground investigations.
- CIRIA (2007), C665 Assessing risks posed by hazardous ground gases to buildings.
- CIRIA (2014), C733 Asbestos in soil and made ground: a guide to understanding and managing risks.
- CIRIA (2014), C735 Good practice on the testing and verification of protection systems for buildings against hazardous ground gases.
- DEFRA (2014), SP1010 Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination.
- DoE (1995), Industry profiles.
- EA (2020), Land Contamination Risk Management (LCRM).
- EA (2009), Science Report SC050021/SR2, Human health toxicological assessment of contaminants in soil.
- HSE (2013), L143 Control of Asbestos Regulations 2012. Approved Code of Practice and guidance.
- LQM/CIEH (2009), The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment, 2nd edition.
- Environment Agency Regulatory Guidance Note, RGN 9: Surrender, 3rd edition.
- Environment Agency Technical Guidance WM3: Waste Classification – Guidance on the classification and assessment of waste.

1.5 LIMITATIONS

This report has been produced in accordance with industry best practice at the time of writing.

Ivy House Environmental Ltd has, in the production of this report, relied upon information provided by third parties. Ivy House Environmental Ltd does not warrant the accuracy of this information and will not be responsible for any opinions which Ivy House Environmental has expressed, or conclusions which it has drawn, in reliance upon information which is subsequently proven to be inaccurate.

All statements and opinions provided in this report have been reported in good faith and are based on the information gained during, and restrictions imposed by, site investigation techniques used at the time. Ivy House Environmental cannot be held responsible for conditions not revealed by the investigation.

This report has been prepared for the sole use of the client and shall not be relied upon or transferred to third parties without the express written consent of Ivy House Environmental. Unauthorised third parties rely upon the information contained within this report at their own risk.

2.0 PRELIMINARY RISK ASSESSMENT

2.1 SITE DESCRIPTION

The site is located in open countryside to the south east of Kibworth, forming a roughly rectangular shape and generally raised above the surrounding area. The site contains two Environment Agency permitted facilities, namely a waste transfer facility (HWRC) in the eastern portion of the site which comprises containers, concrete hardstanding and a single storey building, and a composting facility which is located in the western part of the site. The composting facility is now closed and consists of open ground comprising flat vegetated areas bounded by bunds that drop down to the surrounding fields, A6 and railway.

The site is bound by fields to the east and west, a railway and associated embankment to the north and the A6 road to the south.

The current HWRC and former composting facility are located on an historic landfill that ceased operations in 1980. It is anticipated that the Old Landfill within the area formerly occupied by the Composting facility has been capped with Clay. However, it is unknown as to whether the capping system extends beneath the current HWRC.

2.2 DEVELOPMENT PROPOSAL

The site is to be redeveloped to create an expanded Local County Council waste facility that would involve the demolition of the existing household waste transfer facility. Additionally, the landfill cap within the open area (Former Composting Facility) in the west of the site is to be reinstated where absent.

2.3 ACCESS

Access to the site will be from the existing access off the A6 in the southeast corner of the site.

2.4 PREVIOUS REPORTS

Ivy House Environmental has been provided with the following previous reports relating to the site, these reports are appended as **Appendix H**.

- Kibworth HWRC Geotechnical Ground Investigation (Stage 2) Factual report on Ground Investigation. Prepared for Leicester County Council Report Ref: 35169 by Geotechnical Engineering Ltd dated July 2019; and

- Geoenvironmental and Geotechnical Ground Investigation Interpretative Report, MHA PSP2 LCC Kibworth RHWS, Project Number 60582224, by AECOM dated August 2019.

2.4.1 REPORT SUMMARY

2.4.2 Interpretative Report (AECOM) – Key Findings

The AECOM report indicates that the site was a former brick pit that became a refuse tip between 1940-1980. The landfill was closed in the late 1980's and the site was redeveloped to the current arrangement of an active HWRC and a composting facility.

The site is underlain by the Charnworth Mudstone Formation comprising of Clays and Limestone bands and is designated a secondary aquifer. The site is not within a source protection zone and the nearest surface water receptor is the Langton Brook, 950m south of the site.

The report indicates that there is up to 7m of Made Ground overlying natural deposits of Clay to an unproven depth of 20m. The Made Ground generally comprised of variable sands, silts, gravels and clays with constituent's indicative of an historic landfill such as plastic, glass, ceramics, wood, metals and textiles. The underlying natural deposits comprised of stiff, fissured clays with occasional siltstones and weathered mudstone horizons.

AECOM have concluded that there is **a LOW RISK to Human Health** from potential contaminants in the soils for the proposed end-use, a **LOW RISK to controlled waters** from the leachate present within the Old Landfill and the site gas risk has been categorised as **Characteristic Situation 3** (Requiring gas protection measures)

3.0 GEO-ENVIRONMENTAL/TECHNICAL ASSESSMENT FIELDWORK

3.1 INTRODUCTION

The intrusive investigation was undertaken between the dates 14/12/20 – 21/12/20 under the supervision of a suitably qualified IVENV/Contractor engineer and in general accordance with the Code of Practice for Site Investigations BS5930: 2015+A1:2020.

The intrusive investigation incorporated the following:

- The advancing of 3No rotary boreholes to a maximum depth of 20mbgl.
- The advancing of 4No windowless sample boreholes to a maximum depth of 3mbgl.
- The excavation of 18No trial pits and 8No hand dug pits to a maximum depth of 4.1mbgl.
- The completion of 8No DCP Tests.
- The completion of 8No Plate Load Tests.
- The analysis of 16No samples for a standard 'CLEA' screening suite and selected site specific determinands.
- The analysis of 8No samples for Waste Acceptance Criteria (WAC) testing.
- The analysis of 1No sample for Geotechnical Design Criteria (PSD).

The exploratory Holes logs are included in **Appendix B**.

3.2 RATIONALE

The intrusive investigation has been designed to facilitate an assessment of the shallow surface conditions in specific relation to the HWRC and composting facilities, the landfill cap integrity/existence, hardstanding thickness and sub-base construction, potential borrow pit suitability and targeted onsite contaminant sources.

The investigation has also been designed in consideration of the current site layout and access restrictions, the development proposal and health and safety issues, the rationale behind the location of each exploratory hole is detailed in table 3.2. The site has been separated into 3No zones, (Zone A, B and C) as shown in **Appendix A**.

Table 3.2: Phase II Rationale

Hole ID	Location	Notes
TP1-4	Southeast corner (Zone C)	Potential Clay borrow pit area
TP5-6, WS1-4	Current Transfer Facility (Zone B)	Clay cap integrity, slab construction build up, targeted sources
TP7-18, HP1-8	Former Composting Facility (Zone A)	Surface material environmental assessment, clay cap integrity and extent.
RO01-103	Site periphery	Groundwater upstream/downstream assessment
PLT1-8, DCP1-8	Zone A	Shallow ground bearing pressure assessment

3.3 LABORATORY ANALYSIS & TESTING

Selected soil, water and gas samples were taken in sufficient quantities and placed in appropriate containers for the anticipated testing suites. Samples analysed at specialist UKAS/MCERTS accredited environmental and geotechnical laboratories or by field monitoring equipment as detailed in the following sections.

3.3.1 Chemical Analysis

A total of 24No samples of Made Ground were sent for analysis at a UKAS/MCERTS accredited laboratory. The scheduled parameters are detailed in table 4.2.

A total of 6No groundwater samples were taken using a dedicated disposable bailer from the monitoring boreholes, RO01 to RO03, during two monitoring visits and sent for analysis at a

UKAS/MCERTS accredited laboratory. The samples were tested for the determinands detailed in the groundwater results from the AECOM report to allow for comparison.

The soil and groundwater chemical analysis results are contained in **Appendix C**.

3.3.2 Geotechnical Testing

One sample of granular Made Ground was sent to a UKAS accredited laboratory and subjected to Particle Size Distribution testing (PSD) to ascertain its suitability for re-use on site.

The geotechnical test results are contained in **Appendix D**.

3.3.3 Gas Monitoring and Sampling

Monitoring installations were installed in a 3No boreholes; gas monitoring was undertaken using a GA5000 gas analyser on two separate visits between the dates of 08/01/21 to 28/01/21. The analyser detects concentration by volume (%v/v) of Methane (CH_4), Carbon Dioxide (CO_2), Oxygen (O_2), flow rate and air pressure.

The gas and groundwater monitoring results are contained in **Appendix F**.

4.0 GROUND CONDITIONS

The site has been split into three zones as shown in **Appendix A**. The following sections describe the ground conditions pertinent to each Zone for the purposes of this assessment.

4.1 ZONE A (Former Composting Facility)

The intrusive investigation has revealed a sequence of Made Ground relating to the former composting facility overlying either the Landfill Clay Cap or, where the Clay Cap is absent, directly onto the Old Landfill material.

The Made Ground can be split into four distinct types.

- Former Composting Facility Material – peaty material with abundant wood debris.
- Former Composting Facility Construction/trafficking Layer – granular deposits of concrete, brick and limestone.
- Landfill Clay Cap – Stiff blueish grey Clay sandwiched between an upper and lower geotextile membrane.
- Former Old Landfill – mix of cohesive and granular deposits containing glass, brick, metal, plastic, fabric and ash.

Trial Pits were excavated to a shallow depth to ensure that the Landfill Cap, where encountered, was not dug through or removed, to ensure its continued integrity. Trial Pits were deepened in certain areas, where the Landfill Cap was absent, until a positive identification of the underlying Old Landfill material could be ascertained, in order to identify the depth of the composting facility material which overlies the Old Landfill.

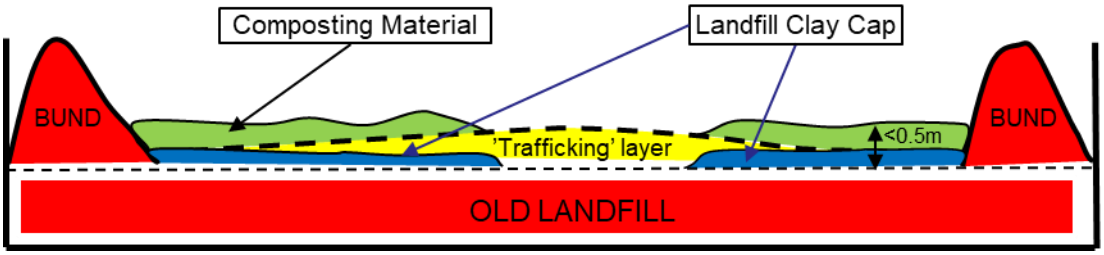
4.2 FIELD OBSERVATIONS

The main objective, within Zone A, was to investigate the material associated with the Former Composting facility and the identification of the Landfill Clay cap across the area but within the confines of the existing soil bunds.

The remnants of the former Composting Facility were encountered across the whole of Zone A, consisting of a granular 'trafficking layer' within the central portion of the area that underlies a peaty material with abundant wood debris that generally thickens towards the edges of the investigated area.

A generalised cross-section of shallow sub surface within Zone A is illustrated below Figure 1.

Figure 1: Zone A Cross-section



The Landfill Clay Cap was encountered in a number of the trial pits. The investigation has shown that the Landfill Cap is absent from the central portion of the site and was probably removed to be replaced by the granular 'trafficking' layer, as shown in **Appendix A** and discussed further in Section 4.10.

The Landfill Cap was seen to be of a consistent material type and construction across the areas where encountered. However, the Landfill Cap has been significantly disturbed and compromised around the edges of the removed area in the centre of Zone A.

Table 4.2 illustrates the pertinent geological and contamination observations made during the intrusive investigation in Zone B.

Table 4.2: Fieldwork Observations

Location	Target	Observation
HP01, HP03-08, TP7, TP11, TP13-18	Former composting facility material	Up to 250mm thick
HP01-04, HP08 TP8-15	Granular 'trafficking' layer	Approx. 100-200mm thick
HP06, HP08, TP07-10, TP14-16 & TP18	Landfill Clay Cap	Approx. 100-250mmmm thick

4.3 GROUNDWATER

Groundwater was not encountered during the site investigation within Zone A. However, a majority of the central portion of the site was covered by surface water and had formed localised ponds.

4.4 ZONE B (Active Household Waste Recycling Centre)

The intrusive investigation has revealed a sequence of Made Ground relating to the current Household Waste Recycling Centre.

The Made Ground can be split into three distinct types.

- Hardstanding – reinforced concrete and asphalt.
- Sub-base construction Layer – granular deposits of concrete, brick and limestone.
- Former Old Landfill – mix of cohesive and granular deposits containing glass, brick, metal, plastic, fabric and ash.

Trial Pits and window samples were excavated to a shallow depth to diminish the disturbance of the underlying Old Landfill.

4.5 FIELD OBSERVATIONS

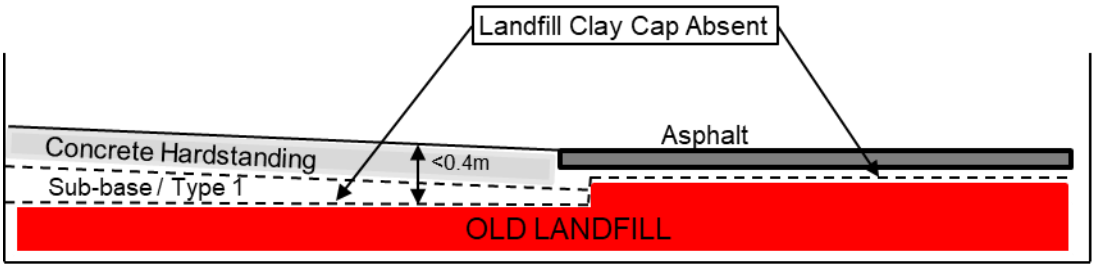
The main objective, within Zone B, was to investigate the construction the hardstanding, the presence of the Landfill Clay Cap and to target potential sources of contamination within the area.

The majority of the area is covered by hardstanding in relatively good states of repair. The site is predominantly covered by reinforced concrete on a plastic membrane overlying granular Made Ground that sits directly on the Old Landfill material.

The Landfill Clay Cap was not encountered in any of the intrusive holes.

A generalised cross-section of shallow sub surface within Zone B is illustrated in Figure 2.

Figure 2: Zone B Cross-section



It was noted that the single storey, brick-built building located close the southern boundary of the site showed signs of movement on the northern wall associated with subsidence.

Olfactory evidence of hydrocarbon contamination was encountered in boreholes, WS03 (location of former above ground storage tank) and WS04 (current above ground oil storage area. Free product was not observed.

Table 4.5 illustrates the pertinent geological and contamination observations made during the intrusive investigation in Zone B.

Table 4.5: Fieldwork Observations

Location	Target Source	Observation
WS01-02	Surface waste containers/clay cap	No visual evidence of contamination
WS03-04	Former above ground storage tank and current oil storage area/clay cap	Slight hydrocarbon odour noted in both boreholes at approx. 1m.
TP05-06	Hardstanding/clay cap assessment	20cm thick concrete reinforced slab

4.6 GROUNDWATER

Groundwater was not encountered within Zone B.

4.7 ZONE C

The main objective, within Zone C (which is outside of the permitted facility areas and therefore is not part of the surrender of the sites, it has been included solely for the use of the contractor for redevelopment options for the site), was to investigate the existence and potential use of natural cohesive deposits directly adjacent to the HWRC and outside of the Old Landfill area in the redevelopment of the site under a Materials Management Plan, and to install 2No down gradient groundwater monitoring boreholes.

4.8 FIELD OBSERVATIONS

Zone C comprises generally of a vegetated bank that is contained above the active site to the west by a 2-3m high concrete wall. The bank falls away to the east to become level with the eastern hedge/ditch and field boundary. Landfill associated debris such as glass bottles and plastics were evident at surface level across the entire area of Zone C.

The intrusive investigation has shown that the old landfill material extends close or up to the site's eastern boundary.

The Made Ground consisted of a mix cohesive and granular deposits containing abundant landfill associated constituents such as glass bottles, plastics, metal, wood fragments, brick and ash.

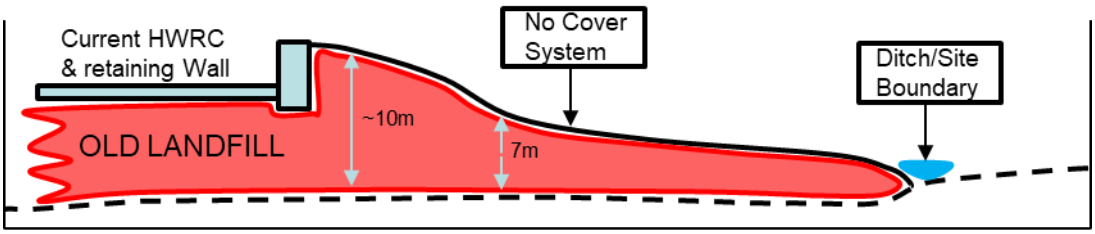
A Landfill Clay cap or soil capping was not encountered in any of the exploratory holes.

Natural strata was encountered in the rotary boreholes from 6.50 and 7.0m depth and comprised of stiff slightly silty Clay that is considered to be representative of the weathered Charnworth Formation.

Natural strata was not encountered within the trial pits.

A generalised cross-section of shallow sub surface within Zone A is illustrated below Figure 3.

Figure 3: Zone C Cross-section



4.9 LANDFILL CLAY CAP

The identification, integrity and extent of the Landfill Clay cap has been assessed within Zones A and B.

The Landfill Clay Cap was not encountered within Zone B and it is inferred that it is absent from this area. The area of Zone B (the active HWRC) comprises of three distinct shallow surface sections; Concrete hardstanding overlying granular sub-base underlain by the Old Landfill material, asphalt directly laid onto the Old Landfill material and Old Landfill material at the surface where hardstanding is absent.

The Landfill Clay Cap was encountered, in part, within Zone A (closed composting facility) and comprised of an upper geotextile membrane overlying approximately 150mm of stiff bluish grey Clay underlain by a lower geotextile membrane. The Landfill Clay Cap is overlain by either the Organic rich Former Composting material, the 'Trafficking' Layer or a combination of both materials with the Organic rich former composting material at the surface.

The Landfill Clay Cap was found to be absent within the central portion of the former composting area, as shown in **Appendix A**. This area is generally topographically low and as a consequence periodically retains water from rainfall events. The underlying ground within the central area generally comprised of the 'Trafficking' Layer directly overlying the Old Landfill.

The approximate area of Landfill Clay cap requiring replacement in the former composting facility (Zone A) is 2,300m^2 which equates to a volume of Clay required to facilitate the works of 345m^3.

Should the installation of a Landfill Clay cap be required within Zone B, the area requiring installation would be 5,000m^2 equating to a volume of material of 750m^3.

4.10 GROUNDWATER MONITORING BOREHOLES

The underlying groundwater quality assessment is necessary to address the proposed development of the site and to ensure that site operations (from the composting facility and the HWRC) have not impacted upon the landfill which in turn might impact upon groundwater.

3No boreholes were installed around the edges of the site to limit the potential interception of landfill material. It is considered that the groundwater flow direction is from west to east. The boreholes have been located to intercept groundwater upgradient of the landfill (RO03) and downgradient of the landfill (RO01 and RO02).

Borehole RO03 was located in the southwest corner of the site and boreholes RO01 and RO02 were located close to the northeast and southeast boundaries of the site.

Borehole, RO03 (located within Zone A), encountered reworked natural deposits containing small amounts of presumed landfill material/Made Ground to 3.0mgl overlying natural cohesive deposits consisting of slightly silty Clay becoming silty from approximately 16m. Boreholes, RO01 and RO02 (located in Zone C), encountered landfill material to depths of 6.50m and 7.0mgl respectively overlying natural cohesive deposits of slightly silty Clay (weathered Charnworth Mudstone).

Borehole, RO01, encountered perched water from 2.0mbgl associated with the old landfill material. The perched water was sealed from the underlying natural deposits at 6.50mgl.

All three boreholes were installed to create a substantial impermeable barrier between the encountered landfill material/Made Ground and the underlying groundwater.

Table 4.10 illustrates the results of groundwater monitoring undertaken to date.

Table 4.10: Groundwater Monitoring

Location	Depth to water (mbgl)
RO01	16.34 to 16.50
RO02	17.0 to 17.11
RO03	17.2 to 17.53

The groundwater monitoring illustrates a groundwater flow direction towards the east, commensurate with the wider surface topography.

NOTE: Groundwater levels are subject to seasonal variations and may be affected by local abstraction rates.

5.0 GEOTECHNICAL ASSESSMENT

The geotechnical assessment considers the development proposal to enlarge the current Household Waste Recycling Centre, to include demolition of the existing structures and extending to the west over the former composting facility. The geotechnical assessment comprises of the following;

- Identification of materials that could potentially be re-used as part of the development, granular Made Ground suitable as sub-base material and natural cohesive deposits suitable for the landfill cap.

- Plate Load Testing, SPT and DCP Tests in the former composting facility to inform the earthworks design within Zone A and B.

5.1 MATERIALS FOR RE-USE

The site investigation has not identified any suitable cohesive deposits for re-use. The area targeted for a potential 'borrow pit' in Zone C was shown to contain landfill material from the surface to a maximum of approximately 10m depth. Natural deposits were encountered but at a depth that is impractical for access for the redevelopment.

The PLTs within trial pit, TP14, have shown that the 'Trafficking' Layer doubles the overall attainable CBR value in Zone A. Therefore, it is considered that the 'Trafficking' Layer could remain in-situ in areas where the Landfill Clay Cap exists to increase the bearing capacity of the Made Ground. Additionally, this would avoid unnecessarily disturbing the existing Landfill Cap by over digging/stripping the 'Trafficking' Layer during construction works.

Granular deposits that form the sub-base of the current concrete hardstanding area in Zone B could be stockpiled for re-use. The sub-base was shown to be approximately 100-250mm thick and sits directly over the underlying landfill material. It is likely that only the upper portion of the thicker layers of the material would be suitable for reuse to avoid mixing with the underlying landfill material.

The particle size distribution testing conducted on this material confirms it as a Type 1 material classification.

Following the concrete hardstanding removal, bearing pressure testing and EA approval, the granular sub-base material could remain in-situ as part of the new development construction layer.

Additionally, we consider that the concrete hardstanding could be crushed and re-used on site following geotechnical suitability testing.

5.2 PLATE LOAD, SPT & DCP TESTING (ZONE A)

6No plate load tests (PLT's) and 8No DCP tests were conducted across the area of Zone B. The purpose of the PLT's and DCP tests is to provide a CBR value to inform the depth of sub-base required to construct the hardstanding areas of the redevelopment.

The PLT's were positioned to evaluate the strength of the three materials underlying the organic rich, peaty, former composting material layer. A 450mm diameter plate was used to allow the assessment of approximately 600mm depth of material and to assess the effect of multiple layers of material. The plates were positioned to commence either on the Landfill Cap or the 'Trafficking' granular layer. The granular 'trafficking' layer is considered to be representative of a heterogenous, poor quality sub-base material. Shallow trial pits were conducted to expose the three material types for evaluation.

A summary of the testing is shown in Table 5.2 with the full results contained within **Appendix D**. The DCP results are shown as a range from lowest to highest value attained.

Table 5.2 PLT, SPT and DCP Testing Summary

Location	Material Sequence Tested	CBR Value (%)
TP10	Granular MG ('Trafficking' Layer)//Clay (Landfill Cap)/Old Landfill	30.9
TP09	Clay (Landfill Cap)/Old Landfill	15
TP13	Granular MG ('Trafficking' Layer)/Old Landfill	23.7
TP14	Granular MG ('Trafficking' Layer)/Clay(Landfill Cap)/Old Landfill	15
TP14	Clay (landfill Cap)/Old Landfill	7.3
TP15	Granular MG ('Trafficking' Layer) over Landfill Cap	30.4
DCP01	Granular MG ('Trafficking' Layer)/Old Landfill	7-123
DCP02	Granular MG ('Trafficking' Layer)/Old Landfill	16-145
DCP03	Granular MG ('Trafficking' Layer)/Old Landfill	5-64
DCP04	Granular MG ('Trafficking' Layer)/Old Landfill	7-45
DCP05	Granular MG ('Trafficking' Layer)/Clay(Landfill Cap)/Old Landfill	19-145
DCP06	Granular MG ('Trafficking' Layer)/Clay(Landfill Cap)/Old Landfill	6-176
DCP07	Granular MG ('Trafficking' Layer)/Clay(Landfill Cap)/Old Landfill	5-70
DCP08	Granular MG ('Trafficking' Layer)/Clay(Landfill Cap)/Old Landfill	14-55
WS1	Old Landfill at 1.0mbgl	5*
WS2	Old Landfill at 1.0mbgl	10*
WS3	Old Landfill at 1.0mbgl	10*
WS4	Old Landfill at 1.0mbgl	5*

*Calculated comparative CBR value based on SPT penetration

The results of the PLTs have shown that the lowest CBR value achievable for Zone B, beneath the former composting facilities organic layer, is 7.3% when tested on the Landfill Clay Cap. The CBR value increases to a minimum of 15% when the test is conducted on the overlying 150-200mm of granular 'trafficking' layer.

The DCP tests show a range of CBR values between 5% and 176%. The DCP test CBR values can be significantly affected by gravel and cobbles within the ground that can give high values that are not consistent with the overall material strength. This is especially true in Made Ground deposits. Therefore, it is considered best practice to take a conservative approach and rely on the lowest CBR value from each test as a 'worst-case' scenario. Based on this, the DCP tests generally conform with the PLT results and have a CBR value range of between 5% and 19%.

In-situ strength testing from the surface was not conducted in Zone B due to the disruption that would be caused to the operational site. However, SPT tests undertaken in the window sample boreholes have shown a comparative CBR value range of 5-10% at 1.0mbgl. The relatively good state of repair of the existing concrete hardstanding, when compared to the 100-150mm thickness of sub-base material, would also indicate that the shallow Made Ground strength characteristics are similar to Zone A.

5.3 STRENGTH TESTING CONCLUSIONS

Based on the worst-case scenario it can be assumed that the Made Ground within Zone A, that consists of the Landfill Clay cap over the Old Landfill material, can achieve a CBR value of 5-7%. This would imply that a sub-base thickness of 225-250mm should be sufficient to for the Hardstanding placement.

It is considered that the Old Landfill material in Zone B should be able to achieve a minimum CBR value of 5% prior to the placement of a Landfill Clay Cap if required or for sub-base design purposes.

However, it should be noted that the cohesive material that will be used to form the new Landfill Clay Cap, within the central area of Zone A and potentially across Zone B, may have differing strength characteristics to the existing Landfill Clay Cap. Placement of the new clay cap should be conducted to achieve an end CBR value of 5% prior to sub-base placement. It is recommended that on-site compaction trials are conducted on considered cohesive material prior to import to site.

5.4 MATERIAL RE-USE

It is considered likely that sub-base material that can be ‘won’ from Zone B should be suitable for re-use on site following stockpiling and further classification testing and soil screening.

The concrete hardstanding, concrete walls and foundations could also be processed on site and re-used as a sub-base material following classification and soil screening.

The redevelopment of Zone A will require a combination of removal of the organic rich Former Composting Facility material and the replacement of the Landfill Cap where absent.

A phytotoxic assessment of the concentrations of Copper, Nickel and Zinc within the organic rich Former Composting facility material has indicated that the material does not pose a risk to plant or animal life. Therefore, it is considered that the thin organic rich Former Composting Facility material could be segregated and used as a growing medium in Zone C dependant on regulatory approval, under a Materials Management Plan.

No suitable cohesive material was encountered at a depth that could be feasibly excavated for re-use on site.

It is considered that the ‘Trafficking’ Layer encountered in Zone A, where it exists above the Landfill Clay Cap, could remain in-situ to protect and improve the bearing strength of the material below.

6.0 GEO-ENVIRONMENTAL ASSESSMENT

The following assessment has been undertaken to determine the risk posed to the underlying aquifer.

The Contaminated Land Exposure Assessment (CLEA) guidance and published Soil Guideline Values (SGV) have been incorporated with Generic Assessment Criteria (GAC), for determinands which do not have a published SGV, to provide a competent Tier 1 Assessment.

The soils within the Former Composting Facility have been subject to leachate testing to determine the mobility of the contaminants and likely risk upon the underlying groundwater. In addition, groundwater samples have been obtained to ascertain the baseline chemistry of the groundwater.

6.1 HUMAN HEALTH

As per the CLEA methodology, statistical analysis of the data set for the soil samples taken at depth <1.0mbgl has been undertaken to assess the risk posed to human health for the commercial end-use, given that there will be an office on site as well as a number of workers, we have used the CLEA Commercial (Office) Development Soil Guidelines as outlined in Table 6.2 below.

6.1.1 CLEA Summary

None of the contaminants of concern exceeded the relevant SGV/GAC. Therefore, no remediation is required.

6.1.2 Hydrocarbon Contamination

Analysis for PAHs was undertaken for 16No of soil samples from across the site area and representative of the materials encountered on site. 5No samples have been analysed for TPHCWG and VOC targeted on potential hydrocarbon impacted areas. The analysis results are contained in **Appendix C.**

6.1.3 Hydrocarbon Summary

Levels of hydrocarbons across the site did not exceed the relevant SGV/GACs. Therefore, no remediation is required.

6.1.4 Asbestos Contamination

Asbestos in the form of a bundle of amosite fibres was detected in a single sample of Made Ground from TP15 at 0.25mbgl at a level of 0.002%. The analysis results are contained in **Appendix C**.

The detection of asbestos in Trial Pit, TP15 could be associated with the surface concrete block debris located close to the trial pit location within Zone A. Trial Pit, TP15 is located within an area that has been designated as requiring Landfill Clay Cap replacement. Therefore, the material from the surface to 0.4m will be excavated to enable the clay cap placement. It is considered that the asbestos containing material could be encapsulated beneath the new developments' hardstanding concrete slab dependant on regulatory authority approval.

6.2 FORMER COMPOSTING FACILITY MATERIAL

The site investigation has specifically targeted the levels of contaminants contained within the Former Composting facility materials and their potential contribution to the contaminant profile of the Old Landfill material detailed in the report by AECOM.

In addition, the soils in the Former Composting Facility have been assessed as to their suitability to remain on site, in accordance with the sites proposed end use. The assessment has been undertaken to determine if the soils are likely to impact on human health, with additional phytotoxicity analysis being undertaken on the Organic Rich material to determine its suitably as a growing medium.

It has been confirmed that the levels of contaminants within the Former Composting Facility materials fall below the relevant GACs for a commercial end-use.

The maximum results for the Old Landfill material, tested by AECOM, and the results for the Former Composting Facility materials (Organic rich material and 'Trafficking' layer material) have been summarised in Table 6.2.

Table 6.2: Chemical Results Comparison

Determinand	Old Landfill material maximum concentrations (mg/kg)	Combined Former Composting Facility materials maximum concentrations (mg/kg)	Former Composting Facility materials concentrations **ABOVE** or **BELOW** Old Landfill material	Soil Value Guidelines for Commercial (office) Development (mg/kg)
Arsenic	110	21	**BELOW**	635
Cadmium	11	6.2	**BELOW**	230
Chromium	64	34	**BELOW**	8840
Chromium (IV)	<5	<2	**-**	34.2
Copper	250	230	**BELOW**	71700
Lead	7700	1580	**BELOW**	2300
Mercury	18	<1	**BELOW**	109
Nickel	55	39	**BELOW**	980
Selenium	<1	<3	**-**	13000
Vanadium	Not tested	40	**-**	5590
Zinc	1100	492	**BELOW**	665000
Naphthalene	2.2	<0.1	**BELOW**	1100
Acenaphthylene	2.6	<0.1	**BELOW**	100000
Acenaphthene	5.5	0.33	**BELOW**	100000
Fluorene	8.5	0.29	**BELOW**	71000
Phenanthrene	47	1.73	**BELOW**	23000
Anthracene	13	0.96	**BELOW**	540000
Fluoranthene	59	4.72	**BELOW**	23000
Pyrene	47	5.52	**BELOW**	54000
Benzo(a)anthracene	19	2.92	**BELOW**	180
Chrysene	17	2.97	**BELOW**	350
Benzo(b)fluoranthene	16	5.64	**BELOW**	45
Benzo(k)fluoranthene	10	2.05	**BELOW**	1200
Benzo(a)pyrene	16	5.74	**BELOW**	26
Indeno(1,2,3-cd)pyrene	7.9	2.58	**BELOW**	510
Dibenz(a,h)anthracene	1.9	0.39	**BELOW**	3.6
Benzo(ghi)perylene	8.0	1.93	**BELOW**	4000
Aliphatics/Aromatics	590/1500	196/337	**BELOW**	2000 (min)
VOCs	Below Detection Limits	Below Detection Limits		

*Excludes results from WS03 and WS04 that were located in Zone B and not within the Former Composting Facility materials.

The levels of contaminants, that are potentially leachable from within the Former Composting Facility, are not elevated sufficiently or exist in significant quantity to adversely affect concentrations of contaminants within the existing Old Landfill leachate. Therefore, it is considered that the former composting facility has not adversely impacted the underlying groundwater.

The generalised appraisal of the Old Landfill Material versus the Former Composting Facility materials in Zone A in Table 6.2 indicate that the contaminant concentrations within the Former Composting Facility materials are, generally, significantly below the concentrations in the Old Landfill and will not pose a risk for the commercial end-use.

Therefore, it is concluded that Former Composting Facility material can be categorised as Low Risk to Human Health for the proposed End-Use, in agreement with the conclusions within the AECOM report.

6.2.1 Phytotoxicity Assessment

The organic rich Former Composting Facility material has been compared to GACs for the risk to plant and animal life for suitability. The results are summarised in Table 6.2.1.

Table 6.2.1: Phytotoxicity Assessment

Determinand	Organic Rich Material concentration range (mg/kg)	GAC*	Acceptable for re-use on site
Copper	24-114	200	**YES**
Nickel	8-18	110	**YES**
Zinc	93-223	300	**YES**

*Based on a solid organic matter content of 6% and pH >7

The results contained within Table 6.2.1 illustrate that the organic rich Former Composting material, if suitably separated and stockpiled from other site materials, can be re-used on site in landscaping areas as a potential growing medium without risk to the environment.

6.3 HAZARDOUS WASTE ASSESSMENT

A Hazardous waste assessment has been undertaken using HazWasteOnline. The results of the assessment are included in **Appendix I**.

The hazardous waste assessment has concluded that three of the samples are categorised as hazardous, samples, TP07 at 0.25m, TP10 at 0.1m and WS03 at 0.70m. Sample WS03 at 0.7m was taken from the Old Landfill material within the currently active HWRC and will remain undisturbed and in-situ and therefore not considered further.

Samples TP07 at 0.25m and TP10 at 0.10m were taken within the Former Composting Facility, the samples have been classified as hazardous for Lead in accordance with Environment Agency Waste Classification Guidance Note WM3 and exhibits hazardous property HP7 (Carcinogenic).

As samples do not contain Hazardous Properties HP12 (gas production in contact with water, air or acid) or HP14 (ecotoxic), we have considered that they will not have an impact on the surrounding environment should the materials be re-used on site.

6.4 WASTE CLASSIFICATION ASSESSMENT

Waste Acceptance Criteria (WAC) testing was undertaken on 8No samples that comprised of the organic rich Former Composting Facility material and the ‘trafficking’ layer from Zone A. The results of the analysis are contained in **Appendix E.**

The results of the analysis have indicated that 4No samples have been categorised as hazardous waste, 2No Non-hazardous waste and 2No inert for landfill purposes. Samples of both the Former Composting Facility material and 'Trafficking' layer returned results classified as hazardous waste. The defining characteristic driving the classification for the samples is Loss of Ignition and Total Organic Matter content.

The 'Trafficking' Layer material in the central area of Zone A has the potential to remain on site dependant on the new development finished levels with reference to the requirement for the replacement of the Landfill Clay Cap and subsequent sub-base construction.

If materials are to be removed from site then it is advised that the material is categorised as **Hazardous,** however it is considered that they pose a low risk with regards to controlled waters based on their low contaminant concentration and the presence of a substantial clay attenuation layer between the site and the groundwater**.**

6.5 GROUNDWATER

As the composting facility was in operation for a number of years before the landfill cap was placed over the Old Landfill, an assessment of the impact to the groundwater within the Charnworth Mudstone by potential migration of leachate from the existing Landfill has been undertaken.

Three perimeter boreholes were installed and positioned to assess the 'upstream' groundwater conditions (RO03) and the 'downstream' groundwater conditions (RO01 and RO02). The boreholes were installed to ensure a significant seal was provided between the base of the Old Landfill and the intercepted deep-seated groundwater.

The proposed use of the Site is for commercial end use, the groundwater chemical data has been compared against a commercial/industrial end use GAC, the Drinking Water Standards (DWS) and Environmental Quality standards (EQS) to assess risks from groundwater sources. However, the groundwater is approximately 18m below existing levels and is considered unlikely to affect the end-users.

The groundwater results from boreholes, (RO01-03) have been compared to the groundwater and leachate results detailed in the AECOM report (Boreholes, CP01D (groundwater) and CP01S, CP04 and CP06 (Leachate).

A summary of the groundwater result comparison is show below in Table 6.5 and the results are attached in **Appendix F**.

Table 6.5: Groundwater monitoring results

Determinand	RO01 (ug/l)	RO02 (ug/l)	RO03 (ug/l)	CP01S-06 (Leachate – Range ug/l)	CP01D Ground water (ug/l)	EQS Freshwater (ug/l)	DWS (ug/l)
pH	7.9	7.9	7.9	7.12-7.46	7.9		
Cyanide	<5	<5	<5	<0.05	-	-	-
Thiocyanate	<10	<10	<10	<0.05-55	-	-	-
Ammoniacal Nitrogen	1700	1080	674	4180-78900	1480	300	500
Total Organic Carbon	16800	15300	10500	11600-99200	3070	-	-
Arsenic	5	<5	<5	7.25-14	5.81	50	10
Boron	1610	1350	1670	1190-3940	1190	2000	1000
Cadmium	<0.4	<0.4	<0.4	<0.08	<0.08	5	5
Chromium	<5	<5	<5	<1-1.15	<1	5	50
Copper	<5	<5	<5	<0.3	2.59	1	2000
Iron	7	<5	<5	3040-16700	77	1000	200
Lead	<5	<5	<5	<0.2-0.704	0.204	4	10
Mercury	<0.05	<0.05	<0.05	<0.01	<0.01	1	1
Nickel	<5	<5	<5	8.35-13.1	0.841	50	20
Selenium	<5	<5	<5	<1	<1	-	10
Zinc	<2	<2	<2	4.29-11	492*	8	5000
Total Phenols	<10	<10	<10	<16	<16	30	0.5
EPH(C10-C40)	<10	<10	<10	6650-33400	<2000	-	-
Naphthalene	**0.06**	<0.01	**0.03**	0.445-3.9	0.254	10	0.1
Acenaphthylene	<0.01	<0.01	<0.01	1.01-13.1	0.221	0.1	0.1
Acenaphthene	<0.01	<0.01	<0.01	0.276-1.56	<0.1	0.1	0.1
Fluorene	<0.01	<0.01	<0.01	0.848-15.4	0.232	0.1	0.1
Phenanthrene	<0.01	<0.01	0.02	7.04-88.7	0.64	0.1	0.1
Anthracene	<0.01	<0.01	<0.01	2.41-23.8	<0.1	-	0.01
Fluoranthene	<0.01	**0.02**	<0.01	29.1-140	0.849	-	0.0063
Pyrene	<0.01	**0.02**	**0.01**	30.8-124	1.2	0.1	0.1
Benzo(a)anthracene	<0.01	<0.01	<0.01	19.4-64.8	<0.1	0.1	0.1
Chrysene	<0.01	<0.01	<0.01	20-53.6	<0.1	0.1	0.1
Benzo(b)fluoranthene	<0.01	<0.01	<0.01	32.8-120	<0.1	0.1	0.1
Benzo(k)fluoranthene	<0.01	<0.01	<0.01	20-55.8	<0.1	0.1	0.1
Benzo(a)pyrene	<0.01	<0.01	<0.01	30.3-90.2	<0.1	0.1	0.01
Indeno(1,2,3-cd)pyrene	<0.01	<0.01	<0.01	17.8-56.6	<0.1	0.1	0.1
Dibenz(a,h)anthracene	<0.01	<0.01	<0.01	3.81-11.1	<0.1	0.1	0.1
Benzo(ghi)perylene	<0.01	<0.01	<0.01	25.4-68.8	<0.1	0.1	0.1

NOTES:
Red highlighted areas indicate exceedances of the EQS Freshwater or Drinking Water Standards (DWS).
*spurious Zinc concentration, potential Lab error.

Analysis of Table 6.5 indicates the following;

- Samples from the upstream and downstream boreholes contain similar determinand concentrations and generally concur with the results obtained by AECOM from borehole, CP01D.
- Elevated levels of Ammoniacal Nitrogen in the downstream boreholes (RO01 and RO02) indicate there is the potential that a degree of leachate is entering the groundwater from the Old Landfill. Notwithstanding, Ammoniacal Nitrogen appears to be naturally elevated within the underlying upstream groundwater.
- Boron appears to be naturally elevated within the groundwater, however while it exceeds the DWS, there are no relevant receptors that can be impacted by this elevated level, in addition, Boron is below the relevant EQS for controlled waters.
- There are with slight detections of PAHs within the background upstream groundwater chemistry.

Based on the elevated levels of Ammoniacal Nitrogen in the downstream boreholes, it is considered that there is a migration of leachate from the Old Landfill into the underlying groundwater. However, the concentration of Ammoniacal Nitrogen within the groundwater is significantly reduced in comparison to the leachate concentrations contained within the Old Landfill. Additionally, all other determinands that are significantly elevated within the Old Landfill leachate, with the exception of marginal PAH concentrations, are below the detection limits within the groundwater, suggesting attenuation within the clays of the weathered Charnworth Mudstone prior to groundwater interception.

Further groundwater sampling is recommended as works progress on site to ensure that the works do not impact the groundwater. The on-going monitoring will be detailed within a Remediation Method Statement (RMS) that will follow this report.

6.6 CONCLUSION

The site investigation has shown that the Landfill Clay cap is absent from the central area of Zone A. Therefore, there is a direct pathway for contaminants from the Former Composting Facility to migrate to the underlying Old Landfill.

However, the chemical analysis of the materials derived from the Former Composting Facility material has shown that the concentrations of contaminants are generally significantly below the concentrations of contaminants derived from the Old Landfill.

It is considered that contaminants from the Former Composting Facility materials are likely to have migrated into the Old Landfill material. The main mechanism for the migration is deemed to be rainwater infiltration. The pathway for contaminant migration during the initial operational phase of the Former Composting Facility was uninhibited and direct into the underlying Old Landfill. Towards the end of the Former Composting Facilities operational life the Landfill Clay cap was installed, resulting in the inhibiting of rainfall and leachate from the Former Composting Facility. Subsequently, the central area of the Landfill Clay Cap was removed, thus allowing a degree of contaminant migration from the remaining Former Composting Facility material into the underlying Old Landfill.

However, it is considered that the contaminant concentration load is unlikely to of increased significantly within the Old Landfill, based upon the volume of the Former Composting Facility material, the lower contaminant concentrations and impeded migration through the presence of the Landfill Cap following installation and subsequent partial coverage around the periphery of Zone A.

7.0 CONCEPTUAL SITE MODEL

The conceptual hydrogeological model for the site is based on the following source-pathway-receptor linkages, and relies on the geological and hydrogeological information gathered during site investigations as outlined above.

Source Term

The Former Composting Facility was not a landfill. However, it is situated upon a closed landfill and, therefore, previous site activities (the presence of the composting materials and the HWRC) may have impacted on the contaminant concentrations within the landfill leachate. The leachate within the Old Landfill has the potential to impact the wider groundwater environment. Therefore, the contribution of contaminants from the Former Composting Facility and the current HWRC are considered to be source terms for the purpose of this conceptual site model.

Pathways

Geology

According to the British Geological Survey's (BGS) 'Geology of Britain Viewer', the bedrock geology comprises of the Charmouth Mudstone Formation – Mudstone, which is Sedimentary Bedrock was formed approximately 183 - 199 million years ago in the Jurassic Period.

These sedimentary rocks are shallow-marine in origin. They are detrital, ranging from coarse- to fine-grained (locally with some carbonate content) forming interbedded sequences.

Drilling information gather during the site investigation has confirmed clays of the weathered Charnworth Mudstone to a depth of 20m.

There is no evidence of mining works around or beneath the site.

Hydrology

The nearest water body is the Langton Brook, which is situated some 955m south of the site with a drainage channel which flows to the Langton Brook located approximately 39m north of the site.

With reference to the Environment Agency's mapping website, the site is situated within a Flood Zone 1, which is a site that has a 'Very Low' chance of flooding in any given year i.e., less than 1 in 1,000.

Surface Water Abstractions

There are two groundwater abstraction points within 2km of the site, located approximately 645 and 1,005m southwest of the site.

The licence numbers allocated to these abstraction points are 5/31/03/*S/0020 and 5/31/03/*S/0020 respectively.

Hydrogeology

The bedrock deposits (Charnworth Mudstone) are designated as a Secondary Aquifer (undifferentiated) which is defined as generally the water-bearing parts of the former non-aquifers. Secondary Undifferentiated has been assigned in cases where it has not been possible to attribute either a category A or B to a rock type.

Groundwater Abstractions

There is one groundwater abstraction point within 2km of the site located approximately 1641m north east of the site.

The licence number allocated to this abstraction facility is: 5/31/03/*G/0031. The abstraction point is for general farming and domestic purposes and as the site is not within a Source Protection Zone (SPZ) is not considered further in this report.

Groundwater Levels

Groundwater level measurements were recorded from monitoring points around the perimeter of the site and are presented in **Appendix F**. Note that only two rounds of monitoring have been undertaken therefore seasonable fluctuations are not able to be determined.

The groundwater levels have confirmed that RO03 can be considered to be up-gradient while RO01 and RO02 can be considered to be downgradient of the site which confirms that groundwater general flow is directed from the east to the west.

It is considered that there is no significant direct pathway between the groundwater beneath the site and the Langton Brook.

Receptors

Current licenced/exempt groundwater or surface water abstractions

There is one groundwater and two surface water abstraction facilities approximately 2km from the site. However, abstractions are private water supplies with no associated Source Protection Zone. It is considered that the Old Landfill is unlikely to have adversely affected the water abstractions, based on the distance from source to receptor and associated dispersion, the limited migration of low leachate concentrations and the low permeability of the underlying clays.

Sites of Ecological or Nature Conversation Significance

There are no statutory or ecological sites within 2km of the site.

Controlled Waters

The only receptor in respect to controlled waters considered in this risk assessment will be the groundwater within the Charnworth Mudstone (primary receptor).

The drainage channel is also considered a potential receptor given that it is in close proximity to the site and may be impacted by potential runoff.

Table 7.0: Conceptual Site Model

Source – Pathway – Receptor Conceptual Model			
SOURCE	**PATHWAY**	**RECEPTOR**	**SOLUTION**
The Old Landfill	Surface Water Runoff	Drainage Channel leading to the Langton Brook	Reinstatement and repair of the landfill cap
	Migration of contaminants through the closed landfill to controlled waters	Groundwater	Low/medium Risk - The landfill has been shown to be contained by several meters of clay. Groundwater monitoring indicates that there may be a slight migration of contaminants to the groundwater based upon Ammoniacal Nitrogen concentrations. However, the Ammoniacal Nitrogen concentration is significantly reduced and all other contaminants are below detection limits, indicating that the clays are retaining the majority of the leachate. Reinstatement and repair of the landfill cap to reduce rainwater migration into the closed landfill.
	Groundwater	Drainage Channel leading to the Langton Brook	Due to the depth of groundwater (16-17mbgl), the Drainage channel and, subsequently, Langton Brook are considered not to be in hydraulic continuity with the groundwater beneath the site.
Contaminated soils from the former composting facility	Surface Water Runoff	Drainage Channel leading to the Langton Brook	Soils are shown as being suitable for reuse on site. WAC testing indicates that the majority of the material is inert and the phytotoxic analysis shows that the Organic Rich materials are suitable to be utilised to promote plant growth. Organic Rich material could be re-used as a growing medium along the eastern boundary of the site.
	Migration of contaminants through the closed landfill to controlled waters	Groundwater	Reinstatement and repair of the landfill cap

	Groundwater	Drainage Channel leading to the Langton Brook	Reinstatement and repair of the landfill cap Due to the depth of groundwater (16-17mbgl), the Drainage channel and subsequently Langton Brook are considered not to be in hydraulic continuity with the groundwater beneath the site.
Onsite activities from the ongoing operation of the HWRC	Surface Water Runoff	Drainage Channel leading to the Langton Brook	Low Risk – The operating elements of the current site are concreted/asphalted with surface water runoff directed to an interceptor on site
	Migration of contaminants through the closed landfill to controlled waters	Groundwater	
	Groundwater	Drainage Channel leading to the Langton Brook	Due to the depth of groundwater (16-17mbgl), the Drainage channel and subsequently Langton Brook are considered not to be in hydraulic continuity with the groundwater beneath the site.
Fuel tanks associated with the HWRC	Ground	Groundwater	Low Risk - Soil testing has shown that contaminants are below the thresholds for the proposed end-use. No remediation is required
	Surface Water Runoff	Drainage Channel leading to the Langton Brook	The two tanks present on site are above ground with one contained within a building and the other covered by a roof. Therefore, impacts on surface water are deemed to be negligible.
Asbestos Hotspot	Air (inhalation)	Site Workers/Construction Workers	Segregation of asbestos impacted soils and picking of asbestos by a suitably licenced contractor to enable soils to be reused on site.
		Site Users	

8.0 RISK MANAGEMENT & REMEDIATION

Previous sections have quantified the risk posed to identified receptors which, in some instances, require remediation to protect or reduce levels of risk. The following section details measures and recommendations for dealing with risks associated with soil and groundwater contamination in respect to the development proposal of commercial end-use.

8.1 REMEDIATION TO PROTECT END USERS

Removal or encapsulation of asbestos containing materials beneath hardstanding areas.

8.2 REMEDIATION TO PROTECT CONTROLLED WATERS

Leachate within the Old Landfill has marginally migrated through the base and into the underlying aquifer. However, it is considered that the majority of the contaminant load within the leachate is been contained within the underlying clays at the base of the Old Landfill. Therefore, currently there is a marginal impact on the underlying secondary aquifer within the Charnworth Mudstone.

The site investigation has shown that the contaminant concentrations within the Former Composting Facility are generally significantly below the contaminant concentrations within the Old Landfill. Therefore, it is considered that the Former Composting Facility materials are not increasing the contaminant load within the Old Landfill and associated leachate.

However, remediation is still required to reinstate the Landfill Clay cap to limit surface/rainwater infiltration to the Old Landfill.

The Landfill Clay cap that is absent from areas within the Former Composting Facility will need to be reinstated to conform to the existing Clay cap construction. Additionally, the proposed replacement waste transfer development will require to be covered by hardstanding (concrete) with a drainage system designed to collect and limit both surface water migration off-site and rainfall infiltration into the underlying Old Landfill.

8.3 REMEDIATION TO PROTECT CONSTRUCTION WORKERS

Basic PPE for all workers (overalls, gloves, dust/vapour mask if required) and wash facilities/personal hygiene.

Dust suppression will be required around the area that contains asbestos in the vicinity of trial pit, TP15.

8.4 REMEDIATION TO PROTECT CONSTRUCTION MATERIALS

No remediation is required to protect this receptor.

8.5 WASTE MANAGEMENT

The two layers of Made Ground associated with the Former Composting Facility are classified as Hazardous based on Total Organic Carbon, Loss of Ignition and Lead. However, it is considered that these materials could remain onsite subject to a Remediation Method Statement and a Materials Management Plan if agreed by the regulators.

The organic rich material within Zone A has the potential to be reused as a growing medium within Zone C dependant on regulatory approval upon the production of a Materials Management Plan.

9.0 RECOMMENDATIONS

Recommendations for further assessment of the site include:

- Site won granular material should be stockpiled and classification testing undertaken before re-use.
- Concrete hardstanding from the existing HWRC could be processed on site and re-used subject to classification testing.
- Segregation of the Former Composting Facility and 'Trafficking' Layer should be undertaken with the potential for the Former Composting Material to be re-used in landscaping areas on site, subject to regulatory approval.
- Following demolition/clearance of the current HWRC and prior to construction, it is recommended that further PLTs are conducted to confirm the assumed shallow CBR values in Zone B.
- An earthworks strategy statement will be required for the replacement of the Landfill Cap and sub-base materials. The statement will detail the requirement for Compaction Trials for all placed materials, material classification, formation testing, verification testing and the requirement for a geotechnical feedback report.
- An asbestos survey should be undertaken for all buildings prior to any redevelopment works and any ACMs dealt with in a safe and controlled manner, with appropriate method statements and risk assessment to ensure safety to groundworkers, future residents and adjacent site users.
- A Remediation Strategy and production of a Materials Management Plan will be required to allow the reuse of materials on site and to allow the importation of additional soils for site works.
- Additional, unidentified localised areas of contamination may exist at the Site and an appropriate 'hotspot' protocol should be in place for groundworkers to act upon should such contamination be identified during the construction process.
- Should any signs of contamination be evident during construction activities, a qualified environmental specialist should be consulted to assess the risk posed to end users and the environment.

10.0 CONCLUSIONS

The SI has been tailored to address the redevelopment of the site as an extended Household Waste Transfer Centre and to address the potential issues relating to the Former Composting Facility in the western portion of the site (Zone A) to allow successful surrender of the permit(s) relating to these areas. The conclusions of the SI are as follows;

- The Landfill Cap within Zone A, the Former Composting Facility in the western portion of the site, has been proven to exist, in part, and constructed as detailed in the report Kibworth Composting Facility - Lining Works-Completion Report, Dated 2009 by Suez Environmental.

- The Landfill Cap is absent from the central area of Zone A and requires replacement. The area requiring replacement is approximately 2,300m^2 equating to a volume of approximately 345m^3 of clay required for import.

- The Landfill Clay cap is absent from Zone B but may not require installation if the new hardstanding(concrete) is deemed an adequate capping medium, dependant on regulatory approval.

- The risk posed by the migration of contaminants from the Former Composting Facility material to the underlying Old Landfill and the effective increase to the concentrations of the resultant leachate is considered to be negligible.

- A CBR value of 5% can be readily achieved for the combined sequence of the Landfill Cap and Old Landfill material in Zone A, the Former Composting facility in the western portion of the site. Resulting in a sub-base construction depth of 225mm.

- The ‘trafficking’ layer within Zone A could remain in-situ based upon contaminant levels and strength properties and could be incorporated within the sub-base for the redevelopment dependent on-site levels.

- A CBR value of 5% can be inferred for the Old Landfill material in Zone B, the active HWRC.

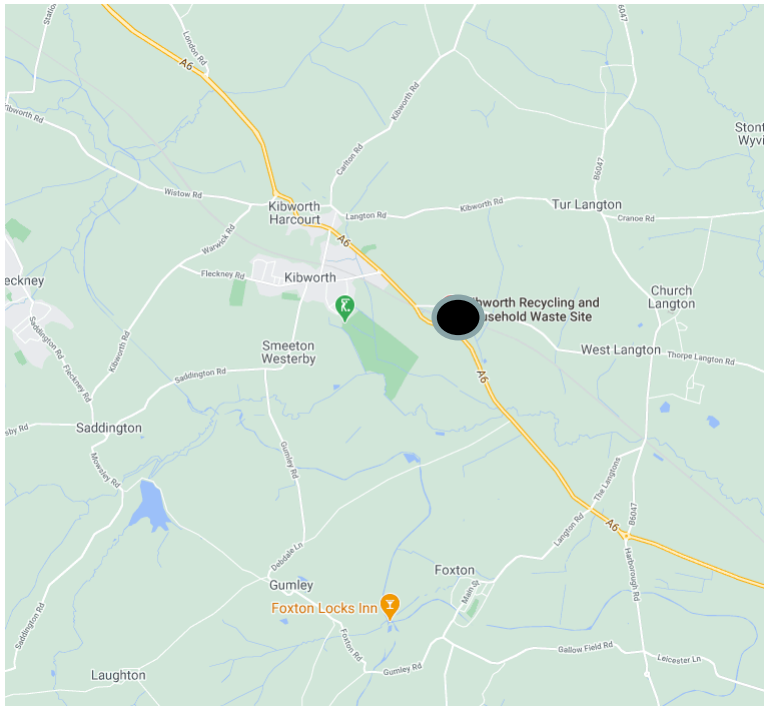
- Natural cohesive deposits from Zone C, to the east of the active HWRC, cannot feasibly be accessed for re-use on site.

- Site won sub-base material and processed concrete from Zone B have the potential to be re-used on site following further material suitability characterisation testing.

- The organic rich Former Composting material has the potential to be reused in landscaping areas within Zone C, subject to regulatory approval following the production of both a Remediation Method Statement and a Materials Management Plan.

- Groundwater analysis has indicated that Leachate from the Old Landfill has not significantly migrated or impacted the underlying secondary aquifer within the Charnworth Mudstone and therefore the presence of the composting facility has not led to ongoing environmental impacts.

APPENDIX A



KEY:

Site Location

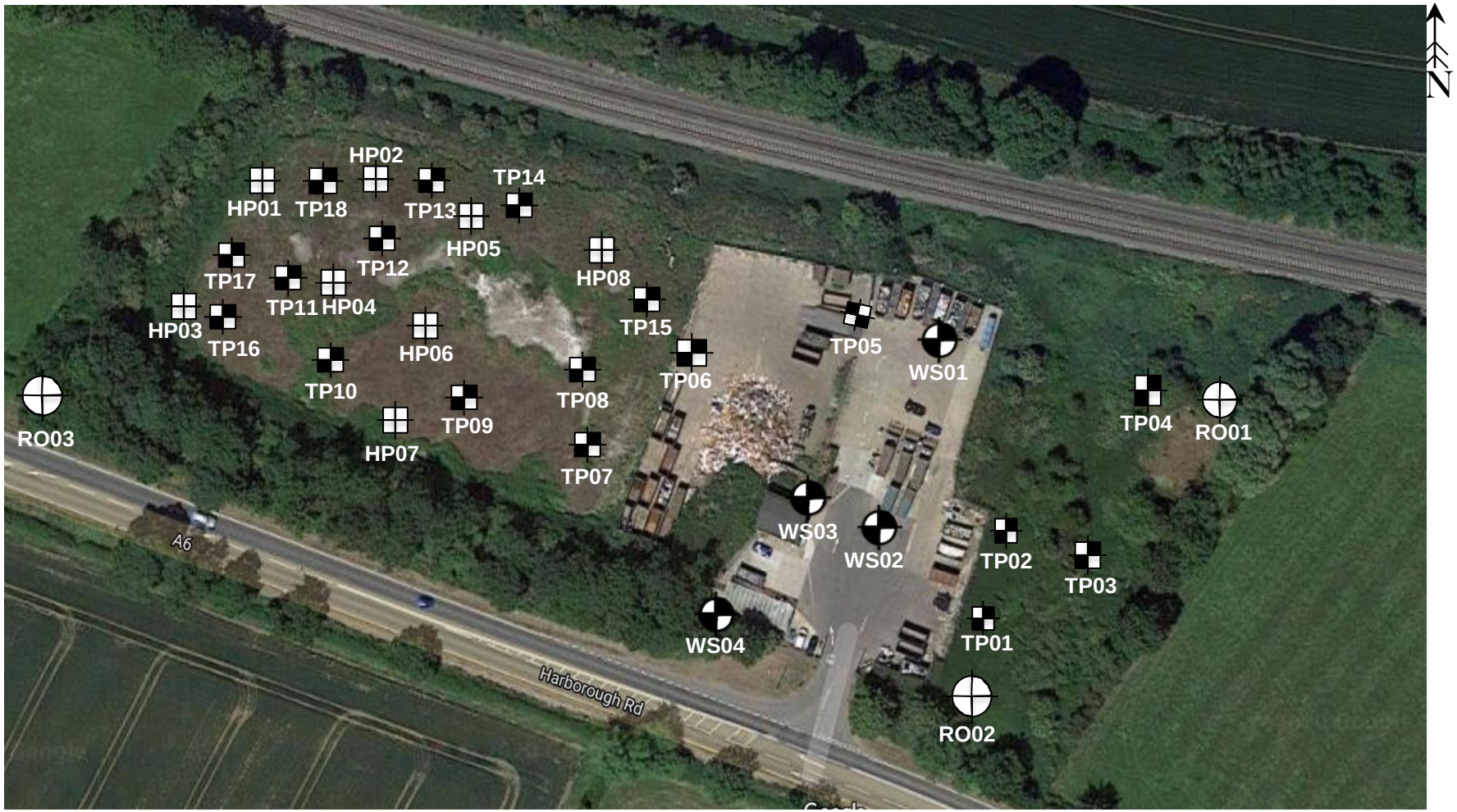
DO NOT SCALE

IVY HOUSE environmental

Scotland Farm, Ockbrook, Derby, DE72 3RX

rps@ivyhousenv.co.uk • www.ivyhousenv.co.uk • 01332 661 987

TITLE:	Site Location and Layout
PROJECT:	Kibworth HWRC
PROJECT No:	IV.293.20
DATE:	02/2021
SCALE :	NTS
DRAWN :	SS
DWG No:	Figure 1



KEY:

- Hand Dug Trial Pits
- WS Concrete core
- Rotary/Groundwater Borehole
- Trial Pit

DO NOT SCALE

IVY HOUSE environmental

Scotland Farm, Ockbrook, Derby, DE72 3RX

rps@ivyhousenv.co.uk • www.ivyhousenv.co.uk • 01332 661 987

TITLE:	Exploratory Hole Location Plan
PROJECT:	Kibworth HWRC
PROJECT No:	IV.293.20
DATE:	02/2021
SCALE :	NTS
DRAWN :	SS
DWG No:	Figure 2

KEY:

Dynamic Cone Penetration Locations

DO NOT SCALE

IVY HOUSE environmental
Scotland Farm, Ockbrook, Derby, DE72 3RX
rps@ivyhousenv.co.uk • www.ivyhousenv.co.uk • 01332 661 987

TITLE:	DCP Locations
PROJECT:	Kibworth HWRC
PROJECT No:	IV.293.20
DATE:	02/2021
SCALE :	NTS
DRAWN :	SS
DWG No:	Figure 3

KEY:

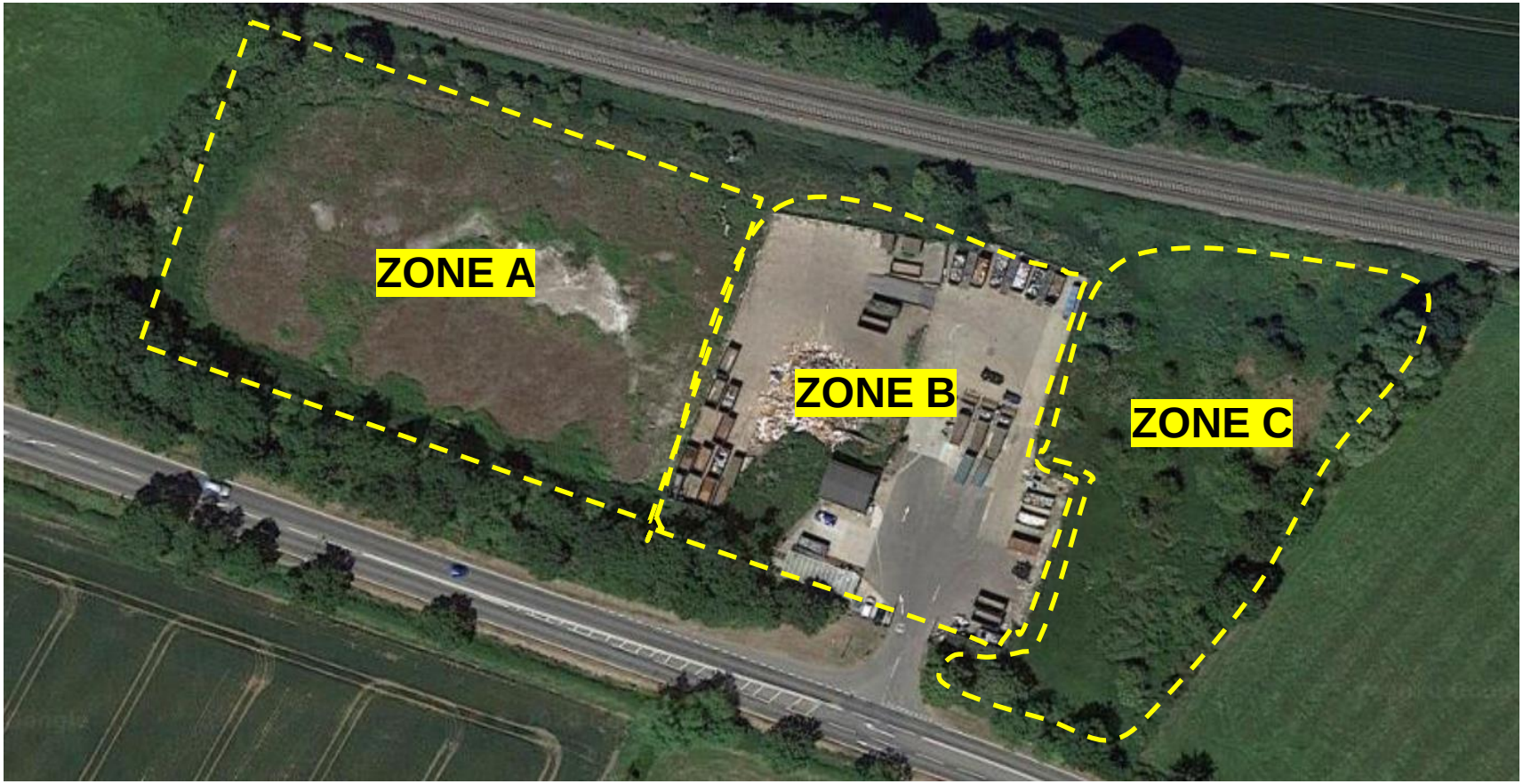
Landfill Clay cap absent within composting facility area

Landfill Clay cap absent beneath concrete/asphalt slab

DO NOT SCALE

IVY HOUSE environmental
Scotland Farm, Ockbrook, Derby, DE72 3RX
rps@ivyhousenv.co.uk • www.ivyhousenv.co.uk • 01332 661 987

TITLE:	Extent of Landfill Clay Cap
PROJECT:	Kibworth HWRC
PROJECT No:	IV.293.20
DATE:	02/2021
SCALE :	NTS
DRAWN :	SS
DWG No:	Figure 4



KEY:

DO NOT SCALE

IVY HOUSE environmental
Scotland Farm, Ockbrook, Derby, DE72 3RX
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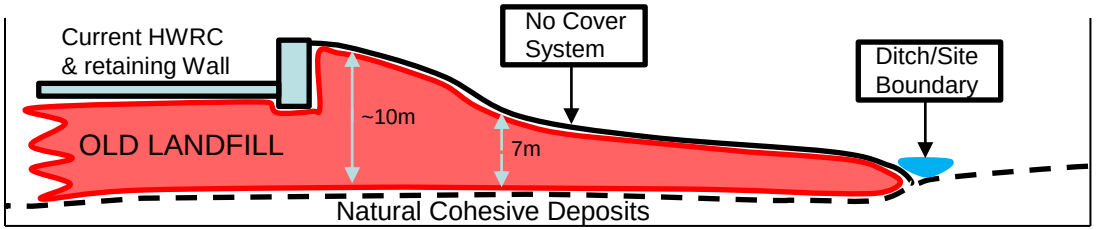
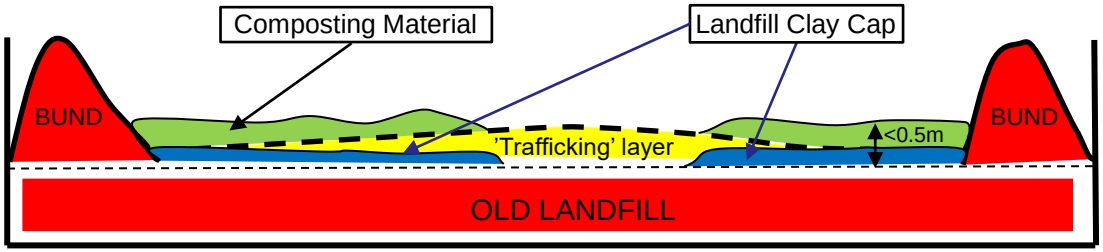
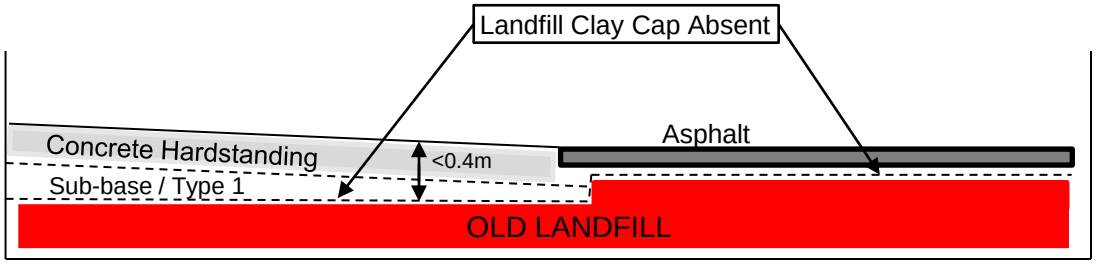
TITLE:	Site Zonation Plan
PROJECT:	Kibworth HWRC
PROJECT No:	IV.293.20
DATE:	02/2021
SCALE :	NTS
DRAWN :	SS
DWG No:	Figure 5







KEY:

DO NOT SCALE

IVY HOUSE environmental

Scotland Farm, Ockbrook, Derby, DE72 3RX

rps@ivyhousenv.co.uk • www.ivyhousenv.co.uk • 01332 661 987

TITLE:	
PROJECT:	Kibworth HWRC
PROJECT No:	IV.293.20
DATE:	02/2021
SCALE :	NTS
DRAWN :	SS
DWG No:	Figure 6

APPENDIX B

10108

GEO QUARRIES
LITTLE PONTON
GRANTHAM

SM5324-19

Simtec Materials Testing
Unit 116, The Burrows
East Goscote Ind Est
East Goscote
LE7 3XD
01163196100

GRADATION ANALYSIS TEST REPORT
for Product: Geo 6F5/ 6F5
Supplier/ source: Geo Quarries / Little Ponton

Material type: SHW 600 Test method: Wash grading to BS EN 933-1: 2012

SAMPLE INFORMATION

Sampled/ tested
Thu 19 December 2019/ 10-01-20
at 1200 hrs

Sample number **SM12298**

Purpose of Sample	ROUTINE	Client	GEO QUARRIES
Carriageway / Lane	PHASE 2	Sampled By	CLIENT
Chainage/Layer	STOCKPILE	Ticket Number	N/A
Sample Cert Number	KP365	Notes	-

SAMPLE ANALYSIS

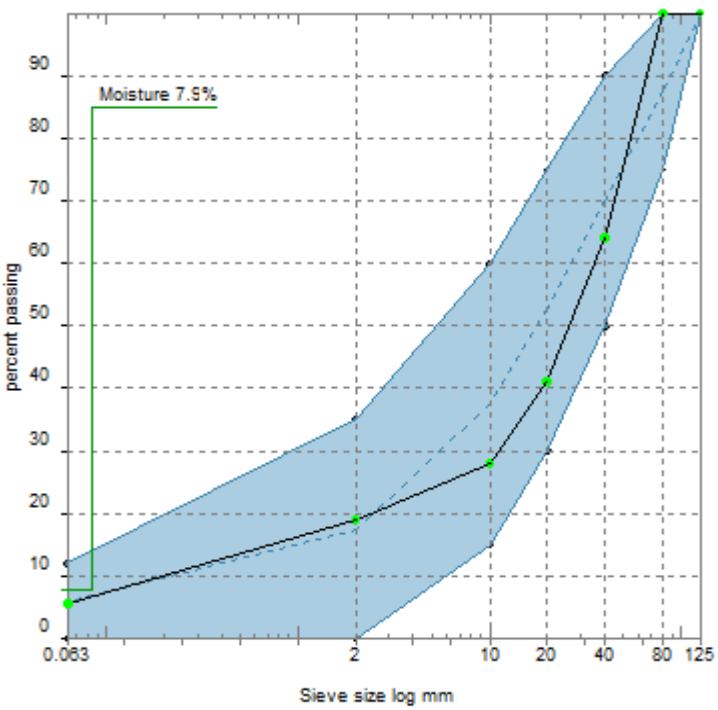
Sieve size	Percent passing	Specification limits	Complies ?
125mm	100	100 - 100	yes
80mm	100	75 - 100	yes
40mm	64	50 - 90	yes
20mm	41	30 - 75	yes
10mm	28	15 - 60	yes
2mm	19	0 - 35	yes
63µm	5.6	0.0 - 12.0	yes
Moisture content %	7.9	not specified	-

Parameters are evaluated to the accuracy of spec. limits

REMARKS

Compliance status ok
Category A of A-C includes secondary parameters

Certificates cannot be reproduced without the laboratory's permission.
80MM sieve set at 100% rather than 99% as per Geo production



Signed _ Quality Assurance Manager Print date 16 Jan 2020

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

Nicholls Colton Group

Cover Sheet

Derbyshire County Council
Highways Laboratory
Ripley Road
Ambergate
Derbyshire
DE56 2ER

Analytical Test Report: L19/0128/DCC/001

Your Project Reference:	**RW/14554/19 - Limestone Testing**	Date of Reciept:	17/01/2019
Your Order Number:	RW/14554/19	Date of Testing	28/01 to 01/02/2019
Report Issue Number:	1	Tests Undertaken	1 Vibrating Hammer Test
		Report Issued:	01/02/2019

Signed

Lee Harbottle
GCM Operations Manager
Nicholls Colton Group

Notes:

Date of Issue 07.02.2017

Owned by Emily Blissett - Customer Services Supervisor

Authorised by James Gane - Commercial Manager

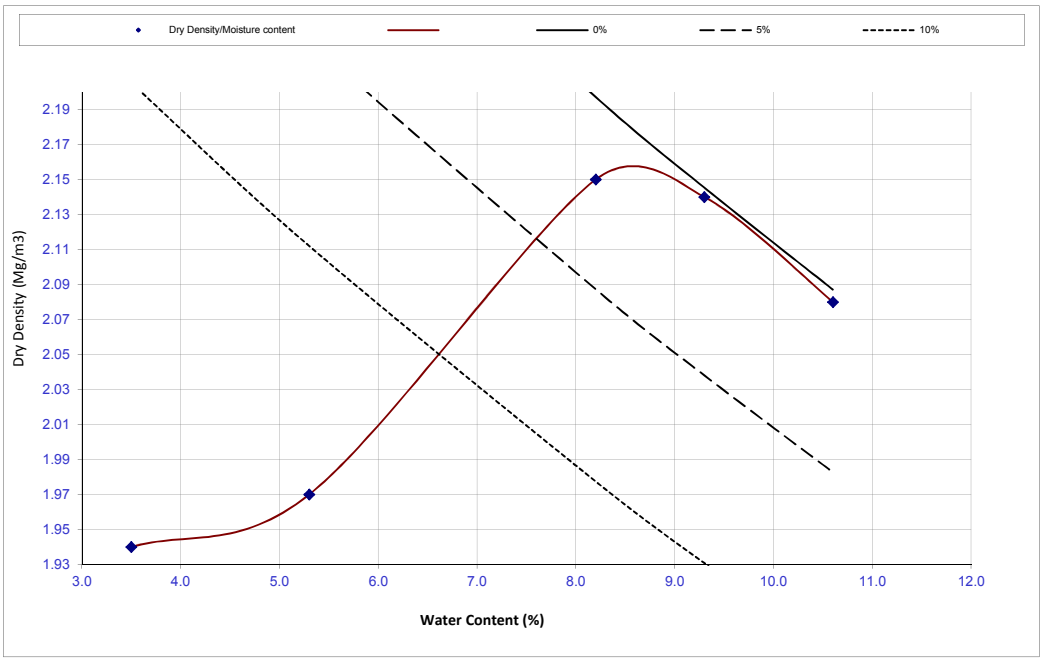
G:\LE1 Production\Controlled Documents\Report Templates\EN 13286\OMC Vib Hammer

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

L19/0128/DCC/001
Project Reference - RW/14554/19 - Limestone Testing
EN13286 Dry Density / Moisture Content Relationship - Vibrating Hammer

NC Reference	**19-988**
Client reference :	R19/01/218
Type of sample and visual description :	Light brown crushed rock
Material retained on 40mm BS test sieve (%) :	1
Particle Density (assumed) (Mg/m^3)	2.68
Peak Dry Density (kg/m^3)	**2.16**
Optimum Water Content % :	**8.5**

Point Reference	1	2	3	4	5
Water content (%)	10.6	9.3	3.5	5.3	8.2
Dry Density (Mg/m^3)	2.08	2.14	1.94	1.97	2.15



NOTES :

1. Testing was in accordance with EN 13286-4:2003
2. A Certificate of samples was not provided.

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

Core Special Projects Ltd
2175 Century Way
Thorpe Park
LS15 8ZB

Analytical Test Report: J20/0016/CRE/003

Your Project Reference:	**Buckingham Business Hub Corby**	Samples Received on:	04/03/2020
Your Order Number:	CSP50/00552/17017	Testing Instruction Received:	04/03/2020
Report Issue Number:	1	Sample Tested:	04/03 to 26/03/2020
Samples Analysed:	3 soil samples	Report issued:	27/03/2020

Signed

Lee Harbottle
GCM Operations Manager
Nicholls Colton Group

Notes:

Samples will be retained for 14 days after issue of this report unless otherwise requested.

The results included within the report are representative of the samples submitted for analysis.

A certificate of sampling was not supplied.

Samples were taken by customer.

EN 933 Particle Size Distribution

Sample preparation was in accordance with BS EN 932-2 : 1999.

Testing was in accordance with BS EN 933-1 : 2012 washing and sieving.

Accreditation Key

UKAS = UKAS Accreditation, u = Unaccredited

Date of Issue 27/11/2019

Owned by Emily Blissett - Commercial Reporting Supervisor

Authorised by Lee Harbottle - GCM Operations Manager

J:\Public\Projects\2020\J20\CRE - Core\J20-0016-CRE - Rockingham Bussiness Hub, Corby\[J20-0016-CRE-003.XLSX]Aggregate

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

J20/0016/CRE/003

Project Reference - Buckingham Business Hub Corby

Analytical Test Results - Aggregate

NC Reference			80402	80403	80404
Client Sample Reference			S1	S2	S3
Client Sample Location			Stockpile	Stockpile	Stockpile
Date of Sampling			04/03/2020	04/03/2020	04/03/2020
Sample Description			Brown slightly silty crushed rock	Brown/grey crushed rock	Brown slightly silty crushed rock
Determinant		**Units**			
EN Test Sieve (mm)	**Specification**			**SHW Series 800 Table 8/5 - T1SB**	
125		(% Passing)	100	100	100
80		(% Passing)	100	100	100
63	100	(% Passing)	100	82	100
50		(% Passing)	100	77	100
40		(% Passing)	100	67	97
31.5	75-99	(% Passing)	95	54	96
25		(% Passing)	86	45	88
22.4		(% Passing)	83	42	85
20		(% Passing)	78	38	81
16	43-81	(% Passing)	74	32	71
14		(% Passing)	70	29	67
12.5		(% Passing)	66	27	64
10		(% Passing)	60	23	59
8	23-66	(% Passing)	54	20	57
6.3		(% Passing)	50	17	54
5		(% Passing)	46	15	50
4	12-53	(% Passing)	43	13	48
2.8		(% Passing)	39	11	46
2	6-42	(% Passing)	35	10	42
1	3-32	(% Passing)	29	7	33
0.5		(% Passing)	24	5	24
0.25		(% Passing)	19	3	18
0.125		(% Passing)	15	2	15
0.063	0-9	(% Passing)	11.6	1.5	13.2

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

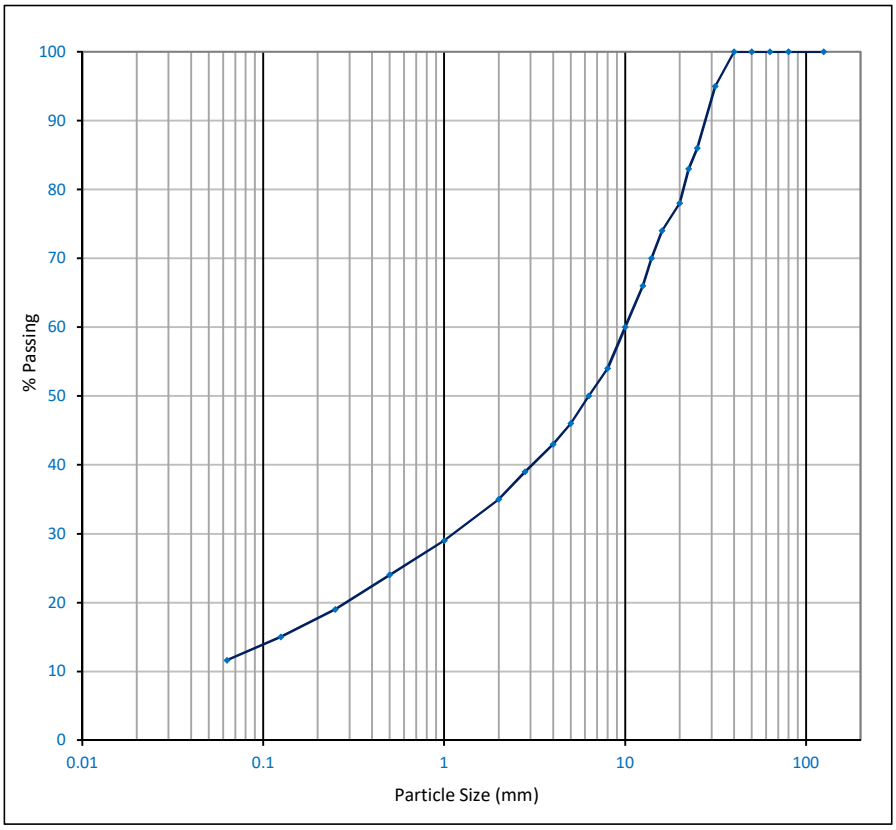
J20/0016/CRE/003

Project Reference - Buckingham Business Hub Corby

Material Analysis Results

NC Reference	**80402**

Client Sample Reference	S1
Client Sample Location	Stockpile
Date of Sampling	04/03/20
Sample Description	Brown slightly silty crushed rock



SHW Series 800 Table 8/5 - T1SB			
Sieve Size (mm)	Upper Limit (%)	Lower Limit (%)	Passing (%)
125			100
80			100
63	100	100	100
50			100
40			100
31.5	99	75	95
25			86
22.4			83
20			78
16	81	43	74
14			70
12.5			66
10			60
8	66	23	54
6.3			50
5			46
4	53	12	43
2.8			39
2	42	6	35
1	32	3	29
0.5			24
0.25			19
0.125			15
0.063	9	0	12

NOTES :

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

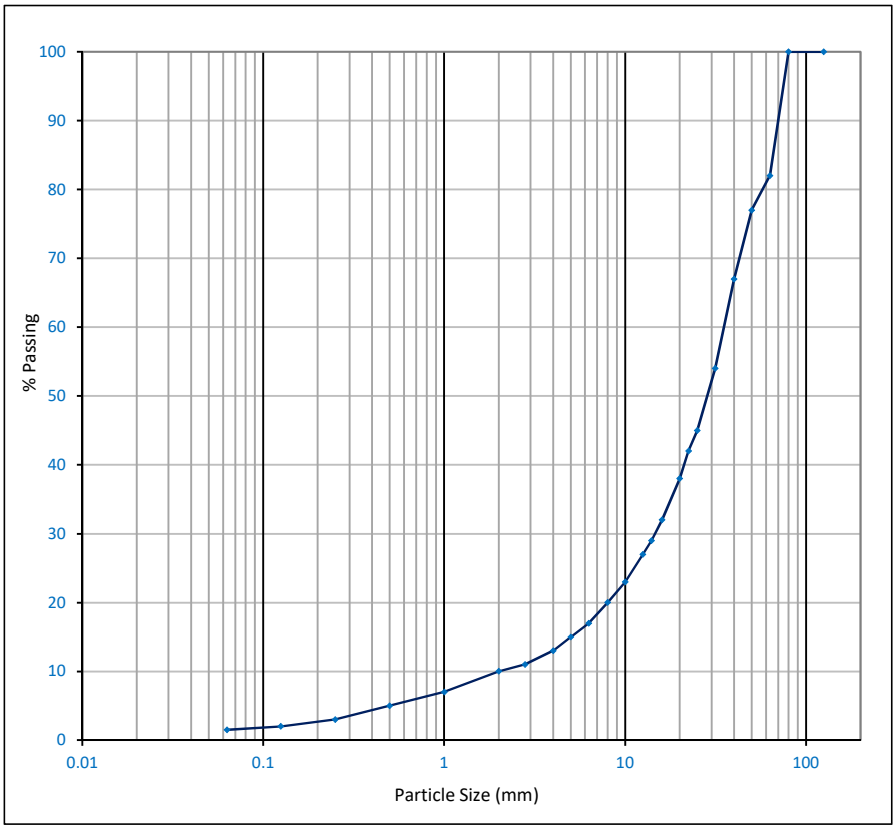
J20/0016/CRE/003

Project Reference - Buckingham Business Hub Corby

Material Analysis Results

NC Reference	**80403**

Client Sample Reference	S2
Client Sample Location	Stockpile
Date of Sampling	04/03/20
Sample Description	Brown/grey crushed rock



SHW Series 800 Table 8/5 - T1SB			
Sieve Size (mm)	Upper Limit (%)	Lower Limit (%)	Passing (%)
125			100
80			100
63	100	100	82
50			77
40			67
31.5	99	75	54
25			45
22.4			42
20			38
16	81	43	32
14			29
12.5			27
10			23
8	66	23	20
6.3			17
5			15
4	53	12	13
2.8			11
2	42	6	10
1	32	3	7
0.5			5
0.25			3
0.125			2
0.063	9	0	2

NOTES :

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

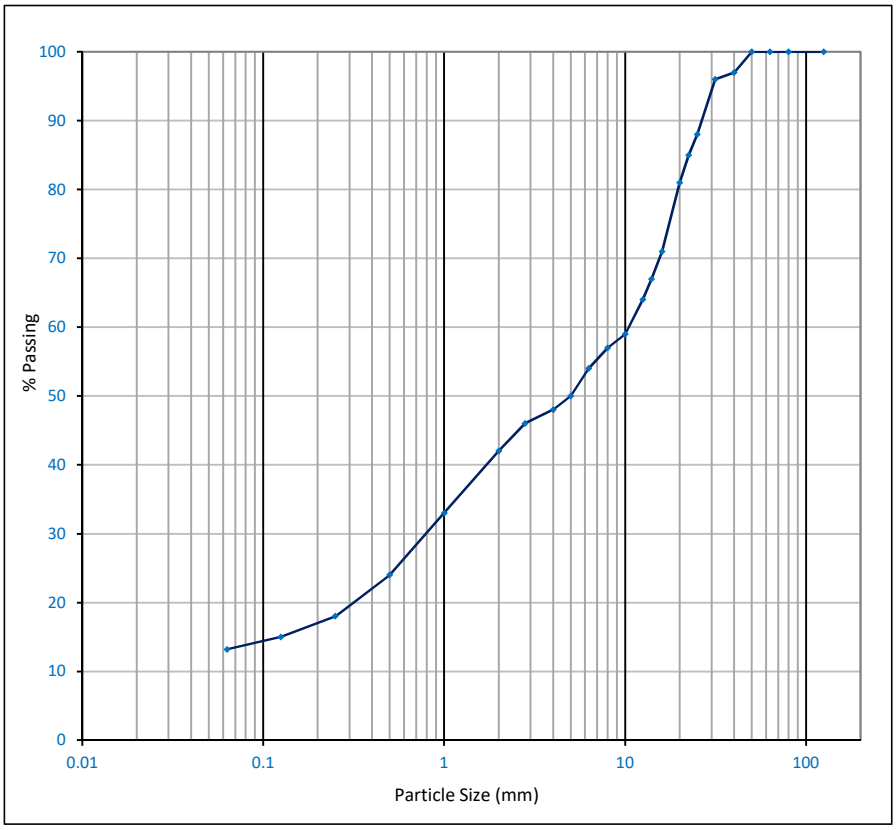
J20/0016/CRE/003

Project Reference - Buckingham Business Hub Corby

Material Analysis Results

NC Reference	**80404**

Client Sample Reference	S3
Client Sample Location	Stockpile
Date of Sampling	04/03/20
Sample Description	Brown slightly silty crushed rock



SHW Series 800 Table 8/5 - T1SB			
Sieve Size (mm)	Upper Limit (%)	Lower Limit (%)	Passing (%)
125			100
80			100
63	100	100	100
50			100
40			97
31.5	99	75	96
25			88
22.4			85
20			81
16	81	43	71
14			67
12.5			64
10			59
8	66	23	57
6.3			54
5			50
4	53	12	48
2.8			46
2	42	6	42
1	32	3	33
0.5			24
0.25			18
0.125			15
0.063	9	0	13

NOTES :

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

Core Special Projects Ltd
2175 Century Way
Thorpe Park
LS15 8ZB

Analytical Test Report: J20/0016/CRE/013

Your Project Reference:	**Rockingham Business Park**	Samples Received on:	22/05/2020
Your Order Number:	CSP SO 00553/17017	Testing Instruction Received:	22/05/2020
Report Issue Number:	1	Sample Tested:	22/05 to 08/07/2020
Samples Analysed:	6 soil samples	Report issued:	09/07/2020

Signed

Lee Harbottle
GCM Operations Manager
Nicholls Colton Group

Notes:

Samples will be retained for 14 days after issue of this report unless otherwise requested.

The results included within the report are representative of the samples submitted for analysis.

A certificate of sampling is available upon request.

Samples were taken by NC.

EN 933 Particle Size Distribution

Sample preparation was in accordance with BS EN 932-2 : 1999.

Testing was in accordance with BS EN 933-1 : 2012 washing and sieving.

EN 1097 Particle Density and Water Absorption

Testing was in accordance with EN 1097-6:2013 clause 8.

The sample was not artificially heated before testing.

Water Absorption was determined in accordance with clause 8 (4mm to 31.5mm).

Accreditation Key

UKAS = UKAS Accreditation, u = Unaccredited

Date of Issue 27/11/2019

Owned by Emily Blissett - Commercial Reporting Supervisor
Authorised by Lee Harbottle - GCM Operations Manager
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Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

J20/0016/CRE/013

Project Reference - Rockingham Business Park

Analytical Test Results - Aggregate

NC Reference			90917	90919	90921	90923	90925	90927
Client Sample Reference			S001-A	S002-A	S003-A	S004-A	S005-A	S006-A
Client Sample Location			See plan (SP)	See plan (Site 2)	See plan (Site 3)	See plan (Site 4)	See plan (Site 5)	See plan
Date of Sampling			21/05/2020	21/05/2020	21/05/2020	21/05/2020	21/05/2020	21/05/2020
Sample Description			Brown crushed	Brown crushed	Brown crushed	Brown crushed	Brown crushed	Brown crushed
Determinant		**Units**						
EN Test Sieve (mm)	**Specification**			**SHW Series 800 Table 8/5 - T1SB**			**SHW Series 800 Table 8/5 - T1SB**	
125		(% Passing)	100	100	100	100	100	100
80		(% Passing)	100	100	100	100	100	100
63	100	(% Passing)	100	100	100	100	100	100
50		(% Passing)	100	100	100	100	100	100
40		(% Passing)	99	99	100	100	100	100
31.5	75-99	(% Passing)	94	91	89	86	97	79
25		(% Passing)	84	84	82	77	91	72
22.4		(% Passing)	82	76	78	73	87	69
20		(% Passing)	78	72	73	67	85	62
16	43-81	(% Passing)	67	61	66	57	74	47
14		(% Passing)	64	58	63	54	70	43
12.5		(% Passing)	62	55	62	52	67	40
10		(% Passing)	57	49	59	48	61	37
8	23-66	(% Passing)	53	46	57	45	57	34
6.3		(% Passing)	50	44	55	42	52	31
5		(% Passing)	46	41	52	38	47	28
4	12-53	(% Passing)	43	38	50	36	43	25
2.8		(% Passing)	37	30	43	30	36	21
2	6-42	(% Passing)	33	26	39	27	31	19
1	3-32	(% Passing)	25	19	30	21	22	15
0.5		(% Passing)	20	15	23	16	17	11
0.25		(% Passing)	14	11	17	12	13	9
0.125		(% Passing)	10	8	11	9	10	6
0.063	0-9	(% Passing)	6.2	5.7	7.6	5.8	8.1	4.4
EN 1097 Particle Density and Water Absorption								
Mass of test portion		(kg)	3.8	3.6	3.7	3.4	3.5	3.3
Size of aggregate		(mm)	31.5	31.5	31.5	31.5	31.5	31.5
Apparent density		(Mg/m^3)	2.71	2.68	2.71	2.69	2.69	2.70
Particle density - oven dried		(Mg/m^3)	2.69	2.67	2.69	2.68	2.67	2.68
Particle density - saturated surface dried		(Mg/m^3)	2.69	2.67	2.70	2.68	2.68	2.69
Water absorption		(%)	0.3	0.3	0.3	0.2	0.3	0.3
Testing in accordance with EN 1097-6:2000			Clause 8	Clause 8	Clause 8	Clause 8	Clause 8	Clause 8
Water Absorption was determined in accordance with			clause 8 (4mm to 31.5mm)	clause 8 (4mm to 31.5mm)	clause 8 (4mm to 31.5mm)	clause 8 (4mm to 31.5mm)	clause 8 (4mm to 31.5mm)	clause 8 (4mm to 31.5mm)

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

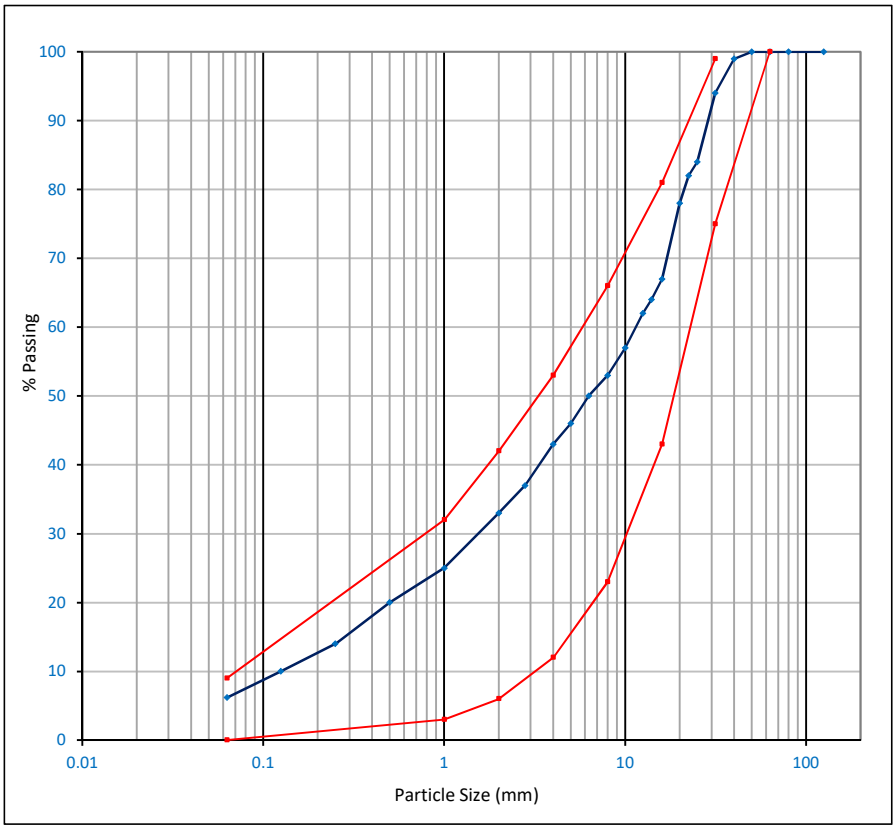
J20/0016/CRE/013

Project Reference - Rockingham Business Park

Material Analysis Results

NC Reference	**90917**

Client Sample Reference	S001-A
Client Sample Location	See plan (SP)
Date of Sampling	21/05/2020
Sample Description	Brown crushed rock



SHW Series 800 Table 8/5 - T1SB			
Sieve Size (mm)	Upper Limit (%)	Lower Limit (%)	Passing (%)
125			100
80			100
63		100	100
50			100
40			99
31.5	99	75	94
25			84
22.4			82
20			78
16	81	43	67
14			64
12.5			62
10			57
8	66	23	53
6.3			50
5			46
4	53	12	43
2.8			37
2	42	6	33
1	32	3	25
0.5			20
0.25			14
0.125			10
0.063	9	0	6

NOTES :

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

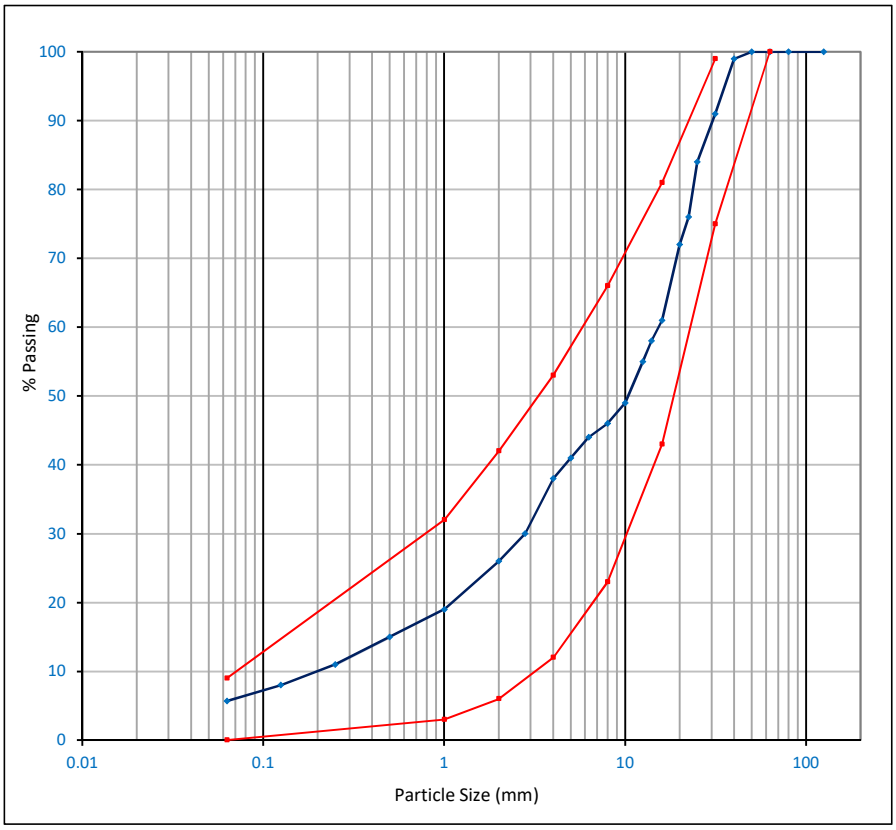
J20/0016/CRE/013

Project Reference - Rockingham Business Park

Material Analysis Results

NC Reference	**90919**

Client Sample Reference	S002-A
Client Sample Location	See plan (Site 2)
Date of Sampling	21/05/2020
Sample Description	Brown crushed rock



SHW Series 800 Table 8/5 - T1SB			
Sieve Size (mm)	Upper Limit (%)	Lower Limit (%)	Passing (%)
125			100
80			100
63		100	100
50			100
40			99
31.5	99	75	91
25			84
22.4			76
20			72
16	81	43	61
14			58
12.5			55
10			49
8	66	23	46
6.3			44
5			41
4	53	12	38
2.8			30
2	42	6	26
1	32	3	19
0.5			15
0.25			11
0.125			8
0.063	9	0	6

NOTES :

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

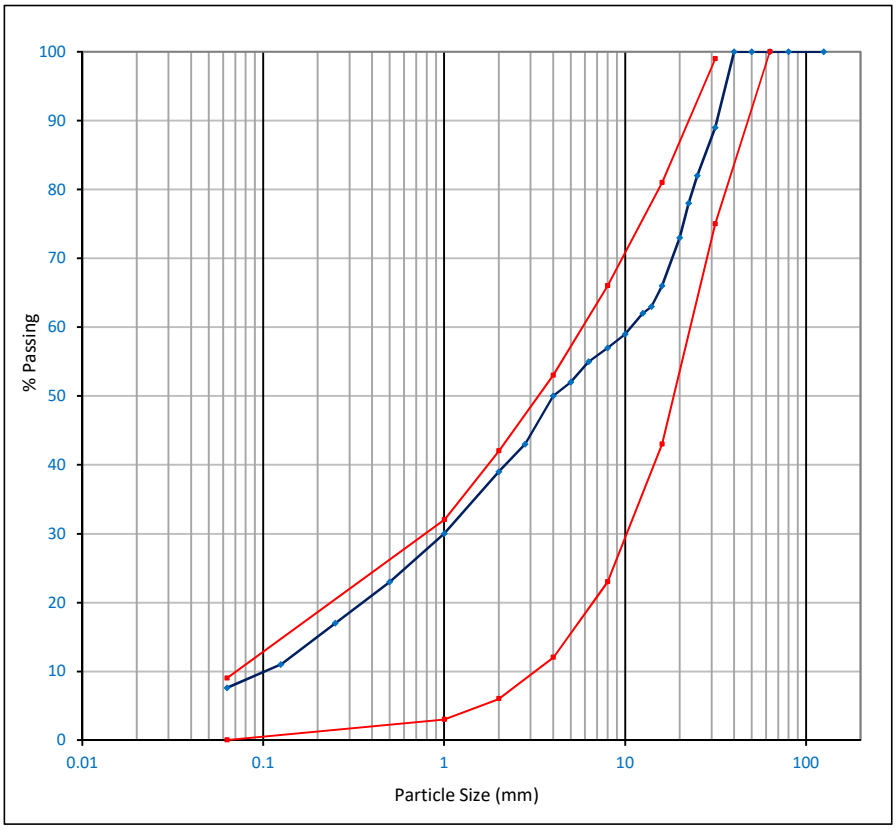
J20/0016/CRE/013

Project Reference - Rockingham Business Park

Material Analysis Results

NC Reference	**90921**

Client Sample Reference	S003-A
Client Sample Location	See plan (Site 3)
Date of Sampling	21/05/2020
Sample Description	Brown crushed rock



SHW Series 800 Table 8/5 - T1SB			
Sieve Size (mm)	Upper Limit (%)	Lower Limit (%)	Passing (%)
125			100
80			100
63		100	100
50			100
40			100
31.5	99	75	89
25			82
22.4			78
20			73
16	81	43	66
14			63
12.5			62
10			59
8	66	23	57
6.3			55
5			52
4	53	12	50
2.8			43
2	42	6	39
1	32	3	30
0.5			23
0.25			17
0.125			11
0.063	9	0	8

NOTES :

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

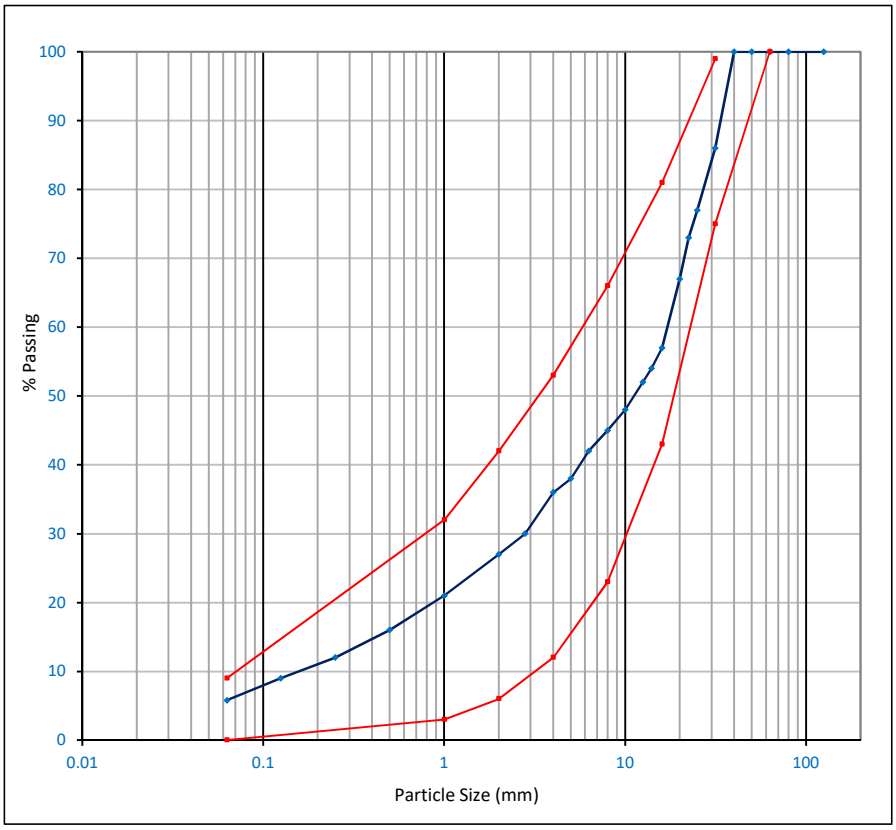
J20/0016/CRE/013

Project Reference - Rockingham Business Park

Material Analysis Results

NC Reference	**90923**

Client Sample Reference	S004-A
Client Sample Location	See plan (Site 4)
Date of Sampling	21/05/2020
Sample Description	Brown crushed rock



SHW Series 800 Table 8/5 - T1SB			
Sieve Size (mm)	Upper Limit (%)	Lower Limit (%)	Passing (%)
125			100
80			100
63		100	100
50			100
40			100
31.5	99	75	86
25			77
22.4			73
20			67
16	81	43	57
14			54
12.5			52
10			48
8	66	23	45
6.3			42
5			38
4	53	12	36
2.8			30
2	42	6	27
1	32	3	21
0.5			16
0.25			12
0.125			9
0.063	9	0	6

NOTES :

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

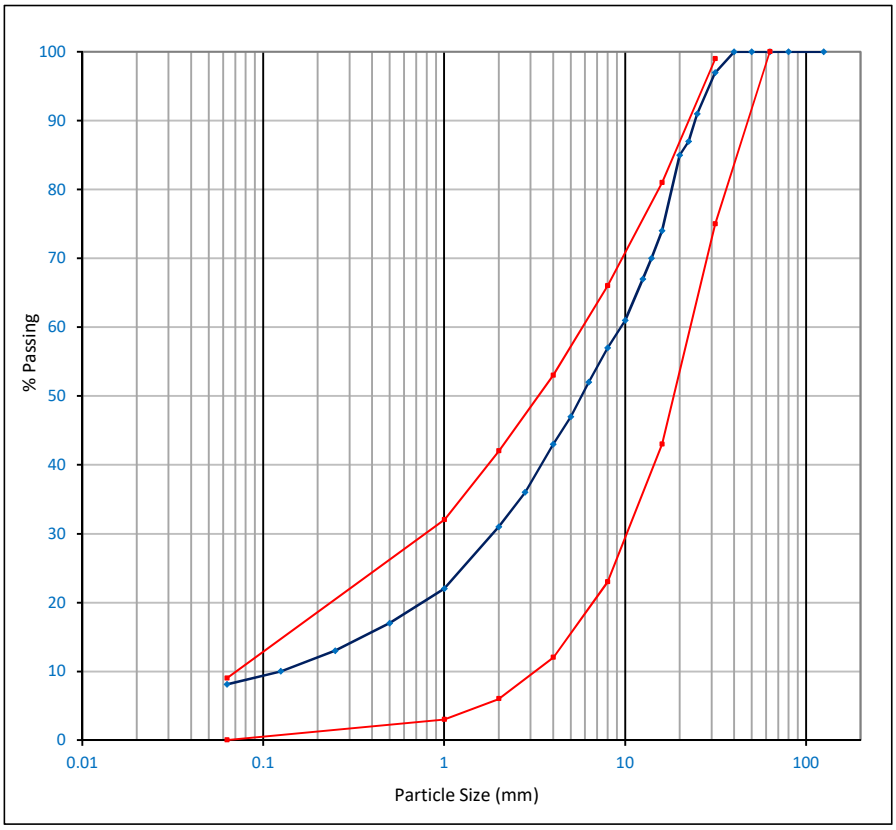
J20/0016/CRE/013

Project Reference - Rockingham Business Park

Material Analysis Results

NC Reference	**90925**

Client Sample Reference	S005-A
Client Sample Location	See plan (Site 5)
Date of Sampling	21/05/2020
Sample Description	Brown silty crushed rock



SHW Series 800 Table 8/5 - T1SB			
Sieve Size (mm)	Upper Limit (%)	Lower Limit (%)	Passing (%)
125			100
80			100
63		100	100
50			100
40			100
31.5	99	75	97
25			91
22.4			87
20			85
16	81	43	74
14			70
12.5			67
10			61
8	66	23	57
6.3			52
5			47
4	53	12	43
2.8			36
2	42	6	31
1	32	3	22
0.5			17
0.25			13
0.125			10
0.063	9	0	8

NOTES :

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

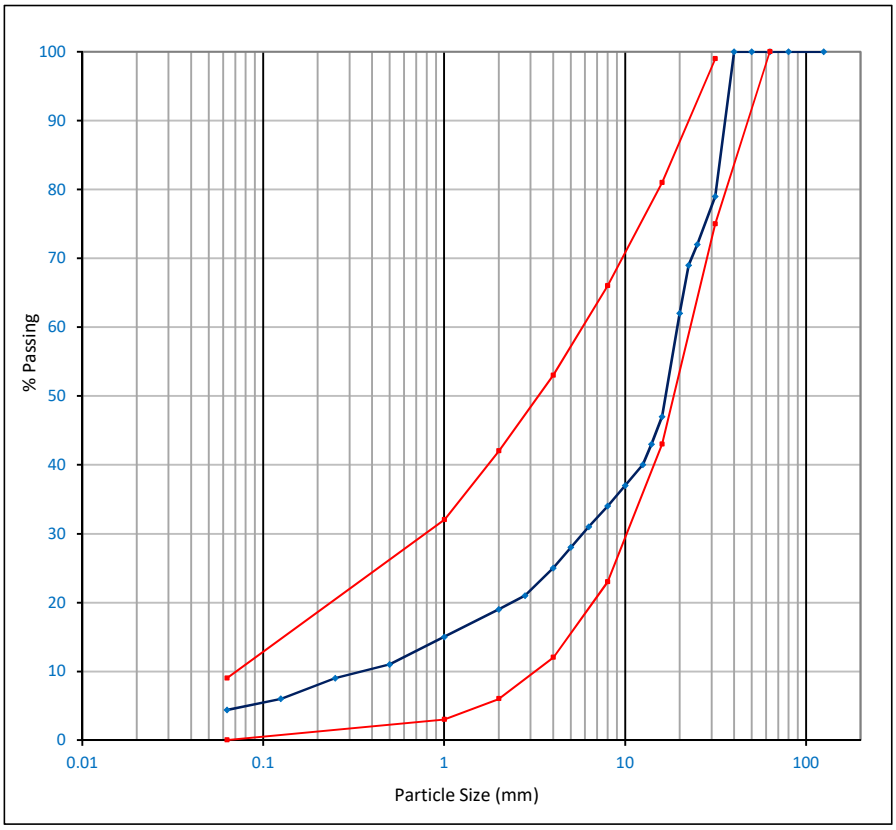
J20/0016/CRE/013

Project Reference - Rockingham Business Park

Material Analysis Results

NC Reference	**90927**

Client Sample Reference	S006-A
Client Sample Location	See plan
Date of Sampling	21/05/2020
Sample Description	Brown silty crushed rock



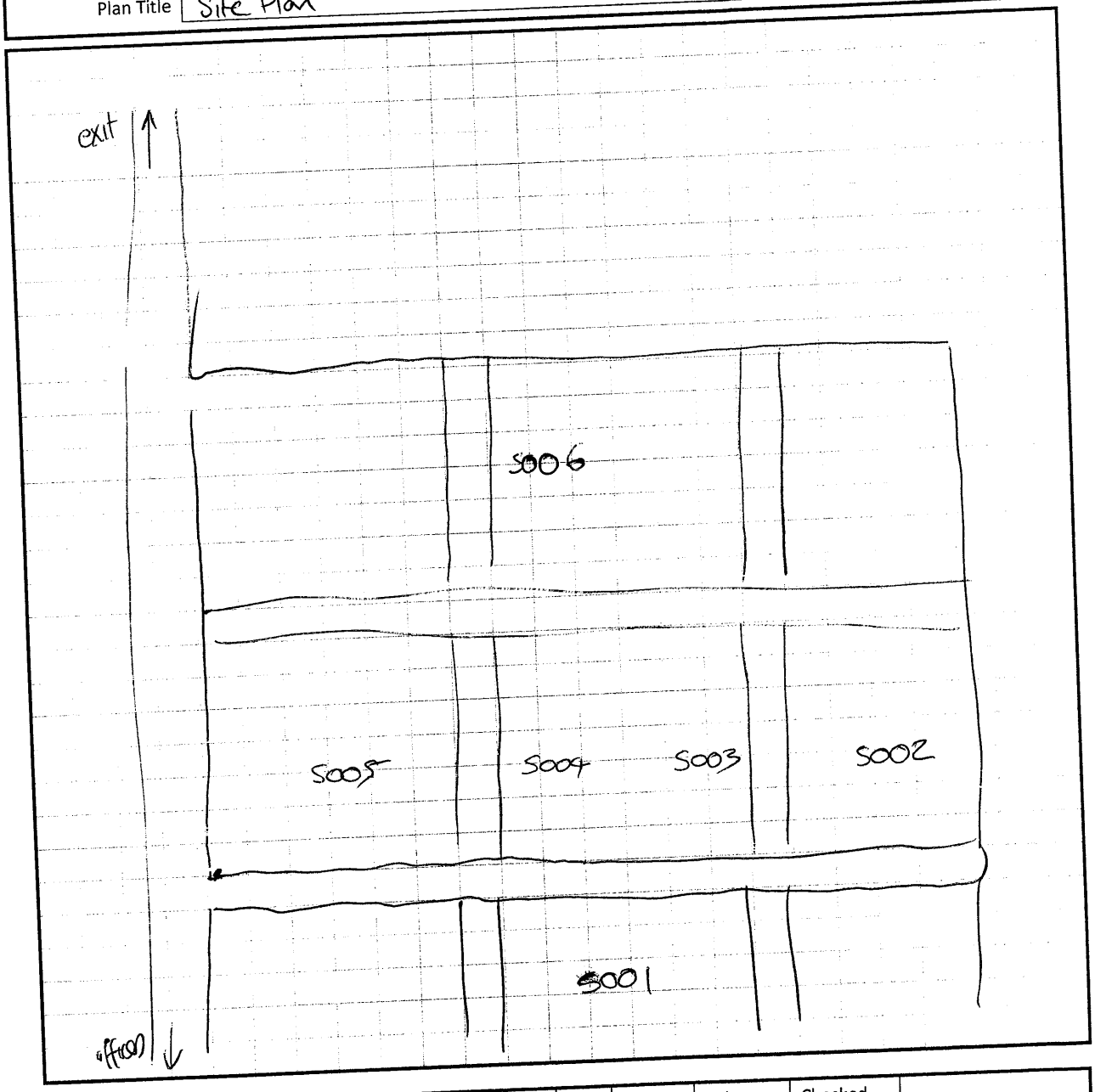
SHW Series 800 Table 8/5 - T1SB			
Sieve Size (mm)	Upper Limit (%)	Lower Limit (%)	Passing (%)
125			100
80			100
63		100	100
50			100
40			100
31.5	99	75	79
25			72
22.4			69
20			62
16	81	43	47
14			43
12.5			40
10			37
8	66	23	34
6.3			31
5			28
4	53	12	25
2.8			21
2	42	6	19
1	32	3	15
0.5			11
0.25			9
0.125			6
0.063	9	0	4

NOTES :

Nicholls Colton Group Limited
7-11 Harding Street, Leicester, LE1 4DH
Tel: 0116 253 6333.
e-mail: info@nicholls-colton.co.uk

NICHOLLS

Client	CORE		
Job Name	Rockingham Buisness Park		
Job No.	J20/0016/CRE	Date	21/5/20
Plan Title	Site Plan		



Prepared by			Sheet	(	of	)	Sheets	Checked

CONTROLLED DOCUMENT

Issued 09 January 2017
Owned by Will Elson – Testing Services Manager
Authorised by Lee Harbottle – GCM Operations Manager
G:\LE1 Production\Controlled Documents\Worksheets\In-situ\Site Works Drawing Sheet

Laboratory Report	DNR/34381	Contract Sample No	DN2064/1
Report Date	01/07/2020	Clients Reference	DN2064/1
		Material Description	Crushed Aggregate
Nicholls Colton 7-11 Harding Street Leicester LE1 4DH		Source	N/S
		Supplier	N/S
		Date Sampled	21/05/2020
		Sampled By	Client
		Date Received	15/06/2020
		Date Completed	29/06/2020
Rockingham Business Park (J20/0016/CRE)		Sample Location	S001-B

Construction Testing Solutions

UKAS TESTING 4161

Bootham Lane Industrial Estate
Dunscroft | Doncaster | DN7 4JU
T | (01302) 352652
E | enquiries@constructiontesting.co.uk
W | www.constructiontesting.co.uk

Lab Reference	20-11073
Lab ID	90918

Determination of Los Angeles Coefficient - BS EN 1097-2:2010

Size fraction tested	14-10	mm
Proportion Passing 11.2mm sieve	38	%
Proportion retained 11.2mm sieve	62	%
Los Angeles Coefficient (*LA*)	17	

Template Version: 1.4

Authorised Signatory

H Daniels - Senior Laboratory Technician

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Laboratory Report	DNR/34383	Contract Sample No	DN2064/3
Report Date	01/07/2020	Clients Reference	DN2064/3
		Material Description	Crushed Aggregate
Nicholls Colton 7-11 Harding Street Leicester LE1 4DH		Source	N/S
		Supplier	N/S
		Date Sampled	21/05/2020
		Sampled By	Client
		Date Received	15/06/2020
		Date Completed	29/06/2020
Rockingham Business Park (J20/0016/CRE)		Sample Location	S003-B

Construction Testing Solutions

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W | www.constructiontesting.co.uk

Lab Reference	20-11073
Lab ID	90922

Determination of Los Angeles Coefficient - BS EN 1097-2:2010

Size fraction tested	14-10	mm
Proportion Passing 11.2mm sieve	37	%
Proportion retained 11.2mm sieve	63	%
Los Angeles Coefficient (*LA*)	17	

Template Version: 1.4

Authorised Signatory

H Daniels - Senior Laboratory Technician

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Laboratory Report	DNR/34384	Contract Sample No	DN2064/4
Report Date	01/07/2020	Clients Reference	DN2064/4
		Material Description	Crushed Aggregate
Nicholls Colton 7-11 Harding Street Leicester LE1 4DH		Source	N/S
		Supplier	N/S
		Date Sampled	21/05/2020
		Sampled By	Client
		Date Received	15/06/2020
		Date Completed	29/06/2020
Rockingham Business Park (J20/0016/CRE)		Sample Location	S004-B

Construction Testing Solutions

UKAS TESTING 4161

Bootham Lane Industrial Estate
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W | www.constructiontesting.co.uk

Lab Reference	20-11073
Lab ID	90924

Determination of Los Angeles Coefficient - BS EN 1097-2:2010

Size fraction tested	14-10	mm
Proportion Passing 11.2mm sieve	37	%
Proportion retained 11.2mm sieve	63	%
Los Angeles Coefficient (*LA*)	18	

Template Version: 1.4

Authorised Signatory

H Daniels - Senior Laboratory Technician

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Laboratory Report	DNR/34385	Contract Sample No	DN2064/5
Report Date	01/07/2020	Clients Reference	DN2064/5
		Material Description	Crushed Aggregate
Nicholls Colton 7-11 Harding Street Leicester LE1 4DH		Source	N/S
		Supplier	N/S
		Date Sampled	21/05/2020
		Sampled By	Client
		Date Received	15/06/2020
		Date Completed	29/06/2020
Rockingham Business Park (J20/0016/CRE)		Sample Location	S005-B

Construction Testing Solutions

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E | enquiries@constructiontesting.co.uk
W | www.constructiontesting.co.uk

Lab Reference	20-11073
Lab ID	90926

Determination of Los Angeles Coefficient - BS EN 1097-2:2010

Size fraction tested	14-10	mm
Proportion Passing 11.2mm sieve	38	%
Proportion retained 11.2mm sieve	62	%
Los Angeles Coefficient (*LA*)	19	

Template Version: 1.4

Authorised Signatory

H Daniels - Senior Laboratory Technician

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Laboratory Report	DNR/34386	Contract Sample No	DN2064/6
Report Date	01/07/2020	Clients Reference	DN2064/6
		Material Description	Crushed Aggregate
Nicholls Colton 7-11 Harding Street Leicester LE1 4DH		Source	N/S
		Supplier	N/S
		Date Sampled	21/05/2020
		Sampled By	Client
		Date Received	15/06/2020
		Date Completed	29/06/2020
Rockingham Business Park (J20/0016/CRE)		Sample Location	S006-B

Construction Testing Solutions

UKAS TESTING 4161

Bootham Lane Industrial Estate
Dunscroft | Doncaster | DN7 4JU
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E | enquiries@constructiontesting.co.uk
W | www.constructiontesting.co.uk

Lab Reference	20-11073
Lab ID	90928

Determination of Los Angeles Coefficient - BS EN 1097-2:2010

Size fraction tested	14-10	mm
Proportion Passing 11.2mm sieve	34	%
Proportion retained 11.2mm sieve	66	%
Los Angeles Coefficient (*LA*)	19	

Template Version: 1.4

Authorised Signatory

H Daniels - Senior Laboratory Technician

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The laboratory does not apply a conformity statement to test reports as standard, unless specifically requested by the customer.

Nicholls Colton Group Limited
7 - 11
Harding Street
Leicester
Leicestershire
LE1 4DH

Date: 02 July 2020
Test Report Ref: TR 737763

Order No: NC38657

Contract: Rockingham Business Park - 20-169

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Resistance to Wear of Aggregate - Micro Deval Test in accordance with **BS EN 1097-1 : 2011 (Wet Condition)**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S88188**
Client Ref. No:	**90918 - S001-B**
Date and Time of Sampling:	**21/05/2020**
Date of Receipt at Lab:	**16/06/2020**
Date of Start of Test:	**01/07/2020**
Sampling Location:	**Unknown**
Name of Source:	**Rockingham Business Park**
Method of Sampling:	**Unknown**
Sampled By:	**Client**
Tested By:	**WK**
Material Description:	**Aggregate**
Target Specification:	**N/A**

RESULTS:

Micro Deval Coefficient (M_{DE}) (Test 1) =	**10.4**
Micro Deval Coefficient (M_{DE}) (Test 2) =	**10.0**
Mean Micro Deval Coefficient (M_{DE}) =	**10**

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:	Report checked and approved by:
None	DWJones Dyfed Jones Aggregate Team Coordinator

Nicholls Colton Group Limited
7 - 11
Harding Street
Leicester
Leicestershire
LE1 4DH

Date: 02 July 2020
Test Report Ref: TR 737764

Order No: NC38657

Contract: Rockingham Business Park - 20-169

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Resistance to Wear of Aggregate - Micro Deval Test in accordance with **BS EN 1097-1 : 2011 (Wet Condition)**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S88188**
Client Ref. No:	**90920 - S002-B**
Date and Time of Sampling:	**21/05/2020**
Date of Receipt at Lab:	**16/06/2020**
Date of Start of Test:	**01/07/2020**
Sampling Location:	**Unknown**
Name of Source:	**Rockingham Business Park**
Method of Sampling:	**Unknown**
Sampled By:	**Client**
Tested By:	**WK**
Material Description:	**Aggregate**
Target Specification:	**N/A**

RESULTS:

Micro Deval Coefficient (M_{DE}) (Test 1) =	**6.8**
Micro Deval Coefficient (M_{DE}) (Test 2) =	**7.2**
Mean Micro Deval Coefficient (M_{DE}) =	**7**

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:	Report checked and approved by:
None	Dyfed Jones Aggregate Team Coordinator

Nicholls Colton Group Limited
7 - 11
Harding Street
Leicester
Leicestershire
LE1 4DH

Date: 02 July 2020
Test Report Ref: TR 737765

Order No: NC38657

Contract: Rockingham Business Park - 20-169

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Resistance to Wear of Aggregate - Micro Deval Test in accordance with **BS EN 1097-1 : 2011 (Wet Condition)**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S88188**
Client Ref. No:	**90922 - S003-B**
Date and Time of Sampling:	**21/05/2020**
Date of Receipt at Lab:	**16/06/2020**
Date of Start of Test:	**01/07/2020**
Sampling Location:	**Unknown**
Name of Source:	**Rockingham Business Park**
Method of Sampling:	**Unknown**
Sampled By:	**Client**
Tested By:	**WK**
Material Description:	**Aggregate**
Target Specification:	**N/A**

RESULTS:

Micro Deval Coefficient (M_{DE}) (Test 1) =	**12.9**
Micro Deval Coefficient (M_{DE}) (Test 2) =	**12.4**
Mean Micro Deval Coefficient (M_{DE}) =	**13**

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These results relate only to the items tested.

Comments:	Report checked and approved by:
None	Dyfed Jones Aggregate Team Coordinator

Nicholls Colton Group Limited
7 - 11
Harding Street
Leicester
Leicestershire
LE1 4DH

Date: 02 July 2020
Test Report Ref: TR 737766

Order No: NC38657

Contract: Rockingham Business Park - 20-169

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Resistance to Wear of Aggregate - Micro Deval Test in accordance with **BS EN 1097-1 : 2011 (Wet Condition)**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S88188**
Client Ref. No:	**90924 - S004-B**
Date and Time of Sampling:	**21/05/2020**
Date of Receipt at Lab:	**16/06/2020**
Date of Start of Test:	**01/07/2020**
Sampling Location:	**Unknown**
Name of Source:	**Rockingham Business Park**
Method of Sampling:	**Unknown**
Sampled By:	**Client**
Tested By:	**WK**
Material Description:	**Aggregate**
Target Specification:	**N/A**

RESULTS:

Micro Deval Coefficient (M_{DE}) (Test 1) =	**13.6**
Micro Deval Coefficient (M_{DE}) (Test 2) =	**12.9**
Mean Micro Deval Coefficient (M_{DE}) =	**13**

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These results relate only to the items tested.

Comments:	Report checked and approved by:
None	Dyfed Jones Aggregate Team Coordinator

Nicholls Colton Group Limited
7 - 11
Harding Street
Leicester
Leicestershire
LE1 4DH

Date: 02 July 2020
Test Report Ref: TR 737767

Order No: NC38657

Contract: Rockingham Business Park - 20-169

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Resistance to Wear of Aggregate - Micro Deval Test in accordance with **BS EN 1097-1 : 2011 (Wet Condition)**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S88188**
Client Ref. No:	**90926 - S005-B**
Date and Time of Sampling:	**21/05/2020**
Date of Receipt at Lab:	**16/06/2020**
Date of Start of Test:	**01/07/2020**
Sampling Location:	**Unknown**
Name of Source:	**Rockingham Business Park**
Method of Sampling:	**Unknown**
Sampled By:	**Client**
Tested By:	**WK**
Material Description:	**Aggregate**
Target Specification:	**N/A**

RESULTS:

Micro Deval Coefficient (M_{DE}) (Test 1) =	**9.8**
Micro Deval Coefficient (M_{DE}) (Test 2) =	**10.9**
Mean Micro Deval Coefficient (M_{DE}) =	**10**

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:	Report checked and approved by:
None	Dyfed Jones Aggregate Team Coordinator

Nicholls Colton Group Limited
7 - 11
Harding Street
Leicester
Leicestershire
LE1 4DH

Date: 02 July 2020
Test Report Ref: TR 737768

Order No: NC38657

Contract: Rockingham Business Park - 20-169

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Resistance to Wear of Aggregate - Micro Deval Test in accordance with **BS EN 1097-1 : 2011 (Wet Condition)**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S88188**
Client Ref. No:	**90928 - S006-B**
Date and Time of Sampling:	**21/05/2020**
Date of Receipt at Lab:	**16/06/2020**
Date of Start of Test:	**01/07/2020**
Sampling Location:	**Unknown**
Name of Source:	**Rockingham Business Park**
Method of Sampling:	**Unknown**
Sampled By:	**Client**
Tested By:	**WK**
Material Description:	**Aggregate**
Target Specification:	**N/A**

RESULTS:

Micro Deval Coefficient (M_{DE}) (Test 1) =	**15.8**
Micro Deval Coefficient (M_{DE}) (Test 2) =	**15.3**
Mean Micro Deval Coefficient (M_{DE}) =	**16**

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:	Report checked and approved by:
None	Dyfed Jones Aggregate Team Coordinator

Kiwa CMT

Kiwa CMT Testing
Unit 5 Prime Park Way
Prime Enterprise Park
Derby
DE1 3QB

T +44 (0)1332 383333
F +44 (0)1332 602607
E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
Derbyshire
DE72 3RX

Date: 28th July 2020

Lab Ref: 61553

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just before Rockingham Speedway
NN17 5AF

Requirements:

Carry out various testing as specified by the client.

Results:

The individual result sheets may be viewed on pages 2 to - of this report.

Kiwa CMT Testing

Author: D. Spencer
Administrator

Checked and Approved by: R. Cartlidge
Departmental Manager

Kiwa CMT

Certificate of Analysis for Plasticity Index & Water Content

Client: Ivy House Environmental Ltd

Site: Mitchell Road
Corby
Just before Rockingham Speedway

Lab Ref: 61553

Date of Test: 03.07 - 22.07.20

Test Method: BS EN ISO 17892-1:2014 - Water Content

Results:

Sample Ref	Material Description	LL (%)	PL (%)	PI (%)	% Retained on 425µm	Modified PI (%)*	Soil Classification	WC (%)
61553/B1	Soil, clay & aggregate	30	17	13	56	6	CL	16.2
61553/B4	Soil, clay & aggregate	34	18	16	61	6	CL	8.8

The samples tested were disturbed and in their natural condition.
* Modified plasticity index relates to BRE Digest 240.
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
WC = Water Content
BRE Digest 240 is not included in the UKAS schedule for this Laboratory.

Kiwa CMT Testing

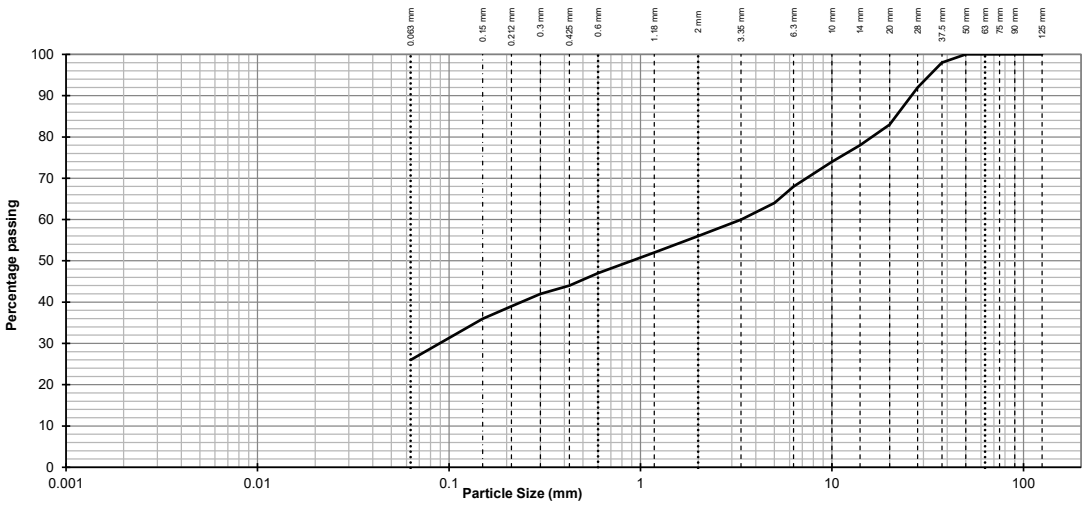
UKAS TESTING
0529

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental Ltd	**Sample ref:**	61553/B1	**Date Tested:**	03.06 - 16.07.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Sampling cert.:**	Available	**Sample size:**	9kg Approx.	**Source:**	Site
		Lab ref.:	61553	**Description:**	Soil, clay & aggregate		

Sieve Size (mm)	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	98
28	92
20	83
14	78
10	74
6.3	68
5	64
3.35	60
2	56
1.18	52
0.6	47
0.425	44
0.3	42
0.212	39
0.15	36
0.063	26



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			

Soil Fraction	Total Percentage
Cobbles	0
Gravel	44
Sand	30
Silt/Clay	26

Comments: Test carried out in accordance with **BS1377: Part 2: 1990: Clause 9.2**
Uniformity coefficient = 138 (For information only)

Kiwa CMT Testing

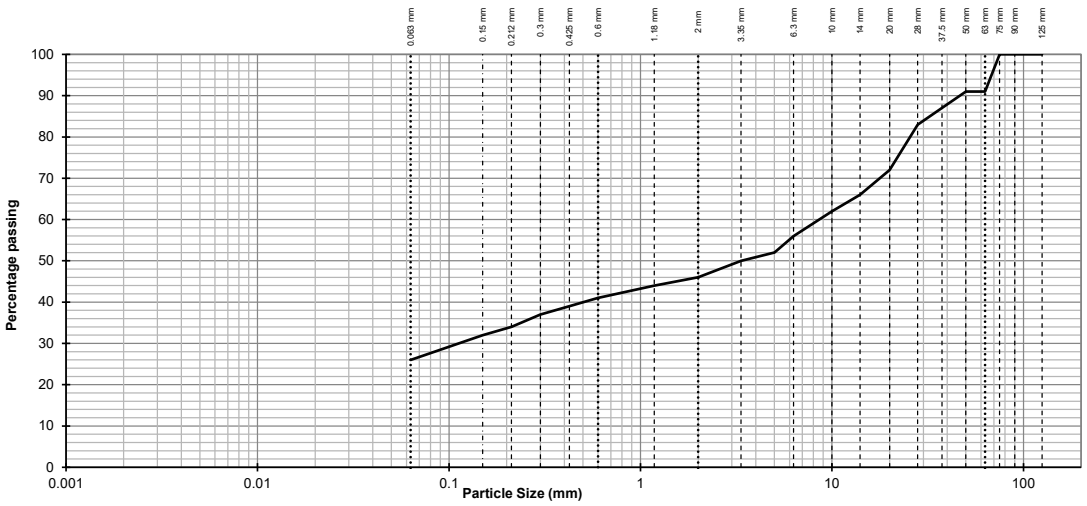
UKAS TESTING
0529

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental Ltd	**Sample ref:**	61553/B4	**Date Tested:**	03.06 - 16.07.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Sampling cert.:**	Available	**Sample size:**	12kg Approx.	**Source:**	Site
		Lab ref.:	61553	**Description:**	Soil, clay & aggregate		

Sieve Size (mm)	% Passing
125	100
90	100
75	100
63	91
50	91
37.5	87
28	83
20	72
14	66
10	62
6.3	56
5	52
3.35	50
2	46
1.18	44
0.6	41
0.425	39
0.3	37
0.212	34
0.15	32
0.063	26



	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
CLAY	SILT			SAND			GRAVEL			COBBLES

Soil Fraction	Total Percentage
Cobbles	9
Gravel	45
Sand	20
Silt/Clay	26

Comments: Test carried out in accordance with **BS1377: Part 2: 1990: Clause 9.2**
Uniformity coefficient = 362 (For information only)

Kiwa CMT Testing

UKAS TESTING
0529

Kiwa CMT

Moisture Content/Dry Density Relationship

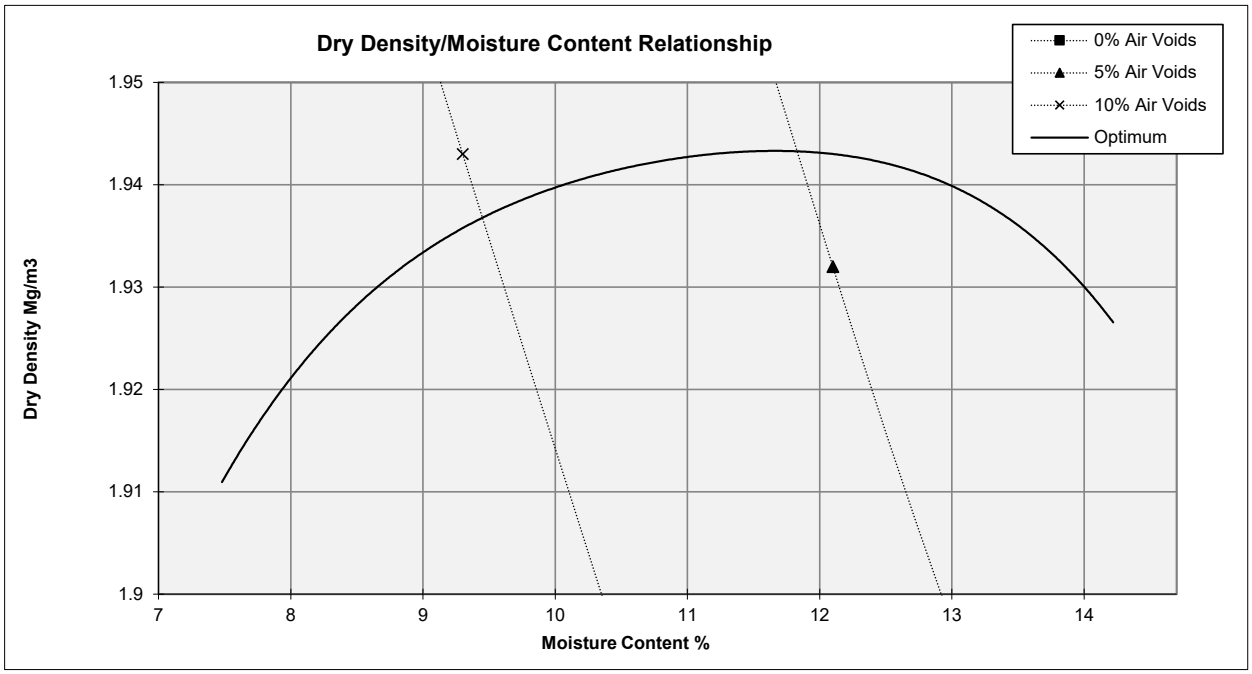
Test Method: BS 1377: Part 4: 1990: Clause 3.4

Client:	Ivy House Environmental Ltd	Site:	Mitchell Road Corby Just before Rockingham Speedway
Lab Ref:	61553	Material:	Brown gravelly sandy CLAY
Test Date:	15.07 - 16.07.20	Sample ref:	61553/B1
Method:	2.5kg Rammer in CBR Mould	Sample Preparation :	Partially Air Dried

Retained on 20mm sieve: 14.2%
Retained on 37.5mm sieve: 0.4%

Separate samples used for test

Moisture Content %	Dry Density Mg/m^3	Particle Density : Calculated =		2.72*
		0% Air Voids	5% Air Voids	10% Air Voids
7.7	1.911	2.247	2.134	2.022
9.5	1.936	2.159	2.051	1.943
12.3	1.943	2.034	1.932	1.830
13.2	1.940	1.997	1.897	1.797
14.4	1.927	1.951	1.854	1.756



Maximum Dry Density = 1.94 Mg/m^3
Optimum Moisture Content = 12 %

Comments:
* Particle Density determined in accordance with BS 1377-2:1990 clause 8.2.
(UKAS accreditation not currently held for Particle Density)

UKAS TESTING 0529

Kiwa CMT

Moisture Content/Dry Density Relationship

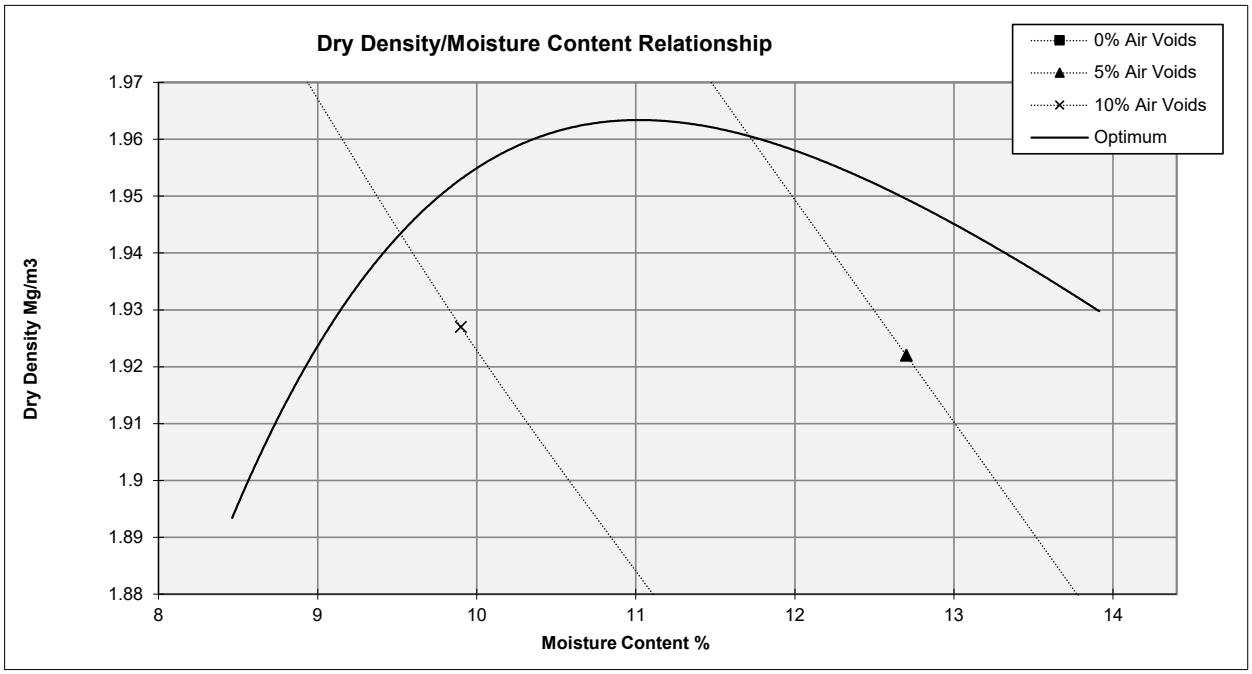
Test Method: BS 1377: Part 4: 1990: Clause 3.4

Client:	Ivy House Environmental Ltd	Site:	Mitchell Road Corby Just before Rockingham Speedway
Lab Ref:	61553	Material:	Brown gravelly sandy CLAY
Test Date:	16.07 - 17.07.20	Sample ref:	61553/B4
Method:	2.5kg Rammer in CBR Mould	Sample Preparation :	Partially Air Dried

Retained on 20mm sieve: 9.7%
Retained on 37.5mm sieve: 0.9%

Separate samples used for test

Moisture Content %	Dry Density Mg/m^3	Particle Density : Calculated =		2.71*
		0% Air Voids	5% Air Voids	10% Air Voids
8.3	1.893	2.211	2.101	1.990
9.7	1.954	2.141	2.034	1.927
11.2	1.963	2.077	1.973	1.869
12.5	1.950	2.023	1.922	1.821
13.7	1.930	1.974	1.875	1.776



Maximum Dry Density = 1.96 Mg/m^3
Optimum Moisture Content = 11 %

Comments:
* Particle Density determined in accordance with BS 1377-2:1990 clause 8.2.
(UKAS accreditation not currently held for Particle Density)

UKAS TESTING 0529

Kiwa CMT

CERTIFICATE OF ANALYSIS

Client	Ivy House Environmental Ltd	**Job No.**	61553
Contact	Scott Spencer	**Site**	Rockingham Hub Mitchell Road Corby
Order Ref	IV.131.20 Rockingham	**Date Received**	08/07/2020
		Date Analysed	15 - 24/07/2020
Sample Description	"Soils"	**Date Reported**	27/07/2020

Analyte:	As:	Units:	61553/B1
Material passing 2mm sieve		%	76
Organic matter content of material passing 2mm seive		%	1.3

Test methods: Organic matter as described in BS1377: Pt 3: 2018: Cl 3

Opinions and interpretations expressed herein are outside the scope of UKAS

Signed :

B Fairweather
Environmental Technician

Approved :

D Mullee
Department Manager

Further interpretation or advice is a chargeable service and may be obtained by contacting the above signatory.

UKAS TESTING
0529

Kiwa CMT

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E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
Derbyshire
DE72 3RX

Date: 24th August 2020

Lab Ref: 61558

Originator: S. Spencer

Order Ref: IV.131.20 ROCKINGHAM

Site: Rockingham Hub
Mitchell Road
Corby
NN17 5AF

Requirements:

Carry out various testing as specified by the client.

Note: OMC/MDD (Vibrating Hammer Method) testing carried out by sub-contracted laboratory.

Results:

The individual result sheets may be viewed on pages 2 to 17 of this report.

Kiwa CMT Testing

Author: J. Eckford
Senior Geotechnical Technician

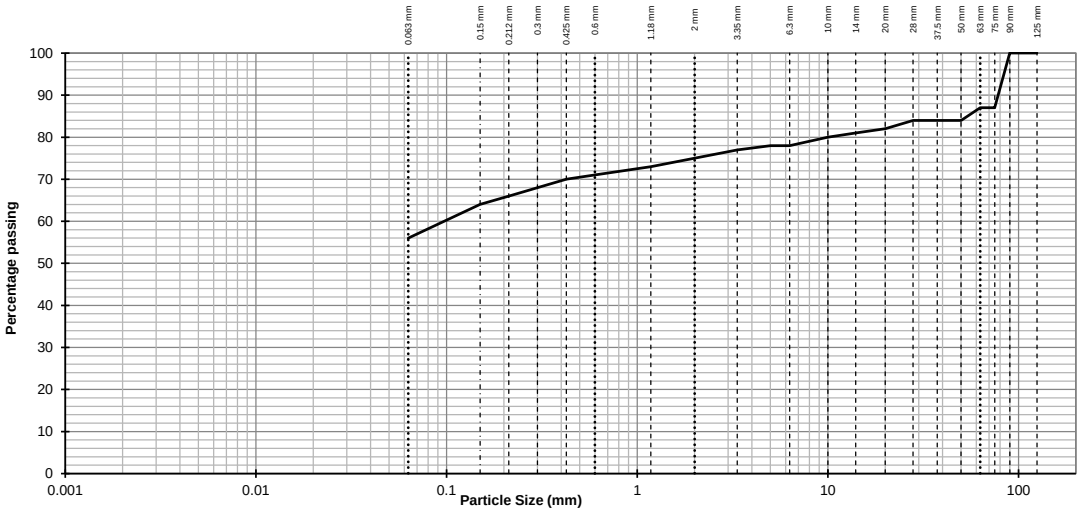
Checked and Approved by: R. Cartlidge
Departmental Manager

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental	**Sample ref:**	E58 Layer 1	**Date Tested:**	01.08- 18.08.20	**Sampled by:**	Kiwa CMT
Site:	Rockingham Hub Mitchell Road Corby	**Sampling cert.:**	Available	**Sample size:**	9kg Approx.	**Source:**	Site
		Lab ref.:	61558	**Description:**	Brown very gravelly sandy CLAY		

Sieve Size (mm)	% Passing
125	100
90	100
75	87
63	87
50	84
37.5	84
28	84
20	82
14	81
10	80
6.3	78
5	78
3.35	77
2	75
1.18	73
0.6	71
0.425	70
0.3	68
0.212	66
0.15	64
0.063	56



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			

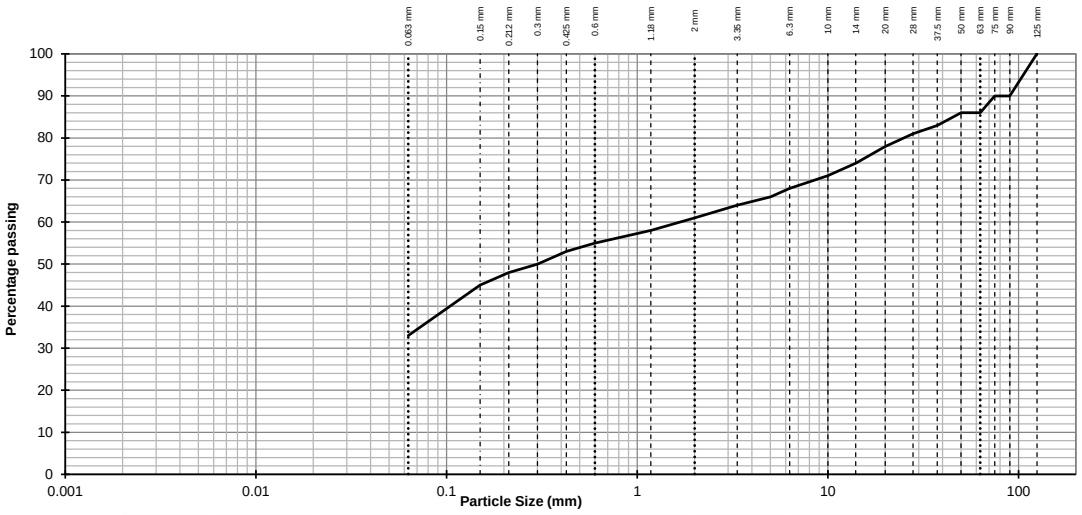
Soil Fraction	Total Percentage
Cobbles	13
Gravel	12
Sand	19
Silt/Clay	56

Comments: Test carried out in accordance with **BS1377: Part 2: 1990: Clause 9.2**
Uniformity coefficient = 9 (For information only)

Particle Size Distribution

Client:	Ivy House Environmental	**Sample ref:**	E57 Layer 1	**Date Tested:**	01.08- 18.08.20	**Sampled by:**	Kiwa CMT
Site:	Rockingham Hub Mitchell Road Corby	**Sampling cert.:**	Available	**Sample size:**	12kg Approx.	**Source:**	Site
		Lab ref.:	61558	**Description:**	Brown very gravelly sandy CLAY		

Sieve Size (mm)	% Passing
125	100
90	90
75	90
63	86
50	86
37.5	83
28	81
20	78
14	74
10	71
6.3	68
5	66
3.35	64
2	61
1.18	58
0.6	55
0.425	53
0.3	50
0.212	48
0.15	45
0.063	33



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			

Soil Fraction	Total Percentage
Cobbles	14
Gravel	25
Sand	28
Silt/Clay	33

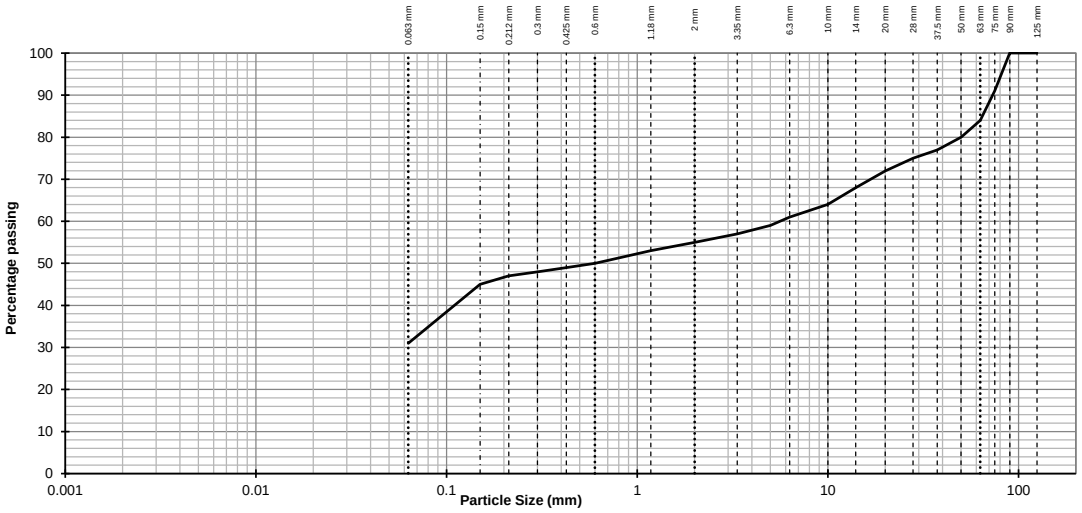
Comments: Test carried out in accordance with **BS1377: Part 2: 1990: Clause 9.2**
Uniformity coefficient = 90 (For information only)

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental	**Sample ref:**	E54 Layer 1	**Date Tested:**	01.08- 18.08.20	**Sampled by:**	Kiwa CMT
Site:	Rockingham Hub Mitchell Road Corby	**Sampling cert.:**	Available	**Sample size:**	10kg Approx.	**Source:**	Site
		Lab ref.:	61558	**Description:**	Grey-brown very gravelly sandy CLAY		

Sieve Size (mm)	% Passing
125	100
90	100
75	91
63	84
50	80
37.5	77
28	75
20	72
14	68
10	64
6.3	61
5	59
3.35	57
2	55
1.18	53
0.6	50
0.425	49
0.3	48
0.212	47
0.15	45
0.063	31



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			

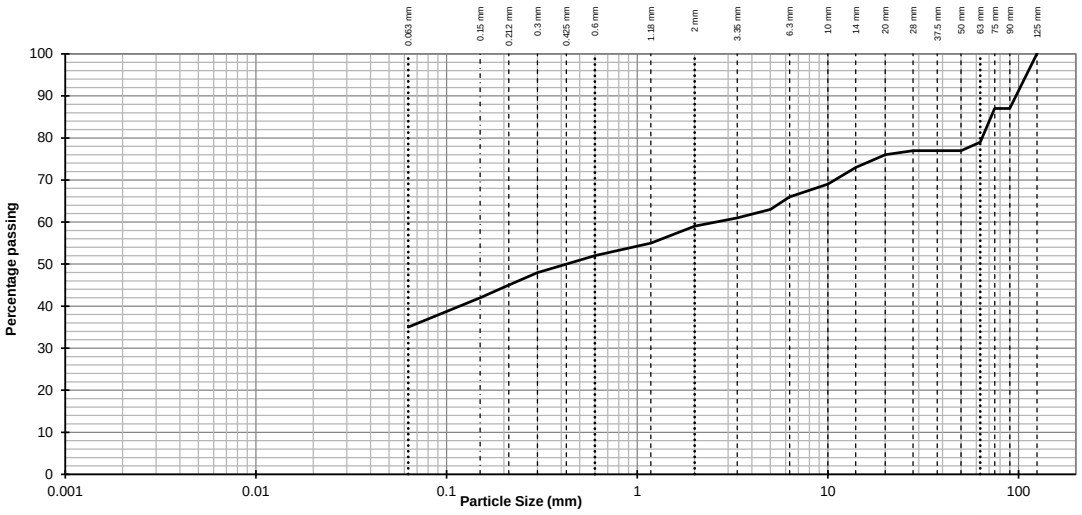
Soil Fraction	Total Percentage
Cobbles	16
Gravel	29
Sand	24
Silt/Clay	31

Comments: Test carried out in accordance with **BS1377: Part 2: 1990: Clause 9.2**
Uniformity coefficient = 305 (For information only)

Particle Size Distribution

Client:	Ivy House Environmental	**Sample ref:**	E36 Layer 1	**Date Tested:**	01.08- 18.08.20	**Sampled by:**	Kiwa CMT
Site:	Rockingham Hub Mitchell Road Corby	**Sampling cert.:**	Available	**Sample size:**	12kg Approx.	**Source:**	Site
		Lab ref.:	61558	**Description:**	Brown very gravelly sandy CLAY		

Sieve Size (mm)	% Passing
125	100
90	87
75	87
63	79
50	77
37.5	77
28	77
20	76
14	73
10	69
6.3	66
5	63
3.35	61
2	59
1.18	55
0.6	52
0.425	50
0.3	48
0.212	45
0.15	42
0.063	35



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			

Soil Fraction	Total Percentage
Cobbles	21
Gravel	20
Sand	24
Silt/Clay	35

Comments: Test carried out in accordance with **BS1377: Part 2: 1990: Clause 9.2**
Uniformity coefficient = 149 (For information only)

Kiwa CMT

Particle Size Distribution

Client: Ivy House Environmental

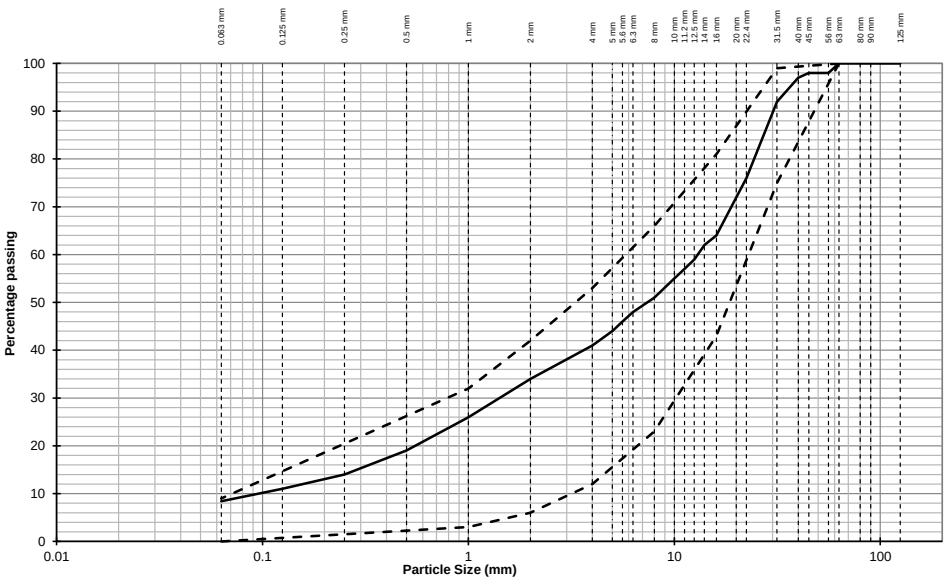
Site: Rockingham Hub
Mitchell Road
Corby

Sample ref: Stockpile 1, S1
Sampling cert.: Available
Lab ref.: 61558

Date Tested: 06.07- 18.08.20
Sample size: 15kg Approx.
Description: Crushed Stone

Sampled by: Kiwa CMT
Source: Site

Sieve Size (mm)	% Passing	Specification Limits (Type 1)	Pass
125	100	-	-
90	100	-	-
80	100	-	-
63	100	**100**	✓
56	98	-	-
45	98	-	-
40	97	-	-
31.5	92	**75-99**	✓
22.4	76	-	-
20	72	-	-
16	64	**43-81**	✓
14	62	-	-
12.5	59	-	-
11.2	57	-	-
10	55	-	-
8	51	**23-66**	✓
6.3	48	-	-
5.6	46	-	-
5	44	-	-
4	41	**12-53**	✓
2	34	**6-42**	✓
1	26	**3-32**	✓
0.5	19	-	
0.25	14	-	
0.125	11	-	
0.063	8.4	**0-9**	✓



Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 8/5 of the Specification for Highway Works Series 800.

Particle Size Distribution

Client: Ivy House Environmental

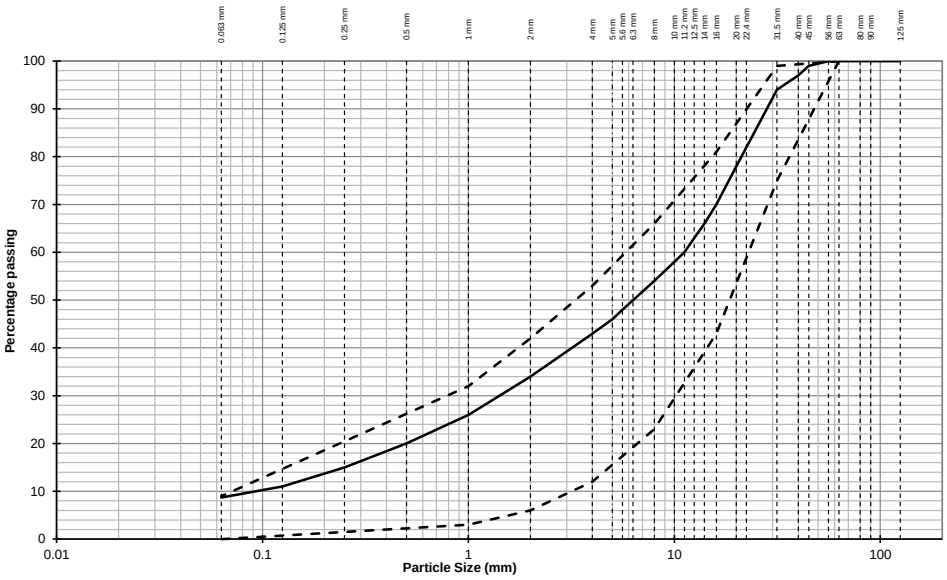
Site: Rockingham Hub
Mitchell Road
Corby

Sample ref: Stockpile 1, S2
Sampling cert.: Available
Lab ref.: 61558

Date Tested: 06.07- 18.08.20
Sample size: 15kg Approx.
Description: Crushed Stone

Sampled by: Kiwa CMT
Source: Site

Sieve Size (mm)	% Passing	Specification Limits (Type 1)	Pass
125	100	-	-
90	100	-	-
80	100	-	-
63	100	**100**	✓
56	100	-	-
45	99	-	-
40	97	-	-
31.5	94	**75-99**	✓
22.4	82	-	-
20	78	-	-
16	70	**43-81**	✓
14	66	-	-
12.5	63	-	-
11.2	60	-	-
10	58	-	-
8	54	**23-66**	✓
6.3	50	-	-
5.6	48	-	-
5	46	-	-
4	43	**12-53**	✓
2	34	**6-42**	✓
1	26	**3-32**	✓
0.5	20	-	
0.25	15	-	
0.125	11	-	
0.063	8.7	**0-9**	✓



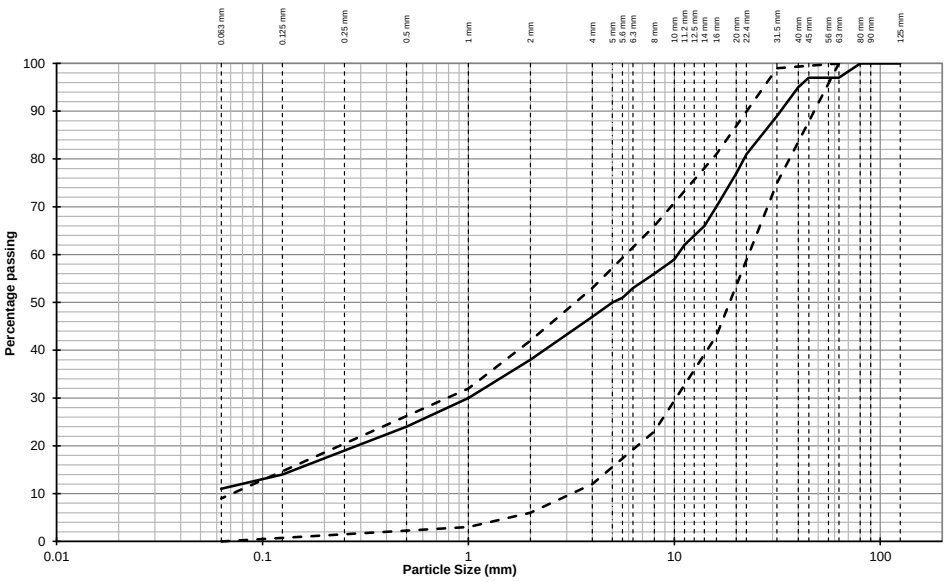
Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 8/5 of the Specification for Highway Works Series 800.

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental	**Sample ref:**	Stockpile 1, S3	**Date Tested:**	06.07- 18.08.20	**Sampled by:**	Kiwa CMT
Site:	Rockingham Hub Mitchell Road Corby	**Sampling cert.:**	Available	**Sample size:**	18kg Approx.	**Source:**	Site
		Lab ref.:	61558	**Description:**	Crushed Stone		

Sieve Size (mm)	% Passing	Specification Limits (Type 1)	Pass
125	100	-	-
90	100	-	-
80	100	-	-
63	97	**100**	✗
56	97	-	-
45	97	-	-
40	95	-	-
31.5	89	**75-99**	✓
22.4	81	-	-
20	77	-	-
16	70	**43-81**	✓
14	66	-	-
12.5	64	-	-
11.2	62	-	-
10	59	-	-
8	56	**23-66**	✓
6.3	53	-	-
5.6	51	-	-
5	50	-	-
4	47	**12-53**	✓
2	38	**6-42**	✓
1	30	**3-32**	✓
0.5	24	-	
0.25	19	-	
0.125	14	-	
0.063	11.0	**0-9**	✗



Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 8/5 of the Specification for Highway Works Series 800.

Kiwa CMT

Certificate of Analysis for Plasticity Index & Water Content

Client: Ivy House Environmental **Site**: Rockingham Hub, Mitchell Road, Corby

Lab Ref: 61558 **Date of Test:** 08.07- 13.08.20

Test Methods: BS 1377: 1990: Part 2: Clauses 4.4 and 5 - Liquid Limit/Plastic Limit/Plasticity Index
BS EN ISO 17892-1:2014 - Water Content

Results:

Sample Ref	Material Description	LL (%)	PL (%)	PI (%)	% Retained on 425µm	Modified PI (%)*	Soil Classification	WC (%)
Stockpile 1 S1	Crushed Stone	Not Scheduled						2.1
Stockpile 1 S2	Crushed Stone	Not Scheduled						2.2
Stockpile 1 S3	Crushed Stone	Not Scheduled						2.5
E58 Layer 1	Brown very gravelly sandy CLAY	46	28	18	30	13	MI	21.1
E57 Layer 1	Brown very gravelly sandy CLAY	36	17	19	47	10	CI	11.5
E54 Layer 1	Grey- brown very gravelly sandy CLAY	28	18	10	51	5	CL	12.1
E36 Layer 1	Brown very gravelly sandy CLAY	34	18	16	50	8	CL	18.1

The samples tested were disturbed and in their natural condition.
* Modified plasticity index relates to BRE Digest 240.
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
WC = Water Content
BRE Digest 240 is not included in the UKAS schedule for this Laboratory.

Kiwa CMT

Moisture Content/Dry Density Relationship

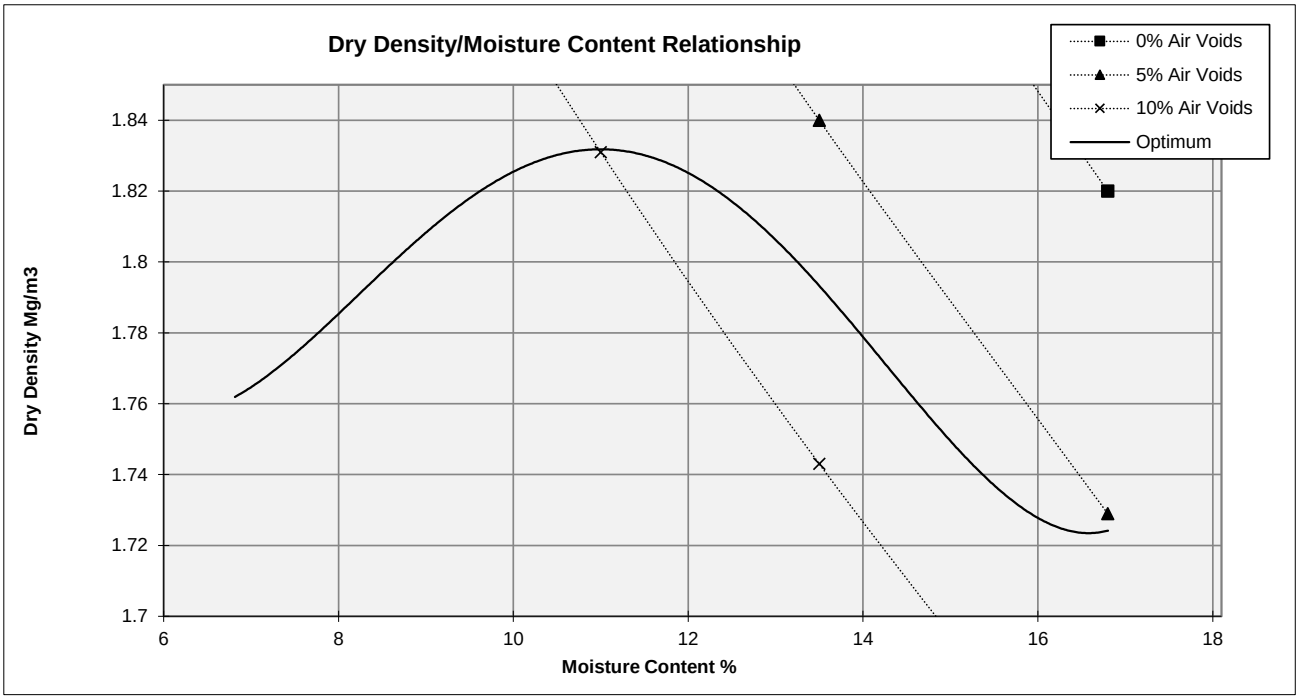
Test Method: BS 1377: Part 4: 1990: Clause 3.4

Client:	Ivy House Environmental	^ Site:	Rockingham Hub Mitchell Road Corby
Lab Ref:	61588	Material:	Brown very gravelly sandy CLAY
Test Date:	21.07.20	^ Sample ref:	E58 Layer 1
Method:	2.5kg Rammer in CBR Mould	Sample Preparation :	Partially Air Dried

Retained on 20mm sieve: 7.3%
Retained on 37.5mm sieve: 3.7%

Separate samples used for test

Moisture Content %	Dry Density Mg/m^3	Particle Density : Calculated =		2.61*
		0% Air Voids	5% Air Voids	10% Air Voids
6.7	1.762	2.224	2.112	2.001
8.3	1.795	2.148	2.041	1.933
10.9	1.832	2.035	1.933	1.831
13.4	1.794	1.937	1.840	1.743
16.7	1.724	1.820	1.729	1.638



Maximum Dry Density = 1.83 Mg/m^3
Optimum Moisture Content = 11 %

Comments:
* Particle Density determined in accordance with BS 1377-2:1990 clause 8.2.
(UKAS accreditation not currently held for Particle Density)

Information supplied by the customer indicated by ^ may affect the validity of the results.

Kiwa CMT

Moisture Content/Dry Density Relationship

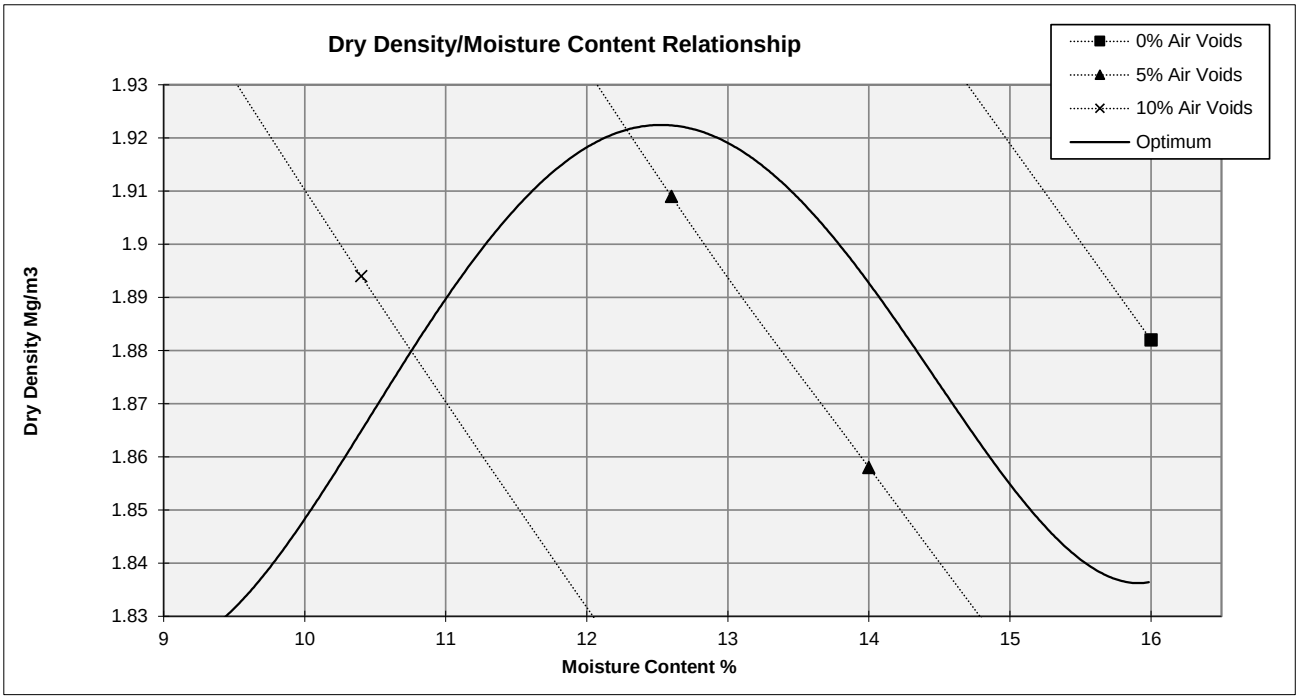
Test Method: BS 1377: Part 4: 1990: Clause 3.4

Client:	Ivy House Environmental	^ Site:	Rockingham Hub Mitchell Road Corby
Lab Ref:	61588	Material:	Brown very gravelly sandy CLAY
Test Date:	21.07.20	^ Sample ref:	E57 Layer 1
Method:	2.5kg Rammer in CBR Mould	Sample Preparation :	Partially Air Dried

Retained on 20mm sieve: 19.6%
Retained on 37.5mm sieve: 15.4%**

Separate samples used for test

Moisture Content %	Dry Density Mg/m^3	Particle Density : Calculated =		2.71*
		0% Air Voids	5% Air Voids	10% Air Voids
8.5	1.843	2.202	2.091	1.981
10.6	1.863	2.104	1.999	1.894
12.8	1.922	2.010	1.909	1.809
14.2	1.894	1.956	1.858	1.760
16.2	1.836	1.882	1.787	1.693



Maximum Dry Density = 1.92 Mg/m^3
Optimum Moisture Content = 12.5 %

Comments:
* Particle Density determined in accordance with BS 1377-2:1990 clause 8.2.
(UKAS accreditation not currently held for Particle Density)
**Deviation: % exceeds the specified maximum as stated in BS 1377-4:1990: clause 3.2: Table 2 .
Information supplied by the customer indicated by ^ may affect the validity of the results.

Kiwa CMT

Moisture Content/Dry Density Relationship

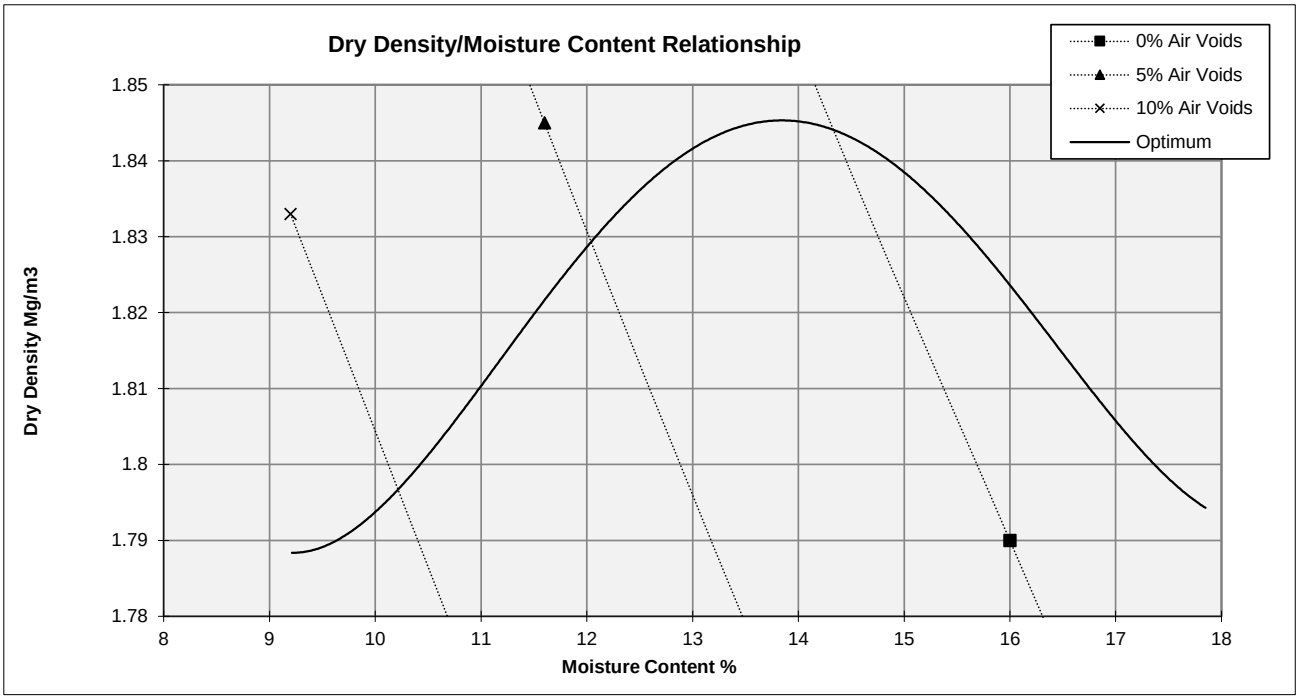
Test Method: BS 1377: Part 4: 1990: Clause 3.4

Client:	Ivy House Environmental	^ Site:	Rockingham Hub Mitchell Road Corby
Lab Ref:	61588	Material:	Brown very gravelly sandy CLAY
Test Date:	21.07.20	^ Sample ref:	E54 Layer 1
Method:	2.5kg Rammer in CBR Mould	Sample Preparation :	Partially Air Dried

Retained on 20mm sieve: 25%
Retained on 37.5mm sieve: 20.4%**

Separate samples used for test

Moisture Content %	Dry Density Mg/m^3	Particle Density : Calculated =		2.51*
		0% Air Voids	5% Air Voids	10% Air Voids
9.2	1.788	2.037	1.935	1.833
11.6	1.822	1.942	1.845	1.748
14.1	1.845	1.852	1.759	1.666
16.0	1.824	1.790	1.700	1.611
17.8	1.794	1.732	1.646	1.559



Maximum Dry Density = 1.85 Mg/m^3
Optimum Moisture Content = 14 %

Comments:
* Particle Density determined in accordance with BS 1377-2:1990 clause 8.2.
(UKAS accreditation not currently held for Particle Density)
**Deviation: % exceeds the specified maximum as stated in BS 1377-4:1990: clause 3.2: Table 2 .
Information supplied by the customer indicated by ^ may affect the validity of the results.

Kiwa CMT

Moisture Content/Dry Density Relationship

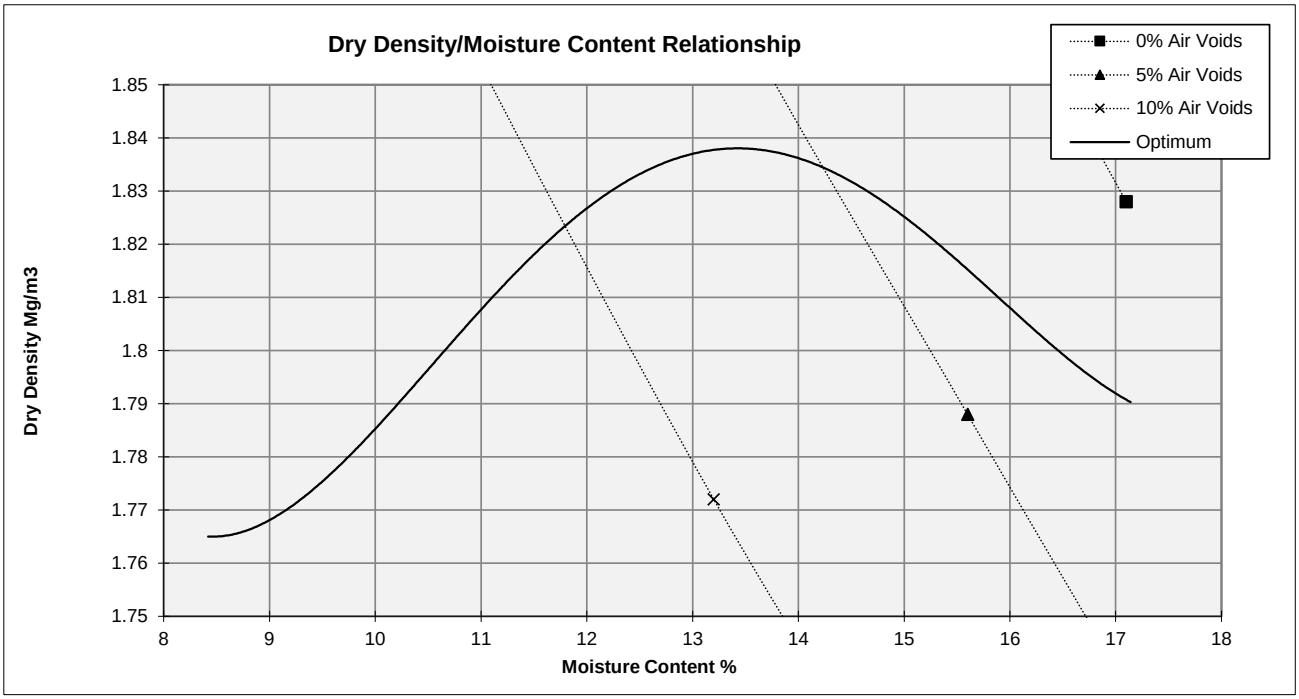
Test Method: BS 1377: Part 4: 1990: Clause 3.4

Client:	Ivy House Environmental	^ Site:	Rockingham Hub Mitchell Road Corby
Lab Ref:	61588	Material:	Brown very gravelly sandy CLAY
Test Date:	21.07.20	^ Sample ref:	E36 Layer 1
Method:	2.5kg Rammer in CBR Mould	Sample Preparation :	Partially Air Dried

Retained on 20mm sieve: 22%
Retained on 37.5mm sieve: 21%**

Separate samples used for test

Moisture Content %	Dry Density Mg/m^3	Particle Density : Calculated =		2.66*
		0% Air Voids	5% Air Voids	10% Air Voids
8.4	1.765	2.175	2.066	1.957
10.6	1.799	2.076	1.972	1.869
13.2	1.838	1.969	1.871	1.772
15.6	1.816	1.882	1.788	1.694
17.1	1.790	1.828	1.737	1.645



Maximum Dry Density = 1.84 Mg/m^3
Optimum Moisture Content = 13.5 %

Comments:
* Particle Density determined in accordance with BS 1377-2:1990 clause 8.2.
(UKAS accreditation not currently held for Particle Density)
**Deviation: % exceeds the specified maximum as stated in BS 1377-4:1990: clause 3.2: Table 2 .
Information supplied by the customer indicated by ^ may affect the validity of the results.

Kiwa CMT

Certificate of Analysis

Particle Density and Water Absorption in accordance with BS 1097: Part 6: 2013: Clause 8: Pyknometer Method for Aggregate Particles Between 4.0mm & 31.5mm

Client: Ivy House Environmental

Site: Mitchell Road, Corby

Lab Ref: 61588

Sample Ref: Stockpile 1, S1

Date of Test: 20th August 2020

Requirements:

Determine the Particle Density and Water Absorption in accordance with **BS EN 1097: Part 6: 2013: Clause 8**.

Results:

Sample Fraction Size (approx.)	Apparent Particle Density (Mg/m^3)	Particle Density on an Oven Dried Basis (Mg/m^3)	Particle Density on a Saturated and Surface Dry Basis (Mg/m^3)	Water Absorption (% of Dry Mass)
4.0-31.5mm	**2.82**	**2.77**	**2.78**	**0.62**

Comment: information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT Testing

Kiwa CMT

Certificate of Analysis

Particle Density and Water Absorption in accordance with BS 1097: Part 6: 2013: Clause 8: Pyknometer Method for Aggregate Particles Between 4.0mm & 31.5mm

Client: Ivy House Environmental

Site: Mitchell Road, Corby

Lab Ref: 61588

Sample Ref: Stockpile 1, S2

Date of Test: 20th August 2020

Requirements:

Determine the Particle Density and Water Absorption in accordance with **BS EN 1097: Part 6: 2013: Clause 8**.

Results:

Sample Fraction Size (approx.)	Apparent Particle Density (Mg/m^3)	Particle Density on an Oven Dried Basis (Mg/m^3)	Particle Density on a Saturated and Surface Dry Basis (Mg/m^3)	Water Absorption (% of Dry Mass)
4.0-31.5mm	**2.81**	**2.77**	**2.78**	**0.46**

Comment: information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT Testing

Kiwa CMT

Certificate of Analysis

Particle Density and Water Absorption in accordance with BS 1097: Part 6: 2013: Clause 8: Pyknometer Method for Aggregate Particles Between 4.0mm & 31.5mm

Client: Ivy House Environmental

Site: Mitchell Road, Corby

Lab Ref: 61588

Sample Ref: Stockpile 1, S3

Date of Test: 20th August 2020

Requirements:

Determine the Particle Density and Water Absorption in accordance with **BS EN 1097: Part 6: 2013: Clause 8**.

Results:

Sample Fraction Size (approx.)	Apparent Particle Density (Mg/m^3)	Particle Density on an Oven Dried Basis (Mg/m^3)	Particle Density on a Saturated and Surface Dry Basis (Mg/m^3)	Water Absorption (% of Dry Mass)
4.0-31.5mm	**2.82**	**2.75**	**2.78**	**0.87**

Comment: information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT Testing

Kiwa CMT

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INDEPENDENT MATERIALS TESTING I DIAMOND DRILLING & SAWING

Kiwa CMT (Testing) Ltd
Prime Parkway,
Prime Enterprise Park
Derby
DE1 3QB

Date: 05 August 2020
Test Report Ref: TR 742459

Order No: 26694

Contract: Rockingham Hub

LABORATORY TEST REPORT

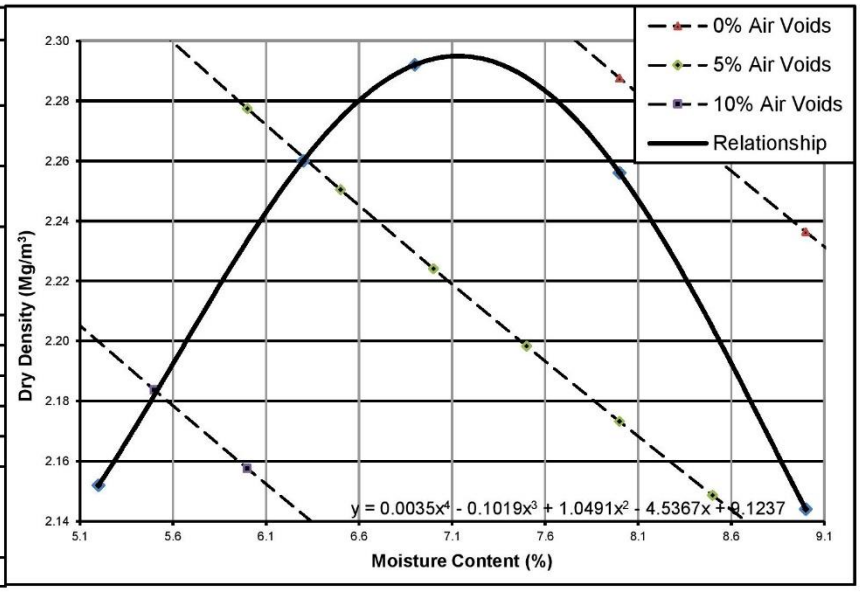
TEST REQUIREMENTS: To determine the Dry Density and Moisture Content Relationship of soil Vibrating Hammer Method in accordance with **BS 1377: 4: 1990 Clause 3.7**

SAMPLE DETAILS:

Certificate of sampling received:	**No**	Name of Source:	**Rockingham Hub, Mitchell Road, Corby**
Laboratory Ref. No:	**S88733**	Method of Sampling:	**Unknown**
Client Ref. :	**61588/ SP1 - S1**	Sampled By:	**Client**
Date and Time of Sampling:	**03/07/2020**	Tested By:	**RWT**
Date of Receipt at Lab:	**13/07/2020**	Sample Preparation Procedure:	**Clause X**
Date of Start of Test:	**30/07/2020**	Sample Preparation Method:	**Separate**
Sampling Location:	**Stockpile**		
Soil Description:	**Granular - 40mm Down**		

RESULTS:

Particle Density: (Assumed)	**2.8Mg/m3**
Retained on 37.5mm Sieve:	**9 %**
Retained on 20mm Sieve:	**31 %**
Moisture Content (%)	Dry Density Mg/m^3
5.2	2.15
6.3	2.26
6.9	2.29
8.0	2.26
9.0	2.14
Optimum Moisture Content (%)	**Maximum Dry Density Mg/m^3**
7.1	**2.30**



This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:
None

Report checked and approved by:
S Parry
Sharon Parry
Aggregate Team Coordinator

Kiwa CMT

celtest
INDEPENDENT MATERIALS TESTING I DIAMOND DRILLING & SAWING

Kiwa CMT (Testing) Ltd
Prime Parkway,
Prime Enterprise Park
Derby
DE1 3QB

Date: 05 August 2020
Test Report Ref: TR 742460

Order No: 26694

Contract: Rockingham Hub

LABORATORY TEST REPORT

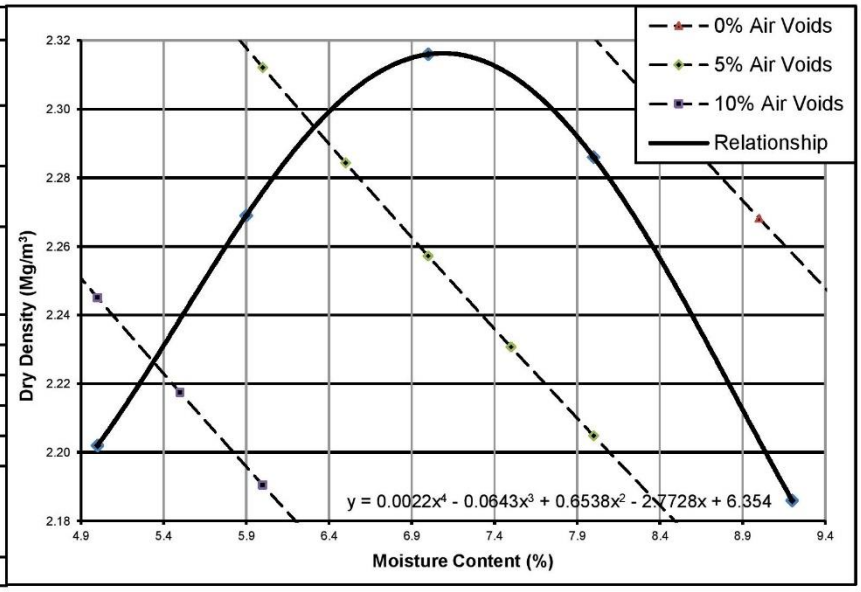
TEST REQUIREMENTS: To determine the Dry Density and Moisture Content Relationship of soil Vibrating Hammer Method in accordance with **BS 1377: 4: 1990 Clause 3.7**

SAMPLE DETAILS:

Certificate of sampling received:	**No**	Name of Source:	**Rockingham Hub, Mitchell Road, Corby**
Laboratory Ref. No:	**S88733**	Method of Sampling:	**Unknown**
Client Ref. :	**61588/ SP1 - S2**	Sampled By:	**Client**
Date and Time of Sampling:	**03/07/2020**	Tested By:	**RWT**
Date of Receipt at Lab:	**13/07/2020**	Sample Preparation Procedure:	**Zone 4**
Date of Start of Test:	**30/07/2020**	Sample Preparation Method:	**Separate**
Sampling Location:	**Stockpile**		
Soil Description:	**Granular - 40mm Down**		

RESULTS:

Particle Density: (Assumed)	**2.85Mg/m3**
Retained on 37.5mm Sieve:	**4 %**
Retained on 20mm Sieve:	**28 %**
Moisture Content (%)	Dry Density Mg/m^3
5.0	2.20
5.9	2.27
7.0	2.32
8.0	2.29
9.2	2.19
Optimum Moisture Content (%)	**Maximum Dry Density Mg/m^3**
7.1	**2.32**



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These results relate only to the items tested.

Comments:
None

Report checked and approved by:
S Parry
Sharon Parry
Aggregate Team Coordinator

UKAS TESTING 0494

Kiwa CMT

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INDEPENDENT MATERIALS TESTING I DIAMOND DRILLING & SAWING

Kiwa CMT (Testing) Ltd
Prime Parkway,
Prime Enterprise Park
Derby
DE1 3QB

Date: 05 August 2020
Test Report Ref: TR 742461

Order No: 26694

Contract: Rockingham Hub

LABORATORY TEST REPORT

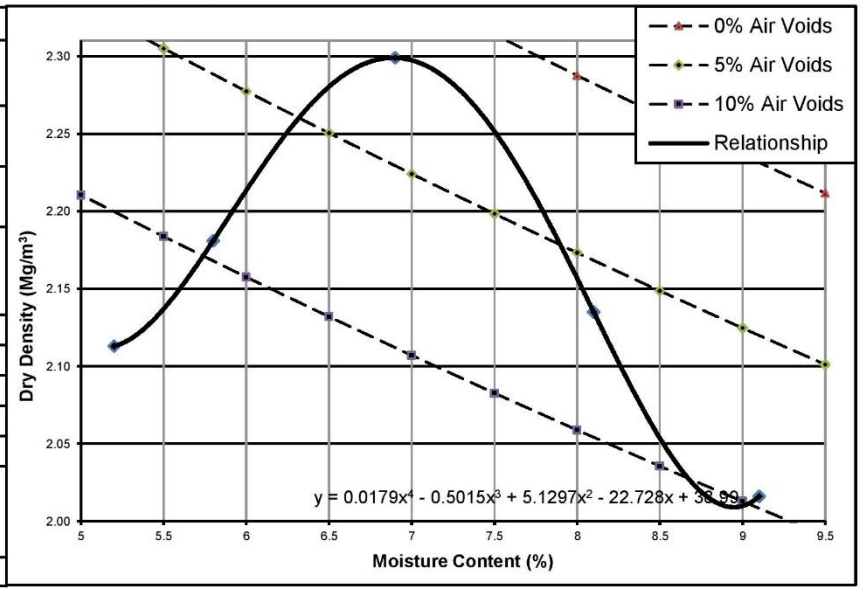
TEST REQUIREMENTS: To determine the Dry Density and Moisture Content Relationship of soil Vibrating Hammer Method in accordance with **BS 1377: 4: 1990 Clause 3.7**

SAMPLE DETAILS:

Certificate of sampling received:	**No**	Name of Source:	**Rockingham Hub, Mitchell Road, Corby**
Laboratory Ref. No:	**S88733**	Method of Sampling:	**Unknown**
Client Ref. :	**61588/ SP1 - S3**	Sampled By:	**Client**
Date and Time of Sampling:	**03/07/2020**	Tested By:	**RWT**
Date of Receipt at Lab:	**13/07/2020**	Sample Preparation Procedure:	**Zone 4**
Date of Start of Test:	**03/08/2020**	Sample Preparation Method:	**Separate**
Sampling Location:	**Stockpile**		
Soil Description:	**Granular - 40mm Down**		

RESULTS:

Particle Density: (Assumed)	**2.8Mg/m3**
Retained on 37.5mm Sieve:	**4 %**
Retained on 20mm Sieve:	**25 %**
Moisture Content (%)	Dry Density Mg/m^3
5.2	2.11
5.8	2.18
6.9	2.30
8.1	2.14
9.1	2.02
Optimum Moisture Content (%)	**Maximum Dry Density Mg/m^3**
6.9	**2.30**



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These results relate only to the items tested.

Comments:
None

Report checked and approved by:
S Parry
Sharon Parry
Aggregate Team Coordinator

Kiwa CMT

CERTIFICATE OF ANALYSIS

Client	Ivy House Environmental Ltd	**Job No.**	61558
Contact	Scott Spencer	**Site**	Rockingham Hub Mitchell Road Corby
Order Ref	IV.131.20 Rockingham	**Date Received**	08/07/2020
		Date Analysed	15 - 24/07/2020
Sample Description	"Soils"	**Date Reported**	27/07/2020

Analyte:	As:	Units:	E36Layer 1	E57 Layer 1
Material passing 2mm sieve		%	78	79
Organic matter content of material passing 2mm seive		%	1.3	1.4

Test methods: Organic matter as described in BS1377: Pt 3: 2018: Cl 3

Opinions and interpretations expressed herein are outside the scope of UKAS

Signed :

B Fairweather
Environmental Technician

Approved :

D Mullee
Department Manager

Further interpretation or advice is a chargeable service and may be obtained by contacting the above signatory.

UKAS TESTING
0529

Kiwa CMT

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DE1 3QB

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F +44 (0)1332 602607
E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
Derbyshire
DE72 3RX

Date: 22nd September 2020

Lab Ref: 61594

Originator: Scott Spencer

Order Ref: IV.131.20 Rockingham

Site: Mitchell Road
Rockingham
Corby
NN17 5AF

Samples:

5No. samples weighing approximately 40kg each were recovered by Kiwa CMT Testing from the above site on 17th July 2020. Sampling certificates are available if required.

Requirements:

Carry out various testing as specified by the client.

Results:

The individual result sheets may be viewed on pages 2 to 12 of this report.

Kiwa CMT Testing

Author: D. Spencer
Technical Administrator

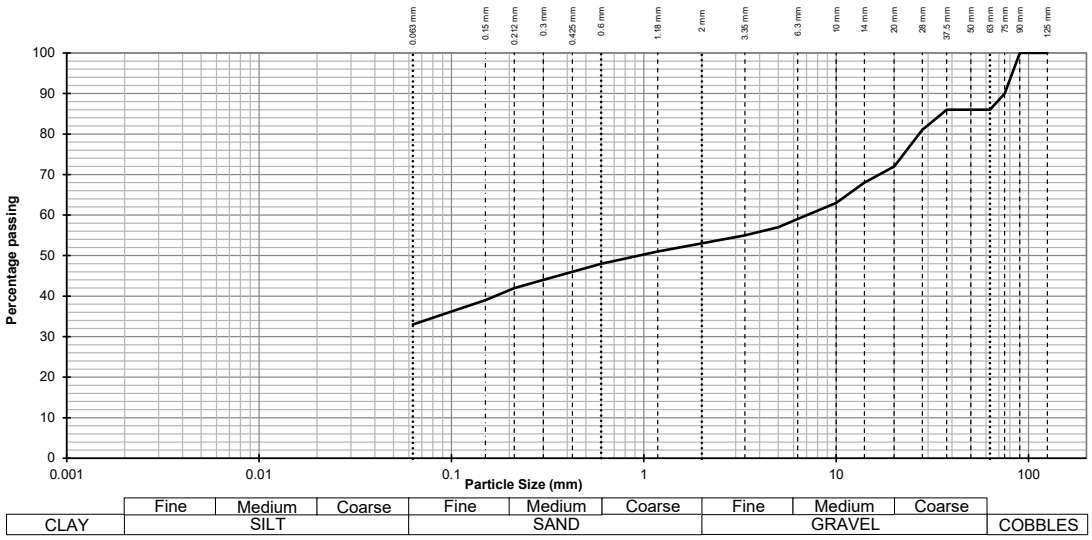
Checked and Approved by: R. Cartlidge
Departmental Manager

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental Ltd	**Sample ref:**	61594/Site Won E34	**Date Tested:**	23.08 - 09.09.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	8kg Approx.	**Source:**	Site
		Lab ref.:	61594	**Description:**	Brown gravelly sandy CLAY		

Sieve Size (mm)	% Passing
125	100
90	100
75	90
63	86
50	86
37.5	86
28	81
20	72
14	68
10	63
6.3	59
5	57
3.35	55
2	53
1.18	51
0.6	48
0.425	46
0.3	44
0.212	42
0.15	39
0.063	33



Soil Fraction	Total Percentage
Cobbles	14
Gravel	33
Sand	20
Silt/Clay	33

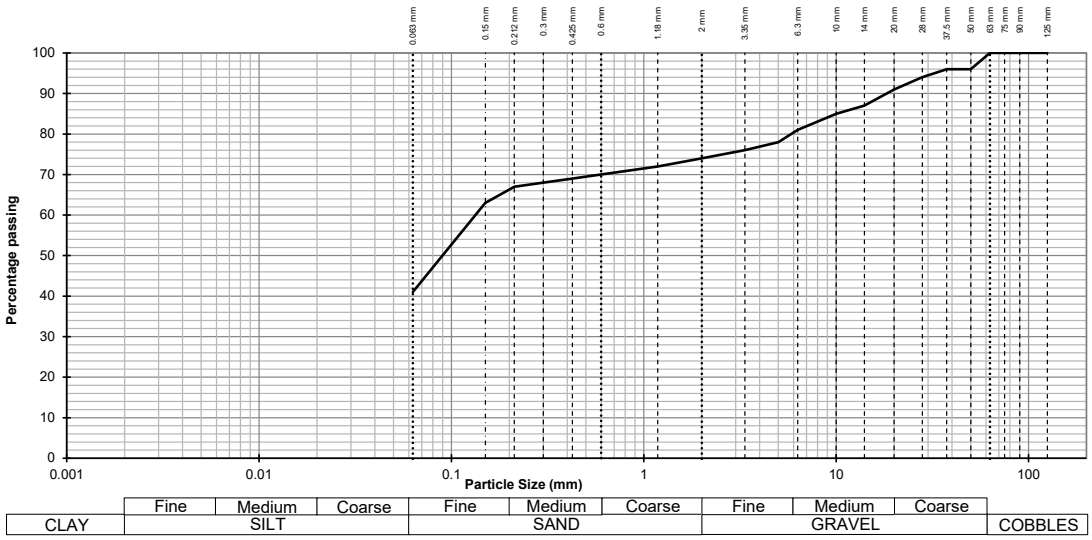
Comments: Test carried out in accordance with **BS1377: Part 2: 1990: Clause 9.2**
Uniformity coefficient = 378 (For information only)

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental Ltd	**Sample ref:**	61594/Site Won E39	**Date Tested:**	23.08 - 09.09.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	7kg Approx.	**Source:**	Site
		Lab ref.:	61594	**Description:**	Brown gravelly sandy CLAY		

Sieve Size (mm)	% Passing
125	100
90	100
75	100
63	100
50	96
37.5	96
28	94
20	91
14	87
10	85
6.3	81
5	78
3.35	76
2	74
1.18	72
0.6	70
0.425	69
0.3	68
0.212	67
0.15	63
0.063	41



Soil Fraction	Total Percentage
Cobbles	0
Gravel	26
Sand	33
Silt/Clay	41

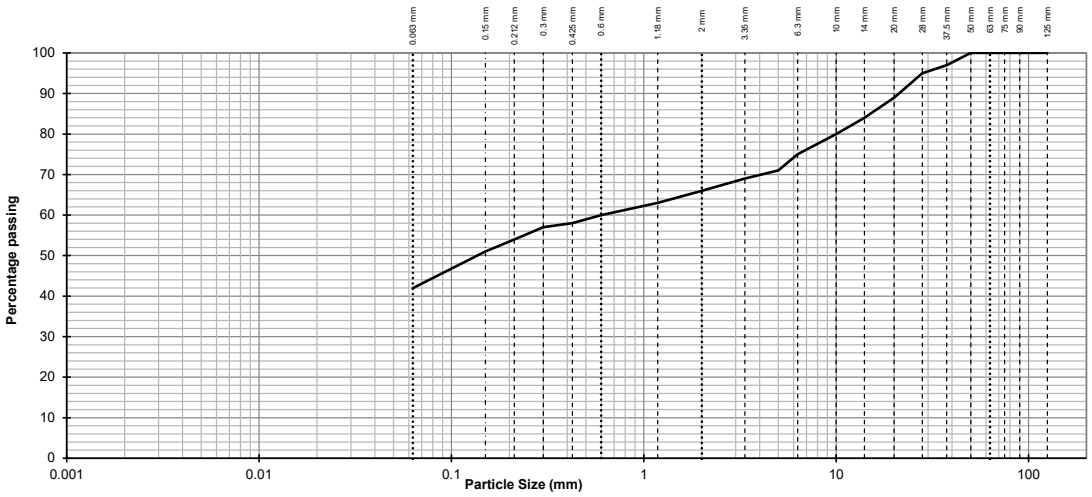
Comments: Test carried out in accordance with **BS1377: Part 2: 1990: Clause 9.2**
Uniformity coefficient = 9 (For information only)

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental Ltd	**Sample ref:**	61594/Site Won E45	**Date Tested:**	23.08 - 09.09.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	8kg Approx.	**Source:**	Site
		Lab ref.:	61594	**Description:**	Brown gravelly sandy CLAY		

Sieve Size (mm)	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	97
28	95
20	89
14	84
10	80
6.3	75
5	71
3.35	69
2	66
1.18	63
0.6	60
0.425	58
0.3	57
0.212	54
0.15	51
0.063	42



	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
CLAY	SILT			SAND			GRAVEL			COBBLES

Soil Fraction	Total Percentage
Cobbles	0
Gravel	34
Sand	24
Silt/Clay	42

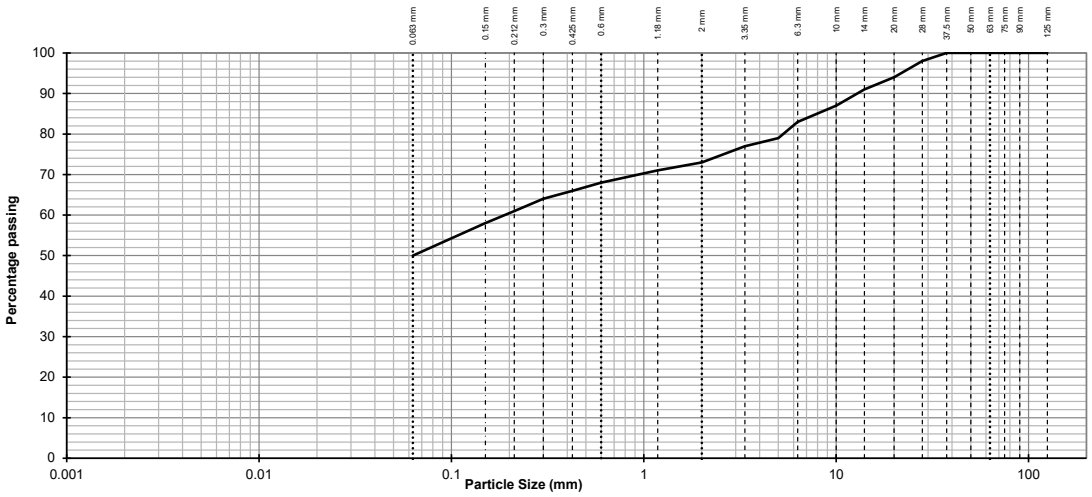
Comments: Test carried out in accordance with **BS1377: Part 2: 1990: Clause 9.2**
Uniformity coefficient = 40 (For information only)

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental Ltd	**Sample ref:**	61594/Site Won E47	**Date Tested:**	23.08 - 09.09.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	7kg Approx.	**Source:**	Site
		Lab ref.:	61594	**Description:**	Brown gravelly sandy CLAY		

Sieve Size (mm)	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	100
28	98
20	94
14	91
10	87
6.3	83
5	79
3.35	77
2	73
1.18	71
0.6	68
0.425	66
0.3	64
0.212	61
0.15	58
0.063	50



	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
CLAY	SILT			SAND			GRAVEL			COBBLES

Soil Fraction	Total Percentage
Cobbles	0
Gravel	27
Sand	23
Silt/Clay	50

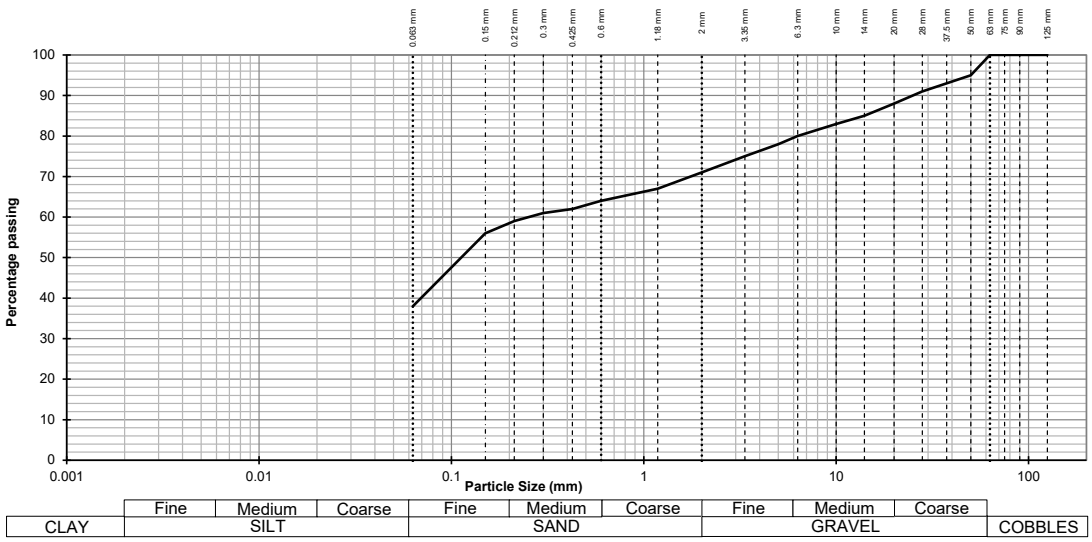
Comments: Test carried out in accordance with **BS1377: Part 2: 1990: Clause 9.2**
Uniformity coefficient = 15 (For information only)

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental Ltd	**Sample ref:**	61594/Site Won E50	**Date Tested:**	23.08 - 09.09.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	7kg Approx.	**Source:**	Site
		Lab ref.:	61594	**Description:**	Brown gravelly sandy CLAY		

Sieve Size (mm)	% Passing
125	100
90	100
75	100
63	100
50	95
37.5	93
28	91
20	88
14	85
10	83
6.3	80
5	78
3.35	75
2	71
1.18	67
0.6	64
0.425	62
0.3	61
0.212	59
0.15	56
0.063	38



Soil Fraction	Total Percentage
Cobbles	0
Gravel	29
Sand	33
Silt/Clay	38

Comments: Test carried out in accordance with **BS1377: Part 2: 1990: Clause 9.2**
Uniformity coefficient = 15 (For information only)

Kiwa CMT

Certificate of Analysis for Plasticity Index & Water Content

Client: Ivy House Environmental Ltd

Site: Mitchell Road
Rockingham
Corby

Lab Ref: 61594

Date of Test: 27.08 - 28.08.20

Test Methods: **BS 1377: 1990: Part 2: Clauses 4.4 and 5 - Liquid Limit/Plastic Limit/Plasticity Index**
BS EN ISO 17892-1:2014 - Water Content

Results:

Sample Ref	Material Description	LL (%)	PL (%)	PI (%)	% Retained on 425µm	Modified PI (%)*	Soil Classification	WC (%)
61594/Site Won E34	Brown gravelly sandy CLAY	38	18	20	54	9	CI	13.8
61594/Site Won E39	Brown gravelly sandy CLAY	31	19	12	31	8	CL	22.6
61594/Site Won E45	Brown gravelly sandy CLAY	34	17	17	42	10	CL	15.5
61594/Site Won E47	Brown gravelly sandy CLAY	39	18	21	34	14	CI	14.6
61594/Site Won E50	Brown gravelly sandy CLAY	Non-plastic						17.0

The samples tested were disturbed and in their natural condition.
* Modified plasticity index relates to BRE Digest 240.
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
WC = Water Content
BRE Digest 240 is not included in the UKAS schedule for this Laboratory.

Kiwa CMT

Moisture Content/Dry Density Relationship

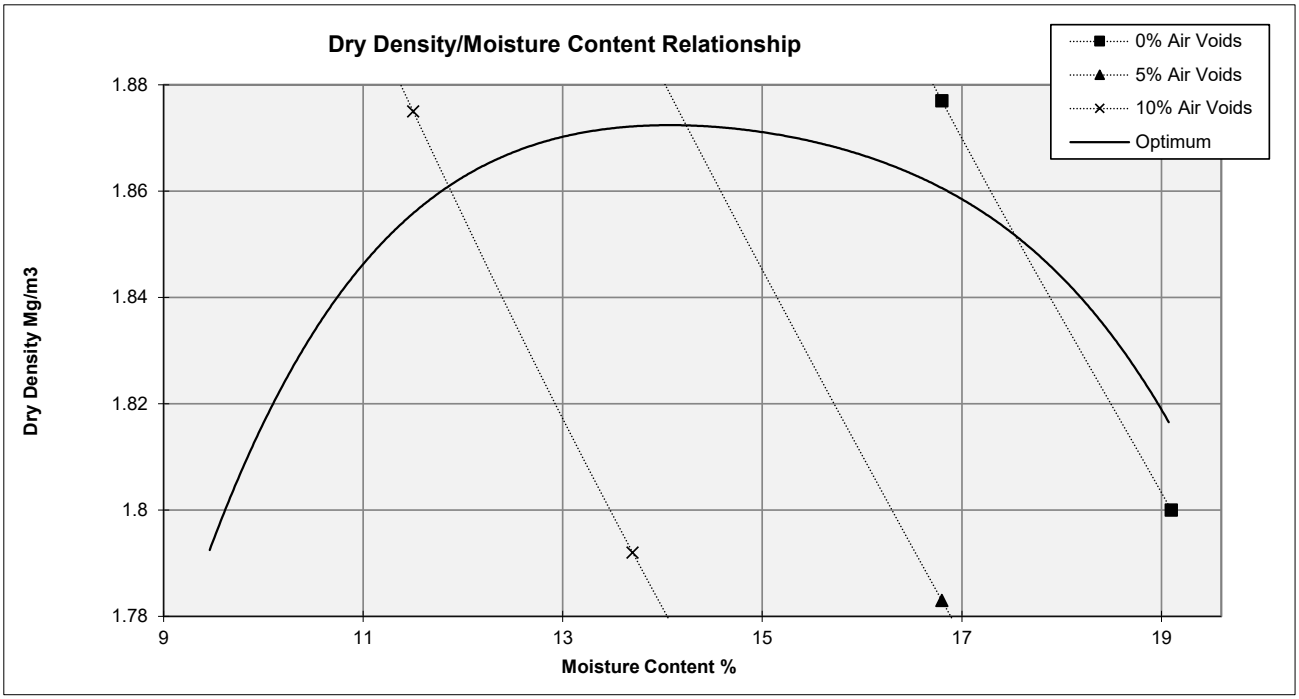
Test Method: BS 1377: Part 4: 1990: Clause 3.4

Client:	Ivy House Environmental	Site:	Mitchell Road Rockingham Corby
Lab Ref:	61594	Material:	Brown gravelly sandy CLAY
Test Date:	15.09 - 16.09.20	Sample ref:	61594/Site Won E34
Method:	2.5kg Rammer in CBR Mould	Sample Preparation :	Partially Air Dried

Retained on 20mm sieve: 28%
Retained on 37.5mm sieve: 14%**

Separate samples used for test

Moisture Content %	Dry Density Mg/m^3	Particle Density : Calculated =		2.71*
		0% Air Voids	5% Air Voids	10% Air Voids
9.1	1.792	2.177	2.068	1.959
11.1	1.856	2.083	1.979	1.875
13.3	1.872	1.991	1.892	1.792
16.4	1.861	1.877	1.783	1.689
18.7	1.817	1.800	1.710	1.620



Maximum Dry Density = 1.87 Mg/m^3
Optimum Moisture Content = 14 %

Comments:
* Particle Density determined in accordance with BS 1377-2:1990 clause 8.2.
(UKAS accreditation not currently held for Particle Density)

**Deviation: % exceeds the specified maximum as stated in BS 1377-4:1990: clause 3.2: Table 2 .

Kiwa CMT

Moisture Content/Dry Density Relationship

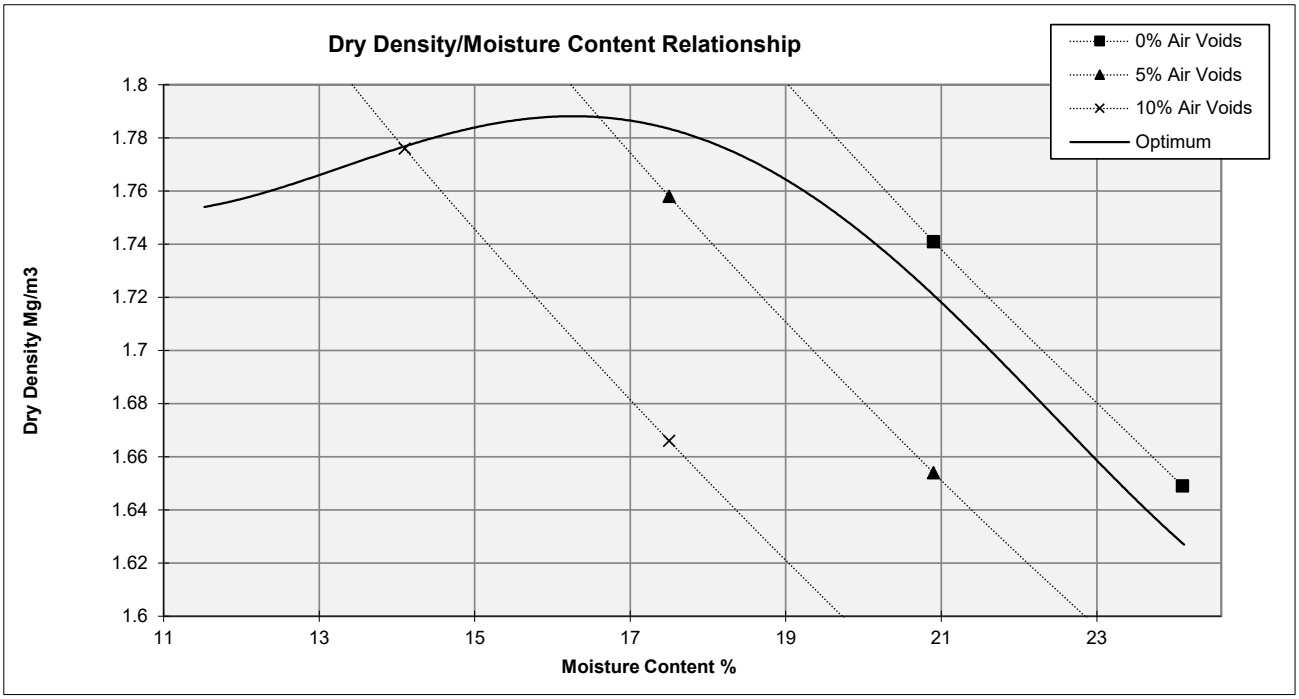
Test Method: BS 1377: Part 4: 1990: Clause 3.4

Client:	Ivy House Environmental	Site:	Mitchell Road Rockingham Corby
Lab Ref:	61594	Material:	Brown gravelly sandy CLAY
Test Date:	15.09 - 16.09.20	Sample ref:	61594/Site Won E39
Method:	2.5kg Rammer in CBR Mould	Sample Preparation :	Partially Air Dried

Retained on 20mm sieve: 9%
Retained on 37.5mm sieve: 4%

Single samples used for test

Moisture Content %	Dry Density Mg/m³	Particle Density : Calculated =		2.73*
		0% Air Voids	5% Air Voids	10% Air Voids
11.4	1.754	2.081	1.977	1.873
14.0	1.777	1.974	1.875	1.776
17.4	1.783	1.851	1.758	1.666
20.8	1.721	1.741	1.654	1.567
24.0	1.627	1.649	1.566	1.484



Maximum Dry Density = 1.79 Mg/m³
Optimum Moisture Content = 16 %

Comments:
* Particle Density determined in accordance with BS 1377-2:1990 clause 8.2.
(UKAS accreditation not currently held for Particle Density)

Kiwa CMT

Moisture Content/Dry Density Relationship

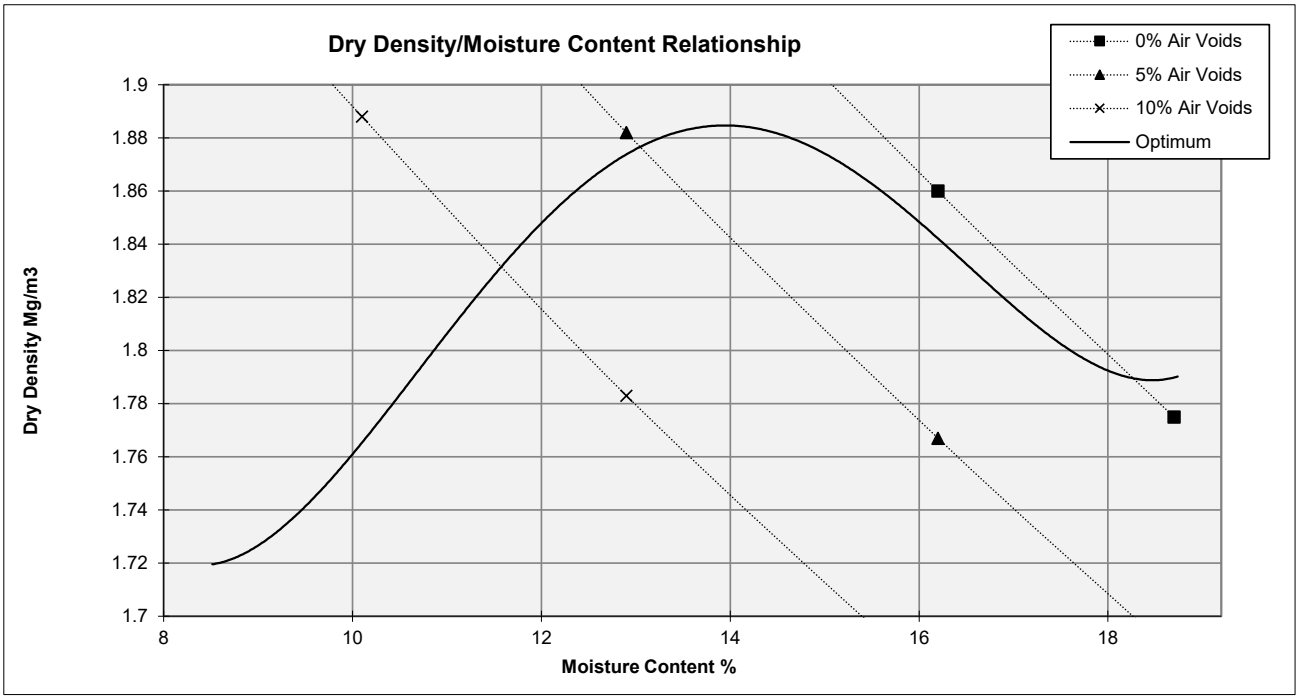
Test Method: BS 1377: Part 4: 1990: Clause 3.4

Client:	Ivy House Environmental	Site:	Mitchell Road Rockingham Corby
Lab Ref:	61594	Material:	Brown gravelly sandy CLAY
Test Date:	16.09 - 17.09.20	Sample ref:	61594/Site Won E45
Method:	2.5kg Rammer in CBR Mould	Sample Preparation :	Partially Air Dried

Retained on 20mm sieve: 11%
Retained on 37.5mm sieve: 3%

Single samples used for test

Moisture Content %	Dry Density Mg/m³	Particle Density : Calculated =		2.68*
		0% Air Voids	5% Air Voids	10% Air Voids
8.8	1.720	2.168	2.060	1.952
10.4	1.764	2.098	1.993	1.888
13.2	1.874	1.981	1.882	1.783
16.5	1.843	1.860	1.767	1.674
19.0	1.790	1.775	1.686	1.597



Maximum Dry Density = 1.88 Mg/m³
Optimum Moisture Content = 14 %

Comments:
* Particle Density determined in accordance with BS 1377-2:1990 clause 8.2.
(UKAS accreditation not currently held for Particle Density)

Kiwa CMT

Moisture Content/Dry Density Relationship

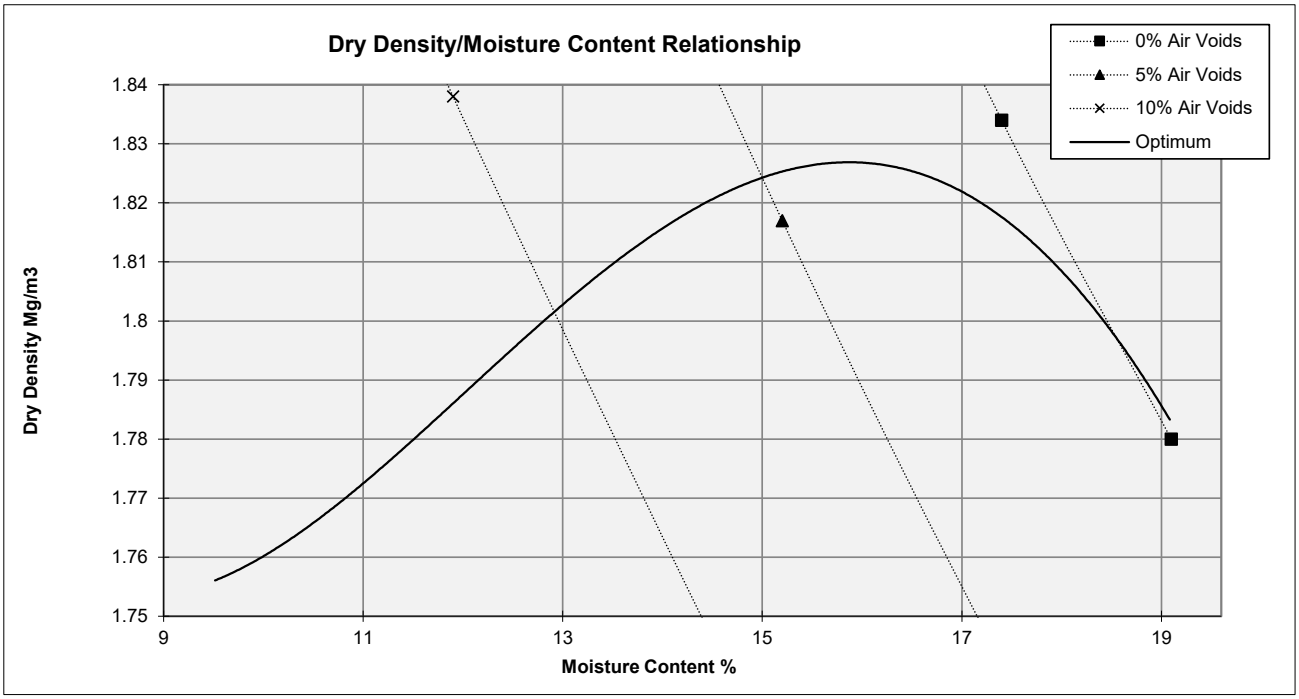
Test Method: BS 1377: Part 4: 1990: Clause 3.4

Client:	Ivy House Environmental	Site:	Mitchell Road Rockingham Corby
Lab Ref:	61594	Material:	Brown gravelly sandy CLAY
Test Date:	15.09 - 16.09.20	Sample ref:	61594/Site Won E47
Method:	2.5kg Rammer in CBR Mould	Sample Preparation :	Partially Air Dried

Retained on 20mm sieve: 6%
Retained on 37.5mm sieve: 0%

Separate samples used for test

Moisture Content %	Dry Density Mg/m³	Particle Density : Calculated =		2.70*
		0% Air Voids	5% Air Voids	10% Air Voids
9.6	1.756	2.145	2.038	1.931
12.0	1.785	2.042	1.940	1.838
15.3	1.825	1.913	1.817	1.722
17.5	1.817	1.834	1.742	1.650
19.2	1.783	1.780	1.691	1.602



Maximum Dry Density = 1.83 Mg/m³
Optimum Moisture Content = 16 %

Comments:
* Particle Density determined in accordance with BS 1377-2:1990 clause 8.2.
(UKAS accreditation not currently held for Particle Density)

Kiwa CMT

Moisture Content/Dry Density Relationship

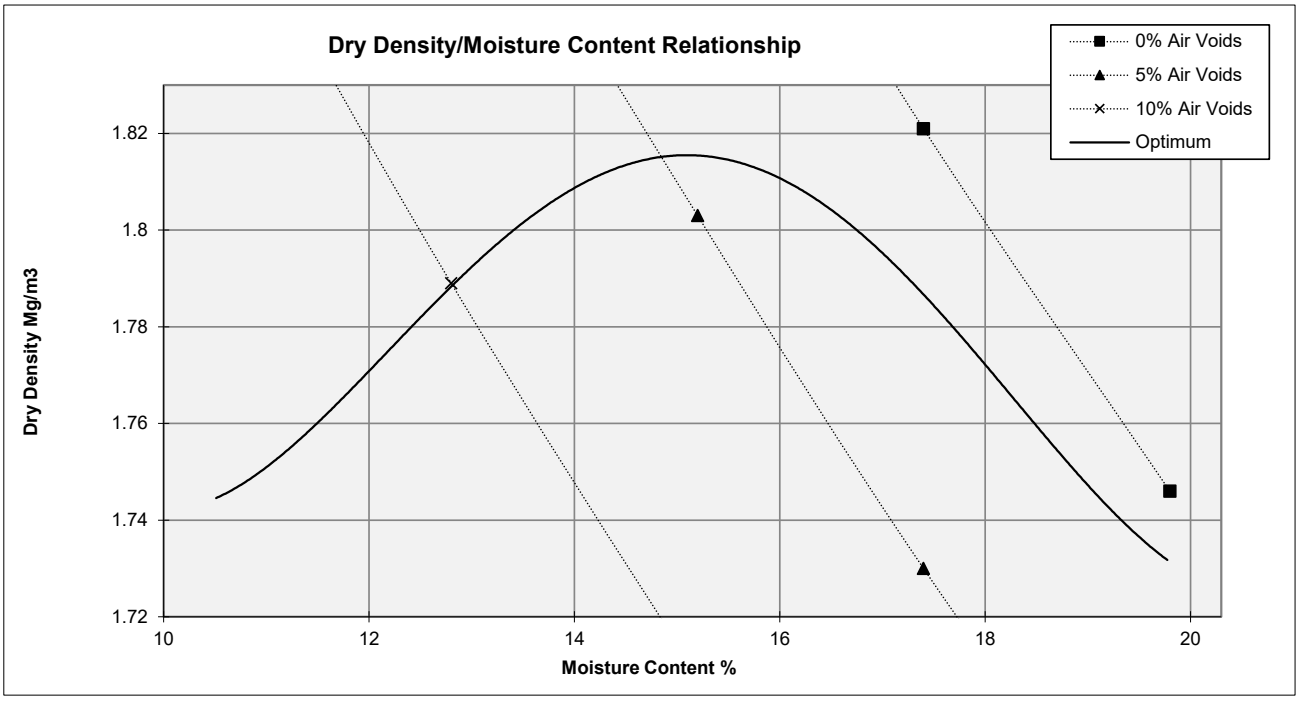
Test Method: BS 1377: Part 4: 1990: Clause 3.4

Client:	Ivy House Environmental	Site:	Mitchell Road Rockingham Corby
Lab Ref:	61594	Material:	Brown gravelly sandy CLAY
Test Date:	15.09 - 16.09.20	Sample ref:	61594/Site Won E50
Method:	2.5kg Rammer in CBR Mould	Sample Preparation :	Partially Air Dried

Retained on 20mm sieve: 12%
Retained on 37.5mm sieve: 7%

Single samples used for test

Moisture Content %	Dry Density Mg/m^3	Particle Density : Calculated =		2.69*
		0% Air Voids	5% Air Voids	10% Air Voids
10.8	1.745	2.083	1.979	1.874
13.1	1.789	1.987	1.888	1.789
15.5	1.815	1.898	1.803	1.708
17.7	1.786	1.821	1.730	1.639
20.1	1.732	1.746	1.659	1.571



Maximum Dry Density = 1.82 Mg/m^3
Optimum Moisture Content = 15 %

Comments:
* Particle Density determined in accordance with BS 1377-2:1990 clause 8.2.
(UKAS accreditation not currently held for Particle Density)

Kiwa CMT

Kiwa CMT Testing
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E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
Derbyshire
DE72 3RX

Date: 1st October 2020

Lab Ref: 61595

Originator: Scott Spencer

Order Ref: IV.131.20 Rockingham

Site: Mitchell Road
Rockingham
Corby
NN17 5AF

Requirements:

Carry out various testing as specified by the client.

Results:

The individual result sheets may be viewed on pages 2 to 11 of this report.

Kiwa CMT Testing

Author: D. Spencer
Technical Administrator

Checked and Approved by: R. Cartlidge
Departmental Manager

Kiwa CMT

Certificate of Analysis for Plasticity Index & Water Content

Client: Ivy House Environmental Ltd

Site: Mitchell Road
Rockingham
Corby

Lab Ref: 61595

Date of Test: 23.07 - 24.07.20

Test Methods: **BS 1377: 1990: Part 2: Clauses 4.4 and 5 - Liquid Limit/Plastic Limit/Plasticity Index**
BS EN ISO 17892-1:2014 - Water Content

Results:

Sample Ref	Material Description	LL (%)	PL (%)	PI (%)	% Retained on 425µm	Modified PI (%)*	Soil Classification	WC (%)
61595/Stockpile 1, S4	Crushed STONE	Not requested						3.0
61595/Stockpile 1, S5	Crushed STONE	Not requested						3.1
61595/Stockpile 1, S6	Crushed STONE	Not requested						3.5

The samples tested were disturbed and in their natural condition.
* Modified plasticity index relates to BRE Digest 240.
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
WC = Water Content
BRE Digest 240 is not included in the UKAS schedule for this Laboratory.

Kiwa CMT Testing

UKAS TESTING
0529

Kiwa CMT

Certificate of Analysis

Particle Density and Water Absorption in accordance with BS 1097: Part 6: 2013: Clause 8: Pyknometer Method for Aggregate Particles Between 4.0mm & 31.5mm

Client: Ivy House Environmental

Site: Mitchell Road, Rockingham, Corby

Lab Ref: 61595

Sample Ref: Stockpile 1, S4

Date of Test: 25th September 2020

Requirements:

Determine the Particle Density and Water Absorption in accordance with **BS EN 1097: Part 6: 2013: Clause 8**.

Results:

Sample Fraction Size (approx.)	Apparent Particle Density (Mg/m^3)	Particle Density on an Oven Dried Basis (Mg/m^3)	Particle Density on a Saturated and Surface Dry Basis (Mg/m^3)	Water Absorption (% of Dry Mass)
4.0-31.5mm	**2.77**	**2.73**	**2.74**	**0.46**

Kiwa CMT Testing

Kiwa CMT

Certificate of Analysis

Particle Density and Water Absorption in accordance with BS 1097: Part 6: 2013: Clause 8: Pyknometer Method for Aggregate Particles Between 4.0mm & 31.5mm

Client: Ivy House Environmental

Site: Mitchell Road, Rockingham, Corby

Lab Ref: 61595

Sample Ref: Stockpile 1, S5

Date of Test: 25th September 2020

Requirements:

Determine the Particle Density and Water Absorption in accordance with **BS EN 1097: Part 6: 2013: Clause 8**.

Results:

Sample Fraction Size (approx.)	Apparent Particle Density (Mg/m^3)	Particle Density on an Oven Dried Basis (Mg/m^3)	Particle Density on a Saturated and Surface Dry Basis (Mg/m^3)	Water Absorption (% of Dry Mass)
4.0-31.5mm	**2.76**	**2.71**	**2.73**	**0.68**

Kiwa CMT Testing

Kiwa CMT

Certificate of Analysis

Particle Density and Water Absorption in accordance with BS 1097: Part 6: 2013: Clause 8: Pyknometer Method for Aggregate Particles Between 4.0mm & 31.5mm

Client: Ivy House Environmental

Site: Mitchell Road, Rockingham, Corby

Lab Ref: 61595

Sample Ref: Stockpile 1, S6

Date of Test: 25th September 2020

Requirements:

Determine the Particle Density and Water Absorption in accordance with **BS EN 1097: Part 6: 2013: Clause 8**.

Results:

Sample Fraction Size (approx.)	Apparent Particle Density (Mg/m^3)	Particle Density on an Oven Dried Basis (Mg/m^3)	Particle Density on a Saturated and Surface Dry Basis (Mg/m^3)	Water Absorption (% of Dry Mass)
4.0-31.5mm	**2.76**	**2.72**	**2.73**	**0.56**

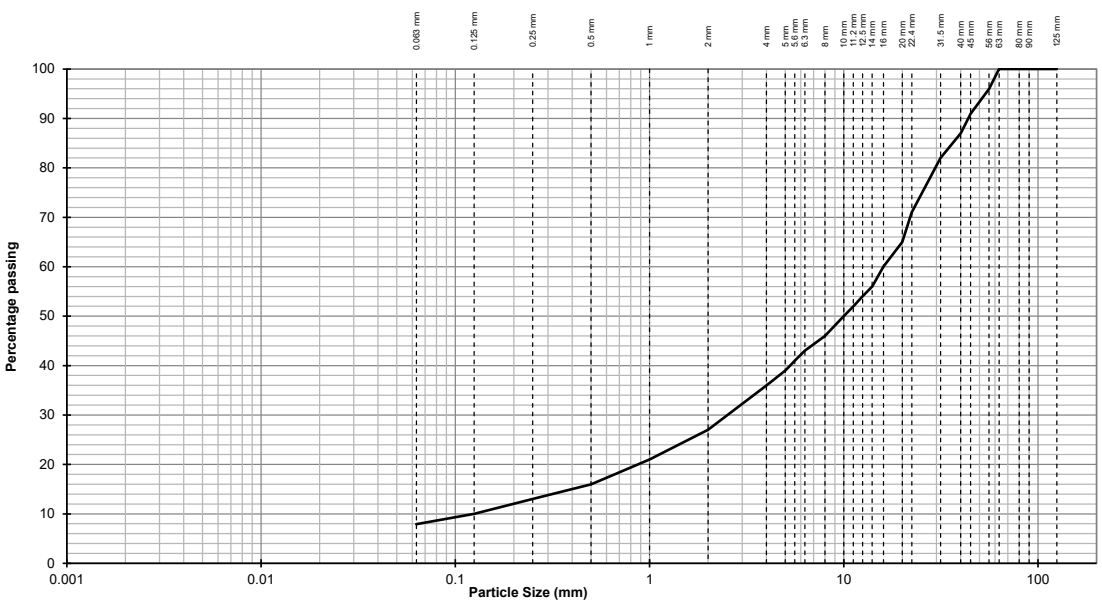
Kiwa CMT Testing

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental	**Sample ref:**	61595/Stockpile 1, S4	**Date Tested:**	27.07 - 25.09.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	15kg Approx.	**Source:**	Site
		Lab ref.:	61595	**Description:**	Crushed STONE		

Sieve Size (mm)	% Passing
125	100
90	100
80	100
63	100
56	96
45	91
40	87
31.5	82
22.4	71
20	65
16	60
14	56
12.5	54
11.2	52
10	50
8	46
6.3	43
5.6	41
5	39
4	36
2	27
1	21
0.5	16
0.25	13
0.125	10
0.063	7.9



Comments: Test carried out in accordance with **BS EN 933-1: 2012**

Kiwa CMT Testing

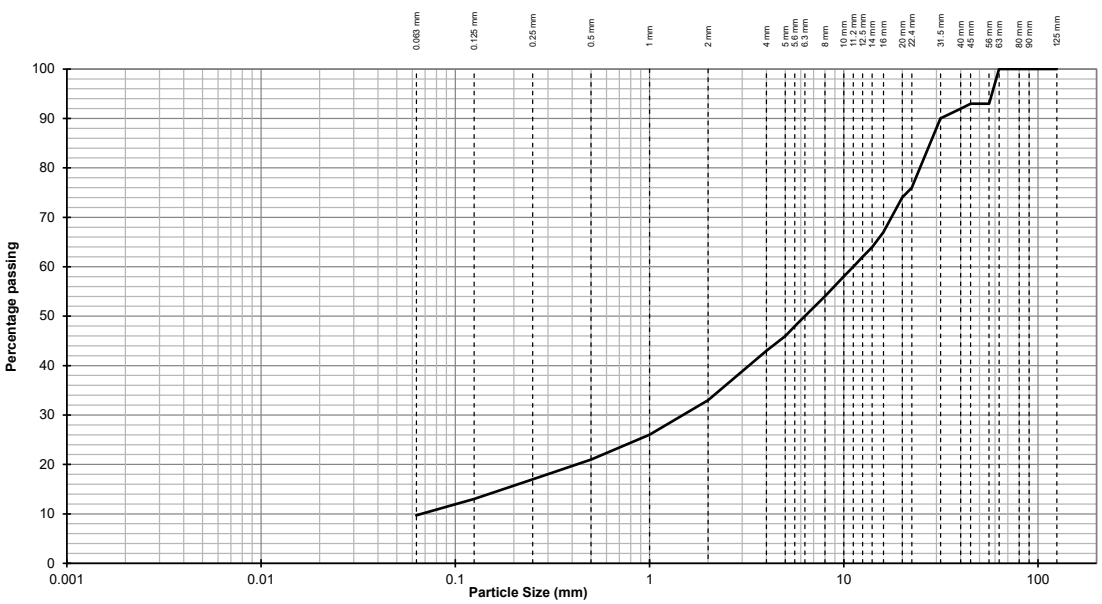
UKAS TESTING 0529

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental	**Sample ref:**	61595/Stockpile 1, S5	**Date Tested:**	27.07 - 24.09.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	14kg Approx.	**Source:**	Site
		Lab ref.:	61595	**Description:**	Crushed STONE		

Sieve Size (mm)	% Passing
125	100
90	100
80	100
63	100
56	93
45	93
40	92
31.5	90
22.4	76
20	74
16	67
14	64
12.5	62
11.2	60
10	58
8	54
6.3	50
5.6	48
5	46
4	43
2	33
1	26
0.5	21
0.25	17
0.125	13
0.063	9.7



Comments: Test carried out in accordance with **BS EN 933-1: 2012**

Kiwa CMT Testing

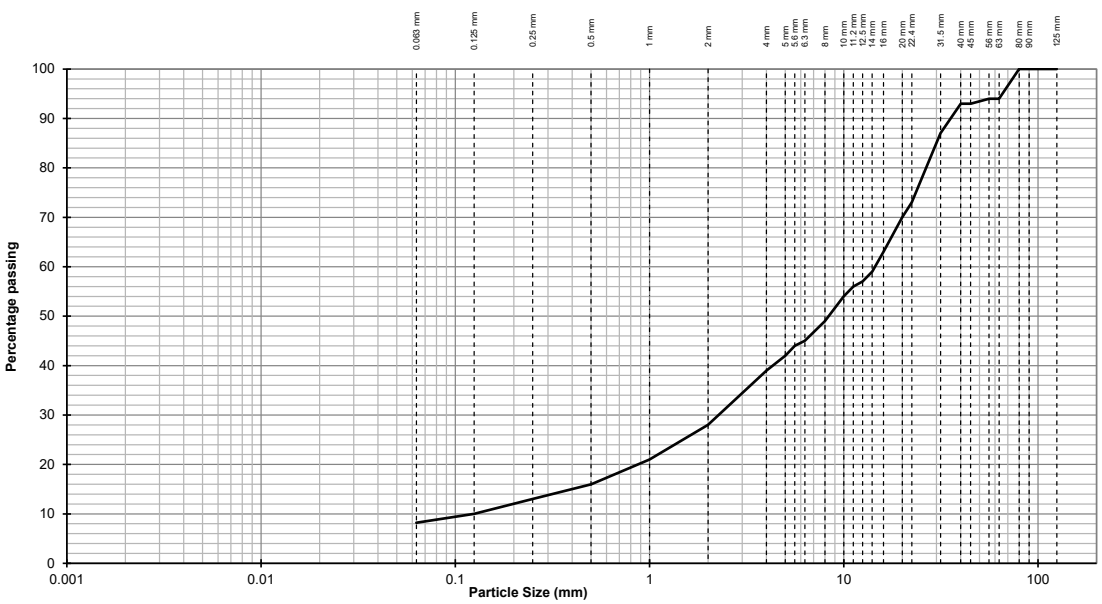
UKAS TESTING 0529

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental	**Sample ref:**	61595/Stockpile 1, S6	**Date Tested:**	27.07 - 24.09.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	13kg Approx.	**Source:**	Site
		Lab ref.:	61595	**Description:**	Crushed STONE		

Sieve Size (mm)	% Passing
125	100
90	100
80	100
63	94
56	94
45	93
40	93
31.5	87
22.4	73
20	70
16	63
14	59
12.5	57
11.2	56
10	54
8	49
6.3	45
5.6	44
5	42
4	39
2	28
1	21
0.5	16
0.25	13
0.125	10
0.063	8.2



Comments: Test carried out in accordance with **BS EN 933-1: 2012**

Kiwa CMT Testing

UKAS TESTING 0529

celtest
INDEPENDENT MATERIALS TESTING I DIAMOND DRILLING & SAWING

Kiwa CMT (Testing) Ltd
Prime Parkway,
Prime Enterprise Park
Derby
DE1 3QB

Date: 11 August 2020
Test Report Ref: TR 744534A
Revision1
Order No: 26694

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the laboratory reference density and water content of unbound and hydraulically bound mixtures - Vibrating Hammer Method in accordance with **BS EN 13286-4: 2003**

SAMPLE DETAILS:

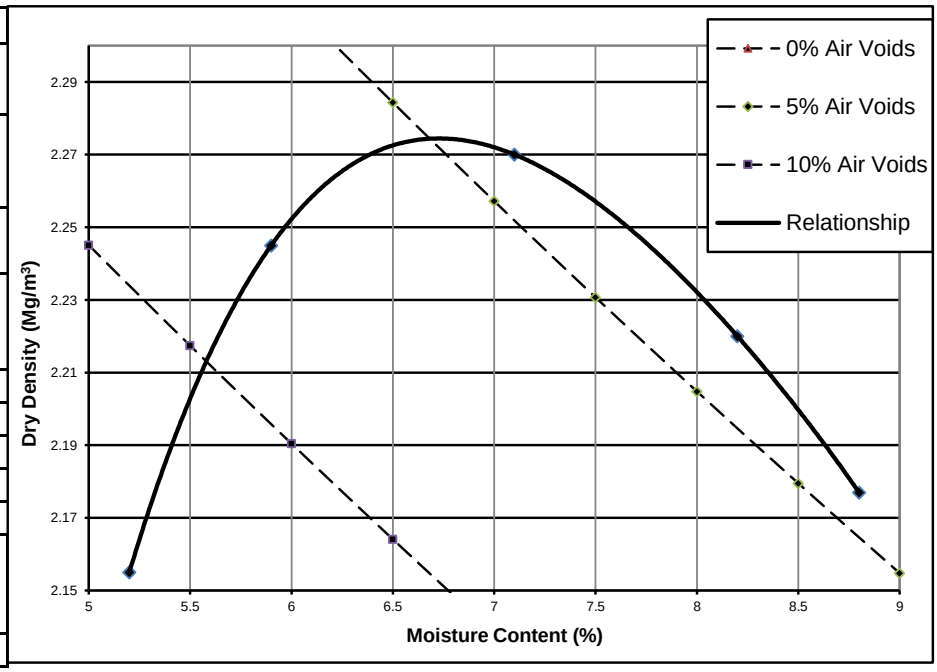
Certificate of sampling received:	**No**	Name of Source:	**Rockingham Hub, Mitchell Rd, Corby**
Laboratory Ref. No:	**S88985**	Method of Sampling:	**Unknown**
Client Ref. :	**61595/SP1 S4**	Sampled By:	**Client**
Date and Time of Sampling:	**Unknown**	Tested By:	**RWT**
Date of Receipt at Lab:	**24/07/2020**		
Date of Start of Test:	**07/08/2020**		
Sampling Location:	**Rockingham Hub, Mitchell Rd, Corby**		
Soil Description:	**Granular Down Material**		

RESULTS:

Particle Density: (Assumed) **2.85Mg/m3**

Retained on 40.0mm Sieve(%):	**6**

Moisture Content (%)	Dry Density Mg/m^3
5.2	2.16
5.9	2.25
7.1	2.27
8.2	2.22
8.8	2.18
Optimum Moisture Content (%)	**Maximum Dry Density Mg/m^3**
6.6	**2.27**



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These results relate only to the items tested.

Comments:
Client reference changed

Report checked and approved by:
Dyfed Jones
Aggregate Team Coordinator

celtest
INDEPENDENT MATERIALS TESTING I DIAMOND DRILLING & SAWING

Kiwa CMT (Testing) Ltd
Prime Parkway,
Prime Enterprise Park
Derby
DE1 3QB

Date: 11 August 2020
Test Report Ref: TR 744535a
Revision1
Order No: 26694

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the laboratory reference density and water content of unbound and hydraulically bound mixtures - Vibrating Hammer Method in accordance with **BS EN 13286-4: 2003**

SAMPLE DETAILS:

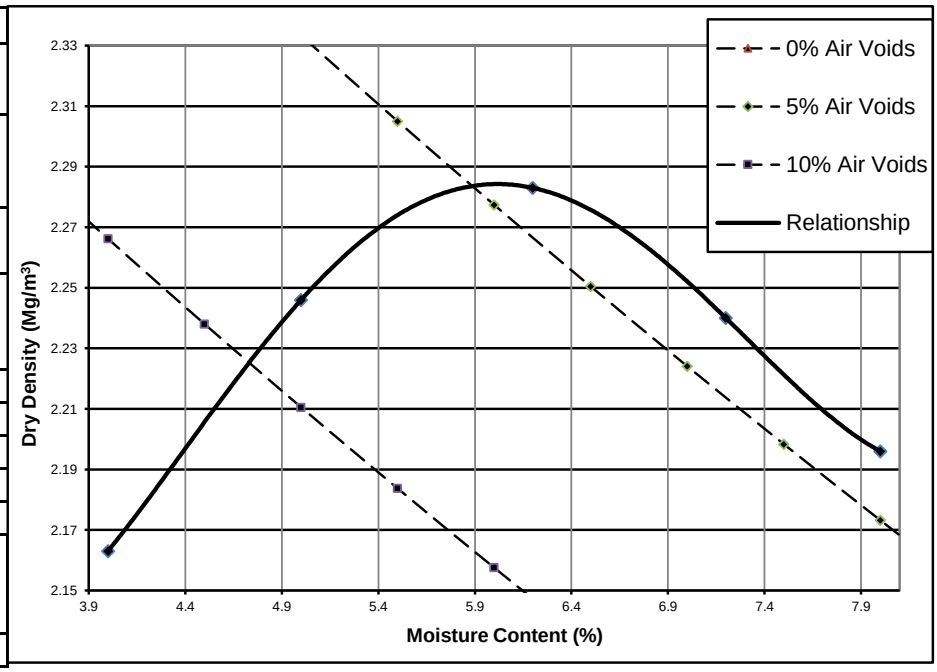
Certificate of sampling received:	**No**	Name of Source:	**Rockingham Hub, Mitchell Rd, Corby**
Laboratory Ref. No:	**S88985**	Method of Sampling:	**Unknown**
Client Ref. :	**61595/SP1 S5**	Sampled By:	**Client**
Date and Time of Sampling:	**Unknown**	Tested By:	**RWT**
Date of Receipt at Lab:	**24/07/2020**		
Date of Start of Test:	**07/08/2020**		
Sampling Location:	**Rockingham Hub, Mitchell Rd, Corby**		
Soil Description:	**Granular Down Material**		

RESULTS:

Particle Density: **2.8Mg/m3** (Assumed)

Retained on 40.0mm Sieve(%):	**14**

Moisture Content (%)	Dry Density Mg/m^3
4.0	2.16
5.0	2.25
6.2	2.28
7.2	2.24
8.0	2.20
Optimum Moisture Content (%)	**Maximum Dry Density Mg/m^3**
6.0	**2.28**



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Comments:
Clinet referece changed

Report checked and approved by:
Dyfed Jones
Aggregate Team Coordinator

UKAS TESTING 0494

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INDEPENDENT MATERIALS TESTING I DIAMOND DRILLING & SAWING

Kiwa CMT (Testing) Ltd
Prime Parkway,
Prime Enterprise Park
Derby
DE1 3QB

Date: 11 August 2020
Test Report Ref: TR 744536a
Revision 1
Order No: 26694

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the laboratory reference density and water content of unbound and hydraulically bound mixtures - Vibrating Hammer Method in accordance with **BS EN 13286-4: 2003**

SAMPLE DETAILS:

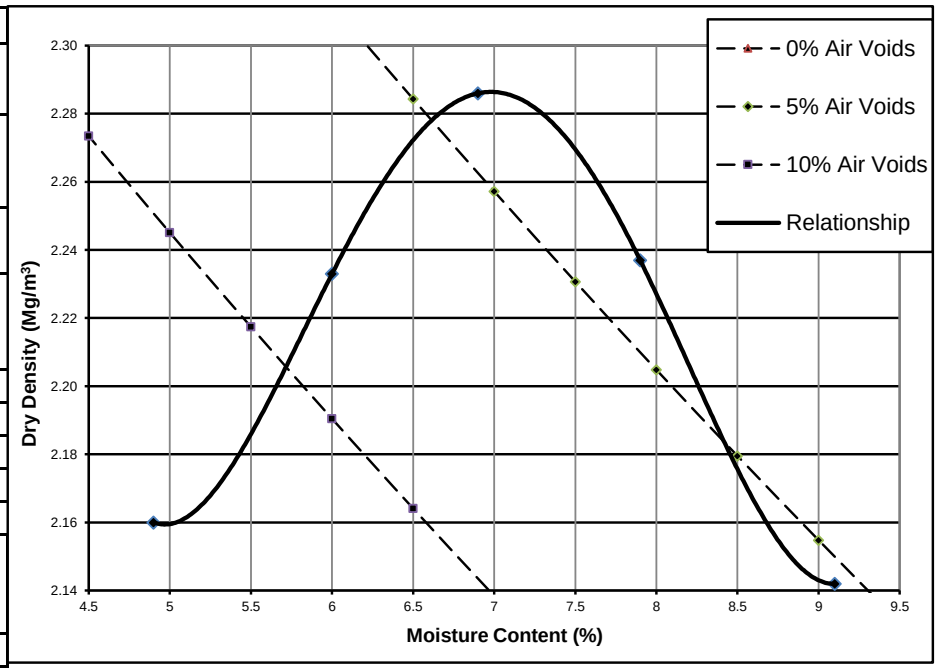
Certificate of sampling received:	**No**	Name of Source:	**Rockingham Hub, Mitchell Rd, Corby**
Laboratory Ref. No:	**S88985**	Method of Sampling:	**Unknown**
Client Ref. :	**61595/SP1 S6**	Sampled By:	**Client**
Date and Time of Sampling:	**Unknown**	Tested By:	**RWT**
Date of Receipt at Lab:	**24/07/2020**		
Date of Start of Test:	**07/08/2020**		
Sampling Location:	**Rockingham Hub, Mitchell Rd, Corby**		
Soil Description:	**Granular Down Material**		

RESULTS:

Particle Density: **2.85Mg/m3** (Assumed)

Retained on 40.0mm Sieve(%):	**5**

Moisture Content (%)	Dry Density Mg/m^3
4.9	2.16
6.0	2.23
6.9	2.29
7.9	2.24
9.1	2.14
Optimum Moisture Content (%)	**Maximum Dry Density Mg/m^3**
7.0	**2.28**



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These results relate only to the items tested.

Comments:
Clinet reference changed

Report checked and approved by:
Dyfed Jones
Aggregate Team Coordinator

Kiwa CMT

Kiwa CMT Testing
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DE1 3QB

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F +44 (0)1332 602607
E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
DE72 3RX

Date: 29th September 2020

Lab Ref: 61802

Originator: Scott Spencer

Order Ref: IV.131.20

Site: Mitchell Road
Rockingham
Corby

Samples:

3No. samples weighing approximately between 120-150kg each were recovered by Kiwa CMT Testing from the above site on 31st July 2020. Sampling certificates are available if required.

Requirements:

Determine the Particle Size Distribution of 3No. samples in accordance with **BS EN 933-1: 2012** in order to establish if they conform to 6F5 specifications.

Results:

The individual result sheets may be viewed on pages 2 to 4 of this report.

Kiwa CMT Testing

Author: D. Spencer
Technical Administrator

Checked and Approved by: R. Cartlidge
Departmental Manager

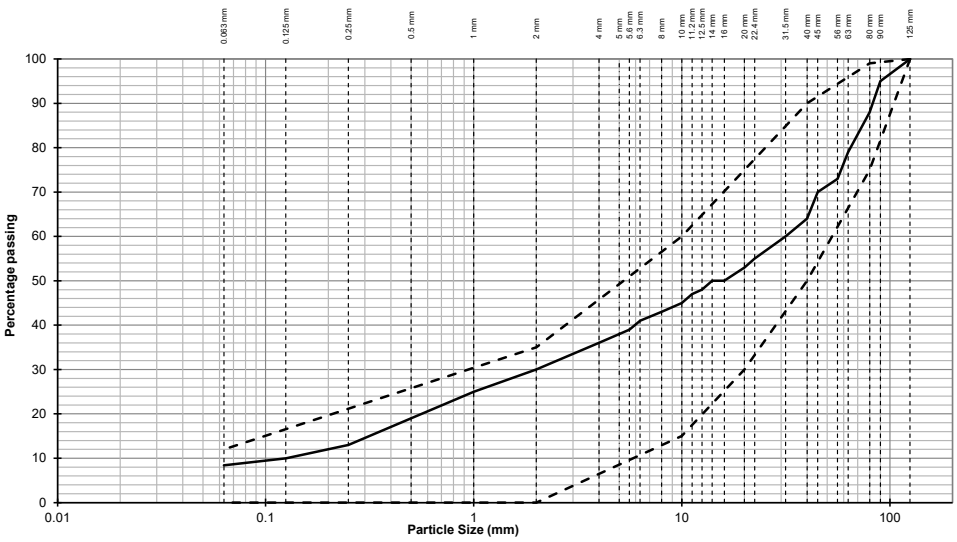
UKAS TESTING
0529

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental Ltd	**Sample ref:**	61802/Limestone Stockpile S1	**Date Tested:**	05.08 - 25.09.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	42kg Approx.	**Source:**	Site
		Lab ref.:	61802	**Description:**	Crushed STONE		

Sieve Size (mm)	% Passing	Specification Limits (6F5)	Pass
125	100	**100**	✔
90	95	-	-
80	88	**75-99**	✔
63	79	-	-
56	73	-	-
45	70	-	-
40	64	**50-90**	✔
31.5	60	-	-
22.4	55	-	-
20	53	**30-75**	✔
16	50	-	-
14	50	-	-
12.5	48	-	-
11.2	47	-	-
10	45	**15-60**	✔
8	43	-	-
6.3	41	-	-
5.6	39	-	-
5	38	-	-
4	36		
2	30	**0-35**	✔
1	25	-	-
0.5	19	-	-
0.25	13	-	-
0.125	10	-	-
0.063	8.4	**0-12**	✔
*40-20mm	11	**<=35**	✔
*20-10mm	8	**>=5**	✔



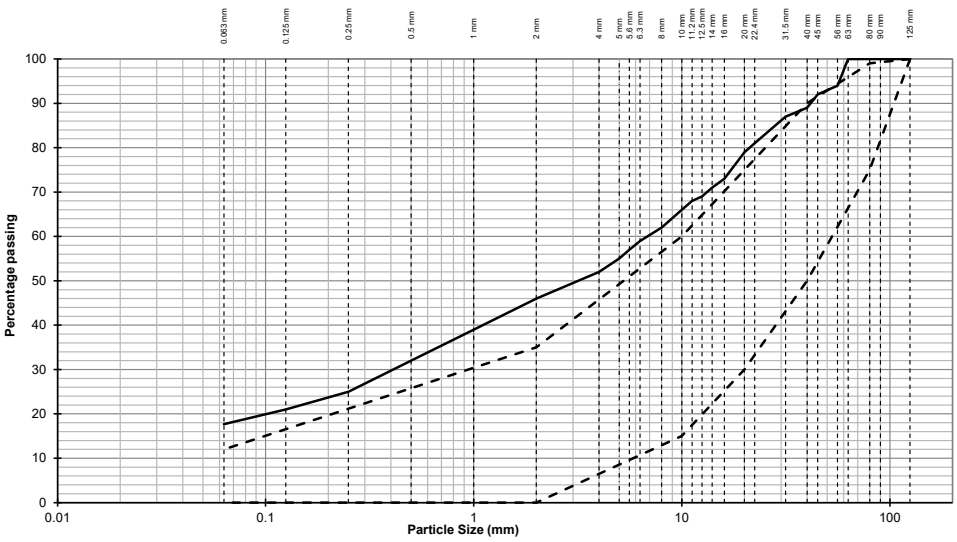
Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 6/1 of the Specification for Highway Works Series 600.
**Note percentage difference passing between 40mm & 20mm test sieve must be no greater than 35 & percentage difference passing between 20mm & 10mm test sieve must be no less than 5*

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental Ltd	**Sample ref:**	61802/Limestone Stockpile S2	**Date Tested:**	11.08 - 25.09.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	22kg Approx.	**Source:**	Site
		Lab ref.:	61802	**Description:**	Crushed STONE		

Sieve Size (mm)	% Passing	Specification Limits (6F5)	Pass
125	100	**100**	✔
90	100	-	-
80	100	**75-99****	✔
63	100	-	-
56	94	-	-
45	92	-	-
40	89	**50-90**	✔
31.5	87	-	-
22.4	81	-	-
20	79	**30-75**	✘
16	73	-	-
14	71	-	-
12.5	69	-	-
11.2	68	-	-
10	66	**15-60**	✘
8	62	-	-
6.3	59	-	-
5.6	57	-	-
5	55	-	-
4	52		
2	46	**0-35**	✘
1	39	-	-
0.5	32	-	-
0.25	25	-	-
0.125	21	-	-
0.063	17.7	**0-12**	✘
*40-20mm	10	**<=35**	✔
*20-10mm	13	**>=5**	✔



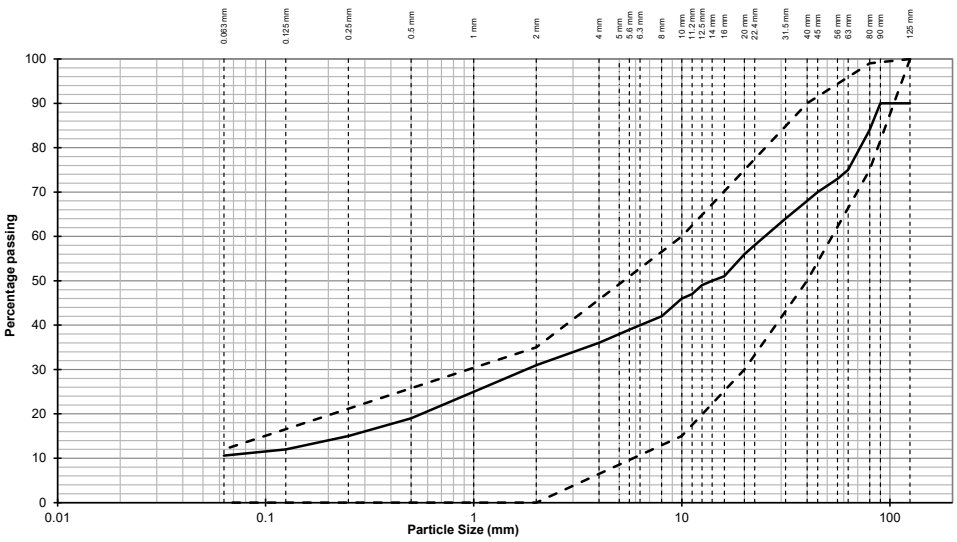
Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 6/1 of the Specification for Highway Works Series 600.
**Note percentage difference passing between 40mm & 20mm test sieve must be no greater than 35 & percentage difference passing between 20mm & 10mm test sieve must be no less than 5*
*** The inclusion of 99% in lieu of 100% is to ensure consistency and to prevent smaller size aggregate being classified as D sized aggregate. However, the percentage passing D may be greater than 99% by mass but in such cases the producer is required to document and declare the typical grading*

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental Ltd	**Sample ref:**	61802/Limestone Stockpile S3	**Date Tested:**	11.08 - 25.09.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	33kg Approx.	**Source:**	Site
		Lab ref.:	61802	**Description:**	Crushed STONE		

Sieve Size (mm)	% Passing	Specification Limits (6F5)	Pass
125	90	**100**	✗
90	90	-	-
80	84	**75-99**	✓
63	75	-	-
56	73	-	-
45	70	-	-
40	68	**50-90**	✓
31.5	64	-	-
22.4	58	-	-
20	56	**30-75**	✓
16	51	-	-
14	50	-	-
12.5	49	-	-
11.2	47	-	-
10	46	**15-60**	✓
8	42	-	-
6.3	40	-	-
5.6	39	-	-
5	38	-	-
4	36		
2	31	**0-35**	✓
1	25	-	-
0.5	19	-	-
0.25	15	-	-
0.125	12	-	-
0.063	10.6	**0-12**	✓
*40-20mm	12	**<=35**	✓
*20-10mm	10	**>=5**	✓



Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 6/1 of the Specification for Highway Works Series 600.
**Note percentage difference passing between 40mm & 20mm test sieve must be no greater than 35 & percentage difference passing between 20mm & 10mm test sieve must be no less than 5*

Kiwa CMT

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www.kiwa.co.uk/cmt

Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
Derbyshire
DE72 3RX

Date: 25th August 2020

Lab Ref: 61818

Originator: S. Spencer

Order Ref: TBC

Site: Rockingham Hub
Mitchell Road
Corby
NN17 5AF

Requirements:

Carry out various testing as specified by the client.

Results:

The individual result sheets may be viewed on pages 2 to 3 of this report.

Kiwa CMT Testing

Checked and Approved by: J. Eckford
Senior Geotechnical Technician

UKAS TESTING
0529

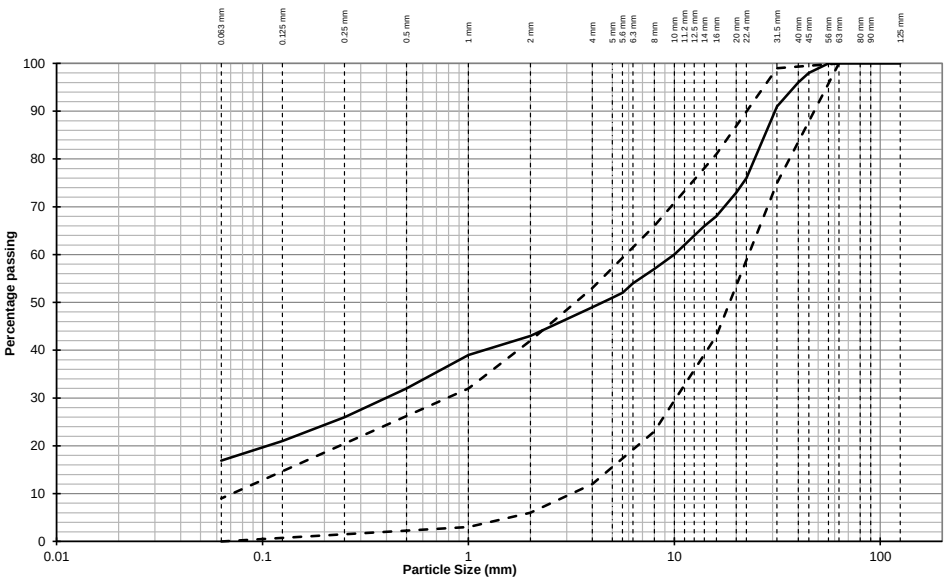
Kiwa CMT

Particle Size Distribution

Client: Ivy House
Site: Mitchell Road, Rockingham, Corby

Sample ref: Imported Stockpile Type1, B1
Sampling cert.: Available
Lab ref.: 61818
Date Tested: 10.08- 25.08.20
Sample size: 14kg Approx.
Description: Crushed Stone
Sampled by: Kiwa CMT
Source: Site

Sieve Size (mm)	% Passing	Specification Limits (Type 1)	Pass
125	100	-	-
90	100	-	-
80	100	-	-
63	100	**100**	✓
56	100	-	-
45	98	-	-
40	96	-	-
31.5	91	**75-99**	✓
22.4	76	-	-
20	73	-	-
16	68	**43-81**	✓
14	66	-	-
12.5	64	-	-
11.2	62	-	-
10	60	-	-
8	57	**23-66**	✓
6.3	54	-	-
5.6	52	-	-
5	51	-	-
4	49	**12-53**	✓
2	43	**6-42**	✗
1	39	**3-32**	✗
0.5	32	-	
0.25	26	-	
0.125	21	-	
0.063	16.9	**0-9**	✗



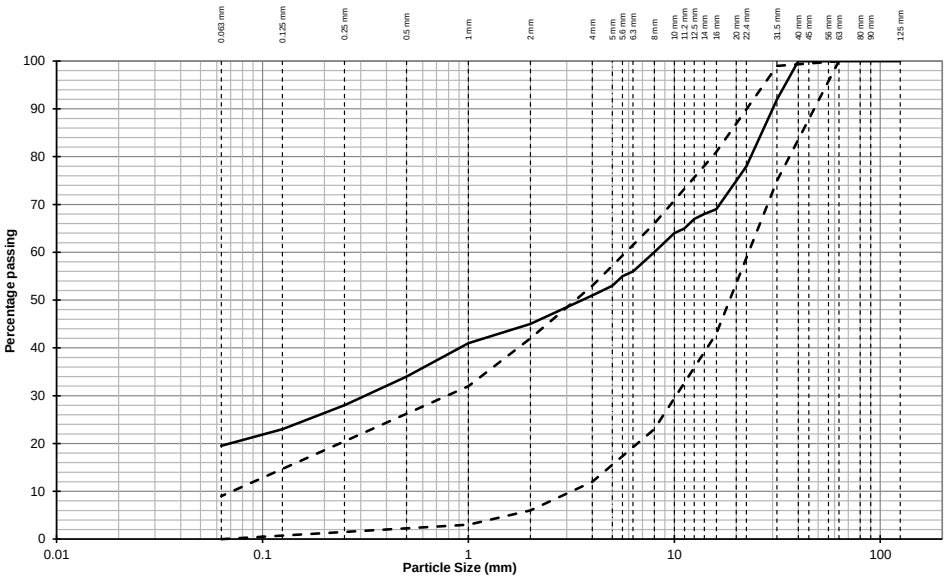
Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 8/5 of the Specification for Highway Works Series 800.

Particle Size Distribution

Client: Ivy House
Site: Mitchell Road, Rockingham, Corby

Sample ref: Imported Stockpile Type1, B2
Sampling cert.: Available
Lab ref.: 61818
Date Tested: 10.08- 25.08.20
Sample size: 12kg Approx.
Description: Crushed Stone
Sampled by: Kiwa CMT
Source: Site

Sieve Size (mm)	% Passing	Specification Limits (Type 1)	Pass
125	100	-	-
90	100	-	-
80	100	-	-
63	100	**100**	✓
56	100	-	-
45	100	-	-
40	100	-	-
31.5	92	**75-99**	✓
22.4	78	-	-
20	75	-	-
16	69	**43-81**	✓
14	68	-	-
12.5	67	-	-
11.2	65	-	-
10	64	-	-
8	60	**23-66**	✓
6.3	56	-	-
5.6	55	-	-
5	53	-	-
4	51	**12-53**	✓
2	45	**6-42**	✗
1	41	**3-32**	✗
0.5	34	-	
0.25	28	-	
0.125	23	-	
0.063	19.5	**0-9**	✗



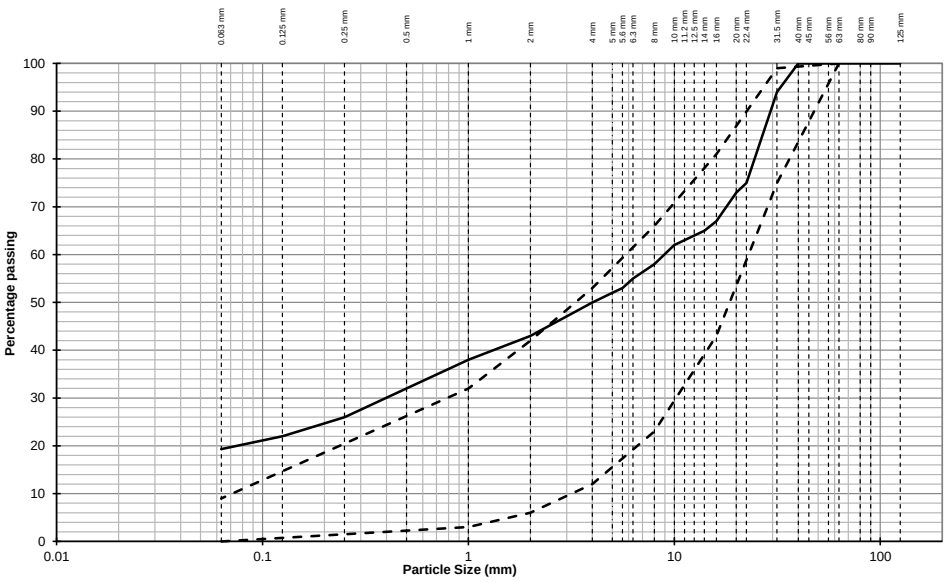
Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 8/5 of the Specification for Highway Works Series 800.

Kiwa CMT

Particle Size Distribution

Client:	Ivy House	**Sample ref:**	Imported Stockpile Type1, B3	**Date Tested:**	10.08- 25.08.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	12kg Approx.	**Source:**	Site
		Lab ref.:	61818	**Description:**	Crushed Stone		

Sieve Size (mm)	% Passing	Specification Limits (Type 1)	Pass
125	100	-	-
90	100	-	-
80	100	-	-
63	100	**100**	✓
56	100	-	-
45	100	-	-
40	100	-	-
31.5	94	**75-99**	✓
22.4	75	-	-
20	73	-	-
16	67	**43-81**	✓
14	65	-	-
12.5	64	-	-
11.2	63	-	-
10	62	-	-
8	58	**23-66**	✓
6.3	55	-	-
5.6	53	-	-
5	52	-	-
4	50	**12-53**	✓
2	43	**6-42**	✗
1	38	**3-32**	✗
0.5	32	-	
0.25	26	-	
0.125	22	-	
0.063	19.3	**0-9**	✗



Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 8/5 of the Specification for Highway Works Series 800.

Kiwa CMT

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E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
Derbyshire
DE72 3RX

Date: 22nd September 2020

Lab Ref: 61818

Originator: Scott Spencer

Order Ref: TBC

Site: Mitchell Road
Rockingham
Corby
NN17 5AF

Requirements:

Carry out various testing as specified by the client.

Results:

The individual result sheets may be viewed on pages 2 to 11 of this report.

Kiwa CMT Testing

Author: D. Spencer
Technical Administrator

Checked and Approved by: R. Cartlidge
Departmental Manager

Kiwa CMT

Certificate of Analysis for Plasticity Index & Water Content

Client: Ivy House Environmental Ltd

Site: Mitchell Road
Rockingham
Corby

Lab Ref: 61818

Date of Test: 10.08 - 12.08.20

Test Methods: **BS 1377: 1990: Part 2: Clauses 4.4 and 5 - Liquid Limit/Plastic Limit/Plasticity Index**
BS EN ISO 17892-1:2014 - Water Content

Results:

Sample Ref	Material Description	LL (%)	PL (%)	PI (%)	% Retained on 425µm	Modified PI (%)*	Soil Classification	WC (%)
61818/Imported Stockpile Type1 B1	Crushed STONE	Not requested						6.2
61818/Imported Stockpile Type1 B2	Crushed STONE	Not requested						7.6
61818/Imported Stockpile Type1 B3	Crushed STONE	Not requested						8.2

The samples tested were disturbed and in their natural condition.
* Modified plasticity index relates to BRE Digest 240.
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
WC = Water Content
BRE Digest 240 is not included in the UKAS schedule for this Laboratory.

Kiwa CMT Testing

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Kiwa CMT

Certificate of Analysis

Particle Density and Water Absorption in accordance with BS 1097: Part 6: 2013: Clause 8: Pyknometer Method for Aggregate Particles Between 4.0mm & 31.5mm

Client: Ivy House Environmental

Site: Mitchell Road, Rockingham, Corby

Lab Ref: 61818

Sample Ref: Imported Stockpile, Type1, B1

Date of Test: 26th August 2020

Requirements:

Determine the Particle Density and Water Absorption in accordance with **BS EN 1097: Part 6: 2013: Clause 8**.

Results:

Sample Fraction Size (approx.)	Apparent Particle Density (Mg/m^3)	Particle Density on an Oven Dried Basis (Mg/m^3)	Particle Density on a Saturated and Surface Dry Basis (Mg/m^3)	Water Absorption (% of Dry Mass)
4.0-31.5mm	**2.67**	**2.24**	**2.40**	**7.11**

Kiwa CMT Testing

Kiwa CMT

Certificate of Analysis

Particle Density and Water Absorption in accordance with BS 1097: Part 6: 2013: Clause 8: Pyknometer Method for Aggregate Particles Between 4.0mm & 31.5mm

Client: Ivy House Environmental

Site: Mitchell Road, Rockingham, Corby

Lab Ref: 61818

Sample Ref: Imported Stockpile, Type1, B2

Date of Test: 26th August 2020

Requirements:

Determine the Particle Density and Water Absorption in accordance with **BS EN 1097: Part 6: 2013: Clause 8**.

Results:

Sample Fraction Size (approx.)	Apparent Particle Density (Mg/m^3)	Particle Density on an Oven Dried Basis (Mg/m^3)	Particle Density on a Saturated and Surface Dry Basis (Mg/m^3)	Water Absorption (% of Dry Mass)
4.0-31.5mm	**2.67**	**2.27**	**2.42**	**6.54**

Kiwa CMT Testing

Kiwa CMT

Certificate of Analysis

Particle Density and Water Absorption in accordance with BS 1097: Part 6: 2013: Clause 8: Pyknometer Method for Aggregate Particles Between 4.0mm & 31.5mm

Client: Ivy House Environmental

Site: Mitchell Road, Rockingham, Corby

Lab Ref: 61818

Sample Ref: Imported Stockpile, Type1, B3

Date of Test: 26th August 2020

Requirements:

Determine the Particle Density and Water Absorption in accordance with **BS EN 1097: Part 6: 2013: Clause 8**.

Results:

Sample Fraction Size (approx.)	Apparent Particle Density (Mg/m^3)	Particle Density on an Oven Dried Basis (Mg/m^3)	Particle Density on a Saturated and Surface Dry Basis (Mg/m^3)	Water Absorption (% of Dry Mass)
4.0-31.5mm	**2.66**	**2.26**	**2.41**	**6.77**

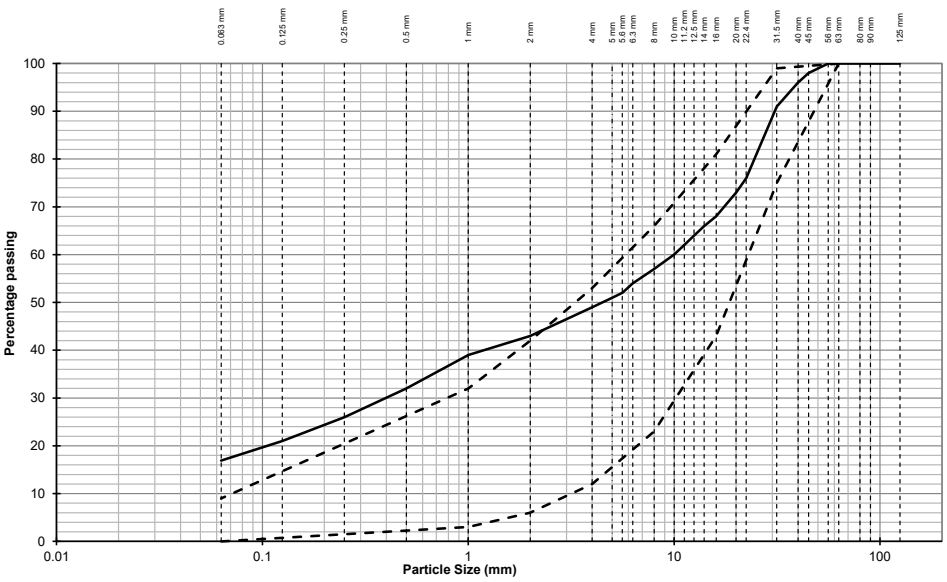
Kiwa CMT Testing

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental	**Sample ref:**	Imported Stockpile Type1, B1	**Date Tested:**	10.08- 25.08.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	14kg Approx.	**Source:**	Site
		Lab ref.:	61818	**Description:**	Crushed Stone		

Sieve Size (mm)	% Passing	Specification Limits (Type 1)	Pass
125	100	-	-
90	100	-	-
80	100	-	-
63	100	**100**	✓
56	100	-	-
45	98	-	-
40	96	-	-
31.5	91	**75-99**	✓
22.4	76	-	-
20	73	-	-
16	68	**43-81**	✓
14	66	-	-
12.5	64	-	-
11.2	62	-	-
10	60	-	-
8	57	**23-66**	✓
6.3	54	-	-
5.6	52	-	-
5	51	-	-
4	49	**12-53**	✓
2	43	**6-42**	✗
1	39	**3-32**	✗
0.5	32	-	
0.25	26	-	
0.125	21	-	
0.063	16.9	**0-9**	✗



Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 8/5 of the Specification for Highway Works Series 800.

Kiwa CMT Testing

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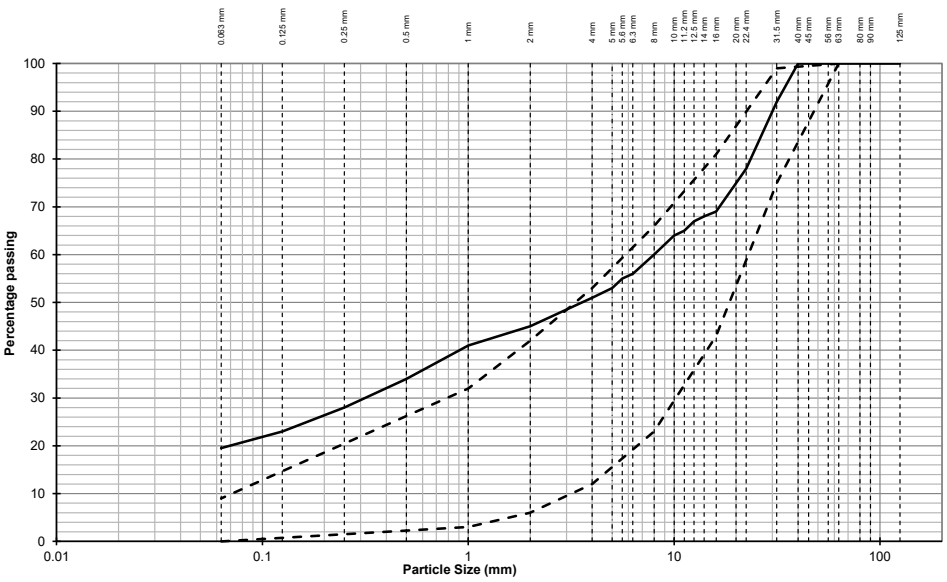
Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental	**Sample ref:**	Imported Stockpile Type1, B2	**Date Tested:**	10.08- 25.08.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	12kg Approx.	**Source:**	Site
		Lab ref.:	61818	**Description:**	Crushed Stone		

Sieve Size (mm)	% Passing	Specification Limits (Type 1)	Pass
125	100	-	-
90	100	-	-
80	100	-	-
63	100	**100**	✓
56	100	-	-
45	100	-	-
40	100	-	-
31.5	92	**75-99**	✓
22.4	78	-	-
20	75	-	-
16	69	**43-81**	✓
14	68	-	-
12.5	67	-	-
11.2	65	-	-
10	64	-	-
8	60	**23-66**	✓
6.3	56	-	-
5.6	55	-	-
5	53	-	-
4	51	**12-53**	✓
2	45	**6-42**	✗
1	41	**3-32**	✗
0.5	34	-	
0.25	28	-	
0.125	23	-	
0.063	19.5	**0-9**	✗



Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 8/5 of the Specification for Highway Works Series 800.

Kiwa CMT Testing

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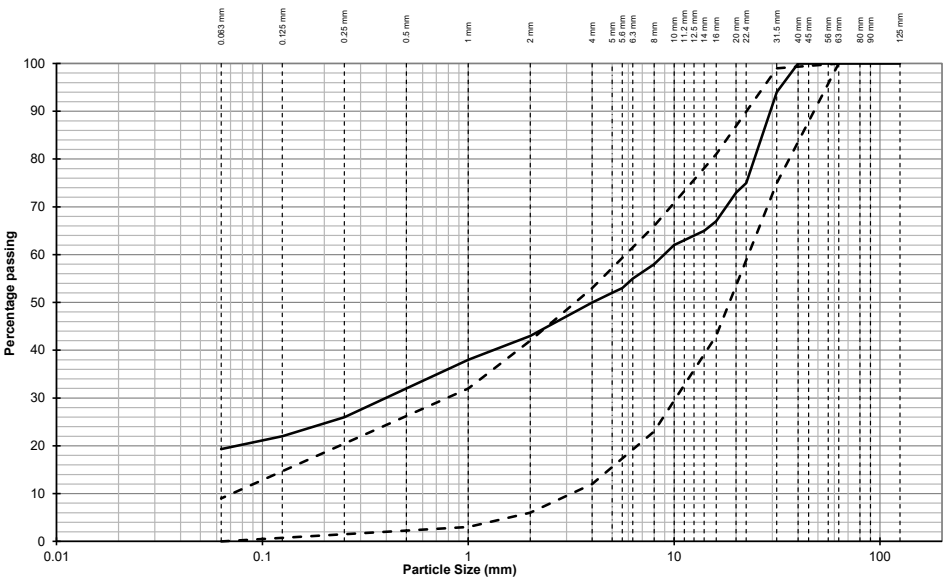
Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental	**Sample ref:**	Imported Stockpile Type1, B3	**Date Tested:**	10.08- 25.08.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	12kg Approx.	**Source:**	Site
		Lab ref.:	61818	**Description:**	Crushed Stone		

Sieve Size (mm)	% Passing	Specification Limits (Type 1)	Pass
125	100	-	-
90	100	-	-
80	100	-	-
63	100	**100**	✓
56	100	-	-
45	100	-	-
40	100	-	-
31.5	94	**75-99**	✓
22.4	75	-	-
20	73	-	-
16	67	**43-81**	✓
14	65	-	-
12.5	64	-	-
11.2	63	-	-
10	62	-	-
8	58	**23-66**	✓
6.3	55	-	-
5.6	53	-	-
5	52	-	-
4	50	**12-53**	✓
2	43	**6-42**	✗
1	38	**3-32**	✗
0.5	32	-	
0.25	26	-	
0.125	22	-	
0.063	19.3	**0-9**	✗



Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 8/5 of the Specification for Highway Works Series 800.

Kiwa CMT Testing

UKAS TESTING
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celtest
INDEPENDENT MATERIALS TESTING I DIAMOND DRILLING & SAWING

Kiwa CMT (Testing) Ltd
Prime Parkway,
Prime Enterprise Park
Derby
DE1 3QB

Date: 22 September 2020
Test Report Ref: TR 747805

Order No: 27163

Contract: Ivy House, Corby.

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the laboratory reference density and water content of unbound and hydraulically bound mixtures - Vibrating Hammer Method in accordance with **BS EN 13286-4: 2003**

SAMPLE DETAILS:

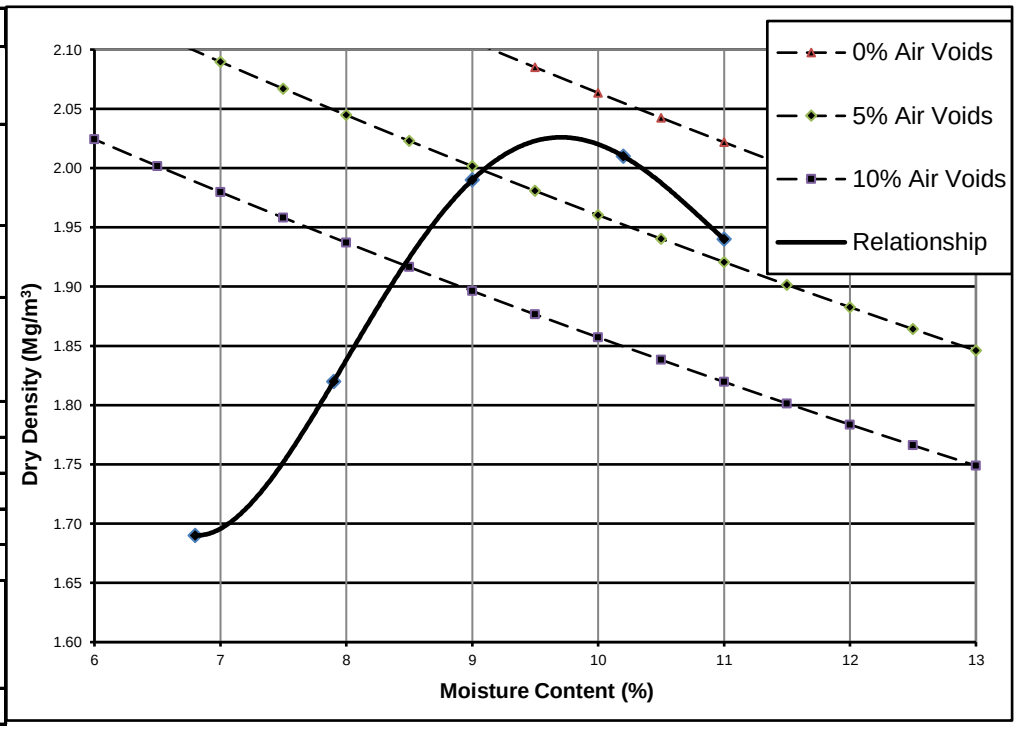
Certificate of sampling received:	**No**	Name of Source:	**Mitchell Road , Corby**
Laboratory Ref. No:	**S89384**	Method of Sampling:	**Unknown**
Client Ref. :	**61818/IMPSP/B1**	Sampled By:	**Client**
Date and Time of Sampling:	**Unknown**	Tested By:	**GJ**
Date of Receipt at Lab:	**12/08/2020**		
Date of Start of Test:	**12/09/2020**		
Sampling Location:	**Unknown**		
Soil Description:	**Imported Type 1**		

RESULTS:

Particle Density: (Assumed) **2.6Mg/m3**

Retained on 40.0mm Sieve(%):	**1**

Moisture Content (%)	Dry Density Mg/m^3
6.8	1.69
7.9	1.82
9.0	1.99
10.2	2.01
11.0	1.94
Optimum Moisture Content (%)	**Maximum Dry Density Mg/m^3**
9.6	**2.03**



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These results relate only to the items tested.

Comments:
None

Report checked and approved by:

Dyfed Jones
Aggregate Team Coordinator

UKAS TESTING 0494

celtest
INDEPENDENT MATERIALS TESTING I DIAMOND DRILLING & SAWING

Kiwa CMT (Testing) Ltd
Prime Parkway,
Prime Enterprise Park
Derby
DE1 3QB

Date: 22 September 2020
Test Report Ref: TR 747806

Order No: 27163

Contract: Ivy House, Corby.

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the laboratory reference density and water content of unbound and hydraulically bound mixtures - Vibrating Hammer Method in accordance with **BS EN 13286-4: 2003**

SAMPLE DETAILS:

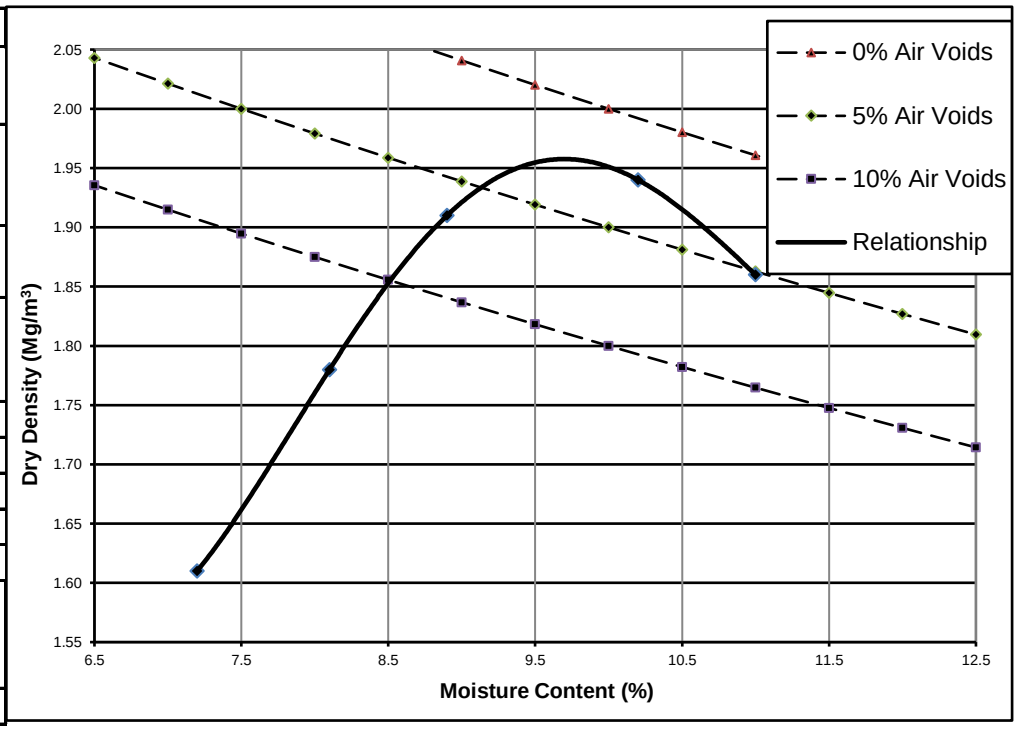
Certificate of sampling received:	**No**	Name of Source:	**Mitchell Road , Corby**
Laboratory Ref. No:	**S89384**	Method of Sampling:	**Unknown**
Client Ref. :	**61818/IMPSP/B2**	Sampled By:	**Client**
Date and Time of Sampling:	**Unknown**	Tested By:	**JJ**
Date of Receipt at Lab:	**12/08/2020**		
Date of Start of Test:	**12/09/2020**		
Sampling Location:	**Unknown**		
Soil Description:	**Imported Type 1**		

RESULTS:

Particle Density: (Assumed) **2.5Mg/m3**

Retained on 40.0mm Sieve(%):	**1**

Moisture Content (%)	Dry Density Mg/m^3
7.2	1.61
8.1	1.78
8.9	1.91
10.2	1.94
11.0	1.86
Optimum Moisture Content (%)	**Maximum Dry Density Mg/m^3**
10.0	**1.95**



This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:
None

Report checked and approved by:

Dyfed Jones
Aggregate Team Coordinator

UKAS TESTING 0494

celtest
INDEPENDENT MATERIALS TESTING I DIAMOND DRILLING & SAWING

Kiwa CMT (Testing) Ltd
Prime Parkway,
Prime Enterprise Park
Derby
DE1 3QB

Date: 22 September 2020
Test Report Ref: TR 747807

Order No: 27163

Contract: Ivy House, Corby.

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the laboratory reference density and water content of unbound and hydraulically bound mixtures - Vibrating Hammer Method in accordance with **BS EN 13286-4: 2003**

SAMPLE DETAILS:

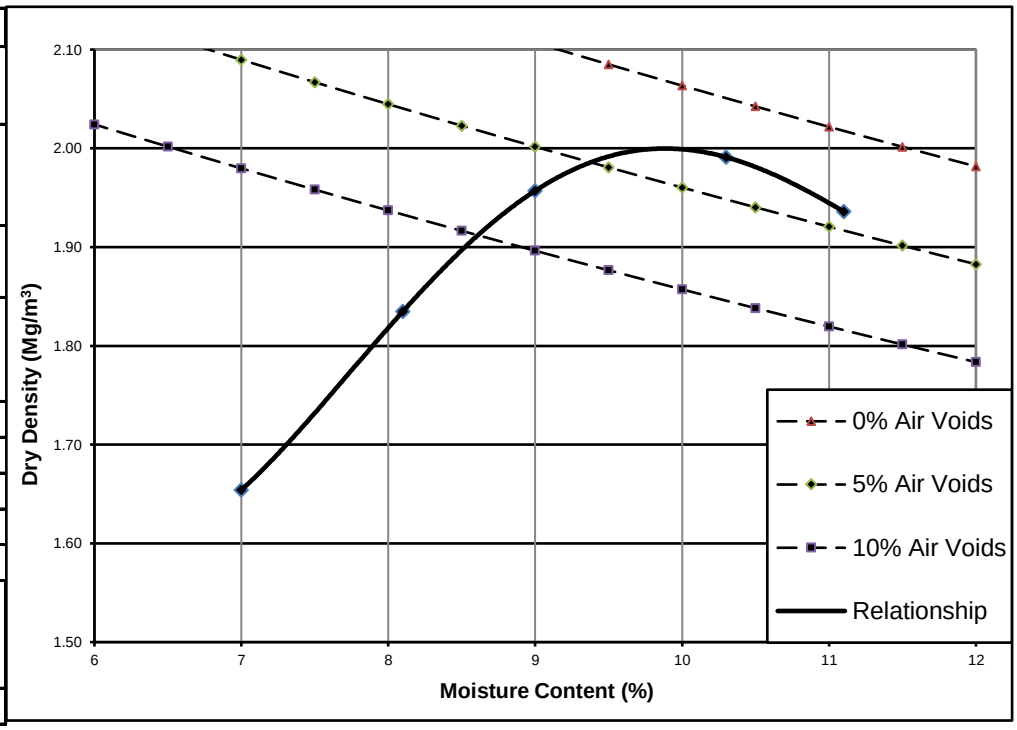
Certificate of sampling received:	**No**	Name of Source:	**Mitchell Road , Corby**
Laboratory Ref. No:	**S89384**	Method of Sampling:	**Unknown**
Client Ref. :	**61818/IMPSP/B3**	Sampled By:	**Client**
Date and Time of Sampling:	**Unknown**	Tested By:	**GJ**
Date of Receipt at Lab:	**12/08/2020**		
Date of Start of Test:	**17/09/2020**		
Sampling Location:	**Unknown**		
Soil Description:	**Imported Type 1**		

RESULTS:

Particle Density: (Assumed) **2.6Mg/m3**

Retained on 40.0mm Sieve(%):	**1**

Moisture Content (%)	Dry Density Mg/m^3
7.0	1.65
8.1	1.84
9.0	1.96
10.3	1.99
11.1	1.94
Optimum Moisture Content (%)	**Maximum Dry Density Mg/m^3**
9.8	**2.00**



This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:
None

Report checked and approved by:

Dyfed Jones
Aggregate Team Coordinator

UKAS TESTING 0494

Kiwa CMT

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www.kiwa.co.uk/cmt

Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
Derbyshire
DE72 3RX

Date: 14th October 2020

Lab Ref: 61841

Originator: Scott Spencer

Order Ref: IV.131.20

Site: Mitchell Road
Rockingham
Corby
NN17 5AF

Samples:

3No. samples weighing approximately 30kg each were recovered by Kiwa CMT Testing from the above site on 3rd September 2020. Sampling certificates are available if required.

Requirements:

Determine the Particle Size Distribution of 3No. samples in accordance with **BS EN 933-1: 2012** in order to establish if they conform to Type 1 specifications.

Results:

The individual result sheets may be viewed on pages 2 to 4 of this report.

Kiwa CMT Testing

Author: D. Spencer
Technical Administrator

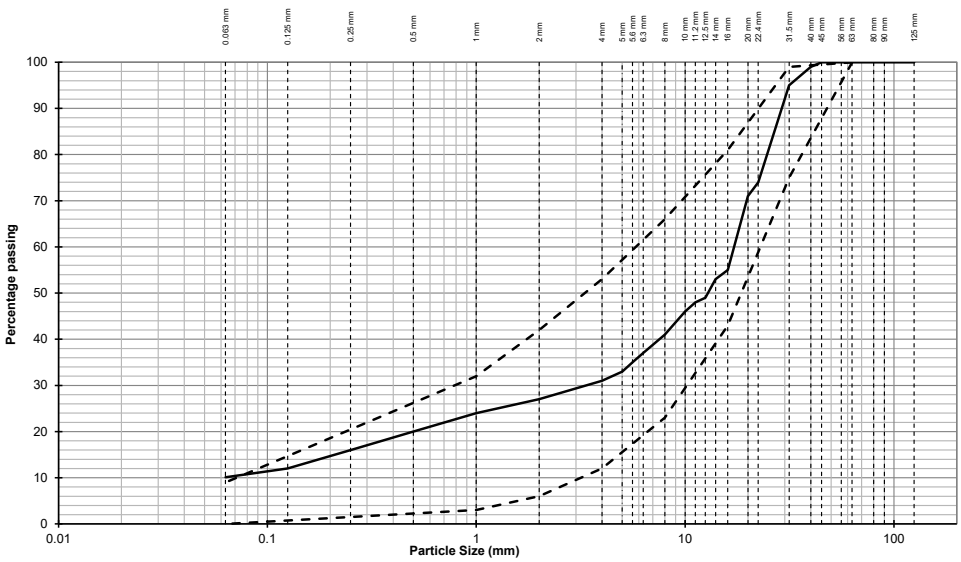
Checked and Approved by: R. Cartlidge
Departmental Manager

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental Ltd	**Sample ref:**	61841/B4 Imported Yellow Type 1	**Date Tested:**	13.09 - 13.10.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	11kg Approx.	**Source:**	Site
		Lab ref.:	61841	**Description:**	Crushed STONE		

Sieve Size (mm)	% Passing	Specification Limits (Type 1)	Pass
125	100	-	-
90	100	-	-
80	100	-	-
63	100	**100**	✔
56	100	-	-
45	100	-	-
40	99	-	-
31.5	95	**75-99**	✔
22.4	74	-	-
20	71	-	-
16	55	**43-81**	✔
14	53	-	-
12.5	49	-	-
11.2	48	-	-
10	46	-	-
8	41	**23-66**	✔
6.3	37	-	-
5.6	35	-	-
5	33	-	-
4	31	**12-53**	✔
2	27	**6-42**	✔
1	24	**3-32**	✔
0.5	20	-	
0.25	16	-	
0.125	12	-	
0.063	10.1	**0-9**	✘



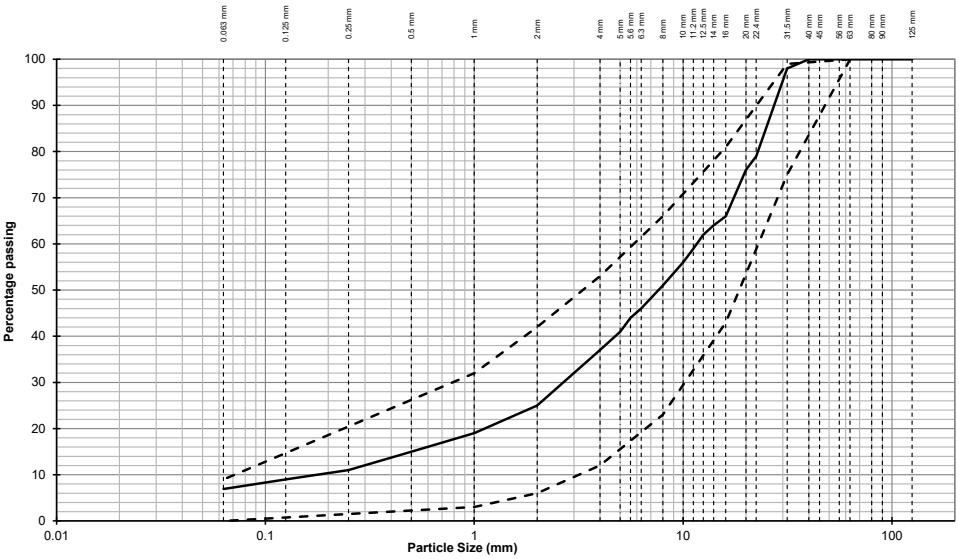
Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 8/5 of the Specification for Highway Works Series 800.

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental Ltd	**Sample ref:**	61841/B5 Imported Grey Type 1	**Date Tested:**	14.09 - 13.10.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	10kg Approx.	**Source:**	Site
		Lab ref.:	61841	**Description:**	Crushed STONE		

Sieve Size (mm)	% Passing	Specification Limits (Type 1)	Pass
125	100	-	-
90	100	-	-
80	100	-	-
63	100	**100**	✓
56	100	-	-
45	100	-	-
40	100	-	-
31.5	98	**75-99**	✓
22.4	79	-	-
20	76	-	-
16	66	**43-81**	✓
14	64	-	-
12.5	62	-	-
11.2	59	-	-
10	56	-	-
8	51	**23-66**	✓
6.3	46	-	-
5.6	44	-	-
5	41	-	-
4	37	**12-53**	✓
2	25	**6-42**	✓
1	19	**3-32**	✓
0.5	15	-	
0.25	11	-	
0.125	9	-	
0.063	6.9	**0-9**	✓



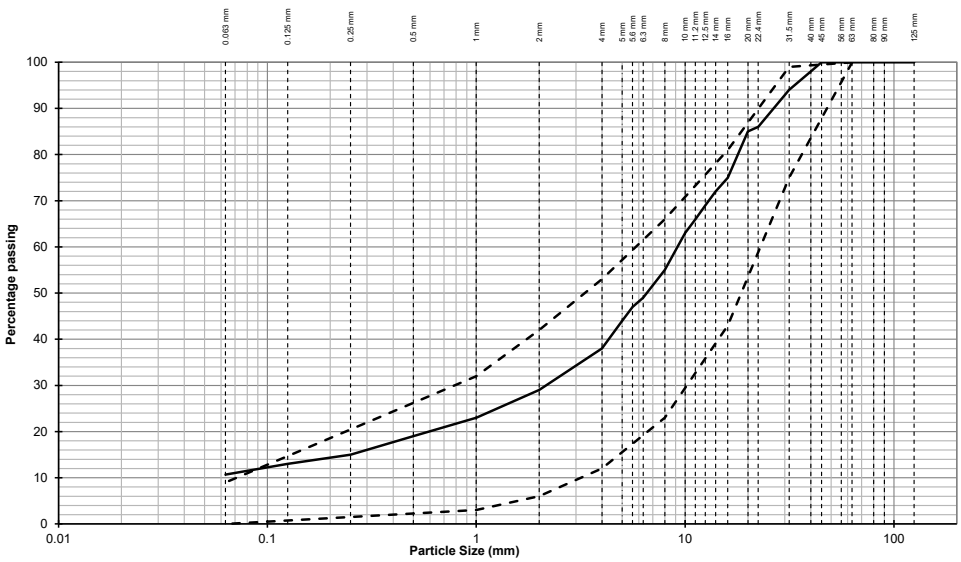
Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 8/5 of the Specification for Highway Works Series 800.

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental Ltd	**Sample ref:**	61841/B6 Imported Grey Type 1	**Date Tested:**	14.09 - 13.10.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	10kg Approx.	**Source:**	Site
		Lab ref.:	61841	**Description:**	Crushed STONE		

Sieve Size (mm)	% Passing	Specification Limits (Type 1)	Pass
125	100	-	-
90	100	-	-
80	100	-	-
63	100	**100**	✔
56	100	-	-
45	100	-	-
40	98	-	-
31.5	94	**75-99**	✔
22.4	86	-	-
20	85	-	-
16	75	**43-81**	✔
14	72	-	-
12.5	69	-	-
11.2	66	-	-
10	63	-	-
8	55	**23-66**	✔
6.3	49	-	-
5.6	47	-	-
5	44	-	-
4	38	**12-53**	✔
2	29	**6-42**	✔
1	23	**3-32**	✔
0.5	19	-	
0.25	15	-	
0.125	13	-	
0.063	10.7	**0-9**	✘



Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 8/5 of the Specification for Highway Works Series 800.

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Derby
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www.kiwa.co.uk/cmt

Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
Derbyshire
DE72 3RX

Date: 13th October 2020

Lab Ref: 62051

Originator: Scott Spencer

Order Ref: IV.131.20

Site: Mitchell Road
Rockingham
Corby
NN17 5AF

Samples:

2No. samples weighing approximately 30kg each were recovered by Kiwa CMT Testing from the above site on 10th September 2020. Sampling certificates are available if required.

Requirements:

Determine the Particle Size Distribution of 2No. samples in accordance with **BS EN 933-1: 2012** in order to establish if they conform to Type 1 specifications.

Results:

The individual result sheets may be viewed on pages 2 and 3 of this report.

Kiwa CMT Testing

Author: D. Spencer
Technical Administrator

Checked and Approved by: R. Cartlidge
Departmental Manager

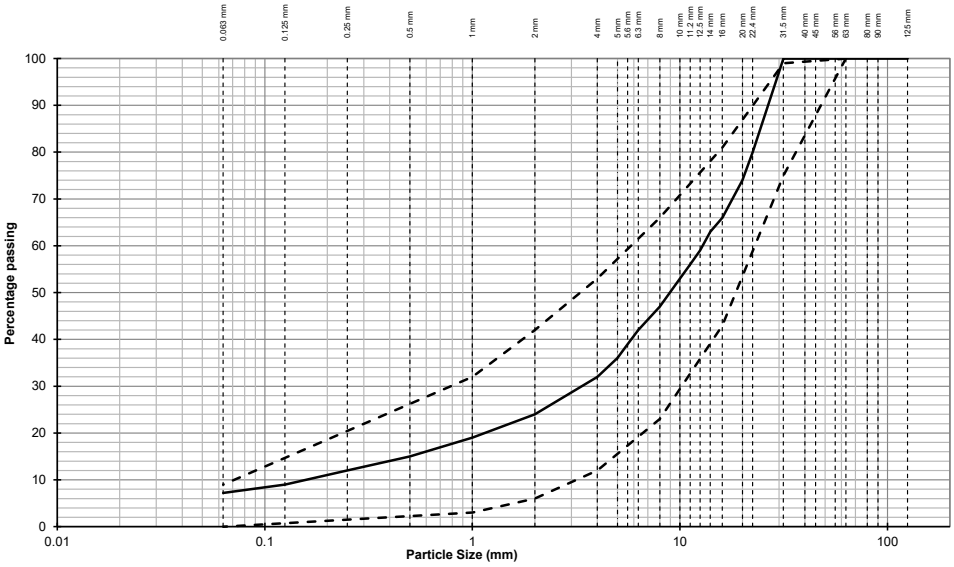
UKAS TESTING
0529

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental Ltd	**Sample ref:**	62051/B7 Imported Grey Type 1	**Date Tested:**	14.09 - 13.10.20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	13kg Approx.	**Source:**	Site
		Lab ref.:	62051	**Description:**	Crushed STONE		

Sieve Size (mm)	% Passing	Specification Limits (Type 1)	Pass
125	100	-	-
90	100	-	-
80	100	-	-
63	100	**100**	✓
56	100	-	-
45	100	-	-
40	100	-	-
31.5	100	**75-99**	✗
22.4	80	-	-
20	74	-	-
16	66	**43-81**	✓
14	63	-	-
12.5	59	-	-
11.2	56	-	-
10	53	-	-
8	47	**23-66**	✓
6.3	42	-	-
5.6	39	-	-
5	36	-	-
4	32	**12-53**	✓
2	24	**6-42**	✓
1	19	**3-32**	✓
0.5	15	-	
0.25	12	-	
0.125	9	-	
0.063	7.2	**0-9**	✓



Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 8/5 of the Specification for Highway Works Series 800.
Information marked by ^ supplied by the client can affect the validity of the results. These apply only to the locations provided.

Kiwa CMT

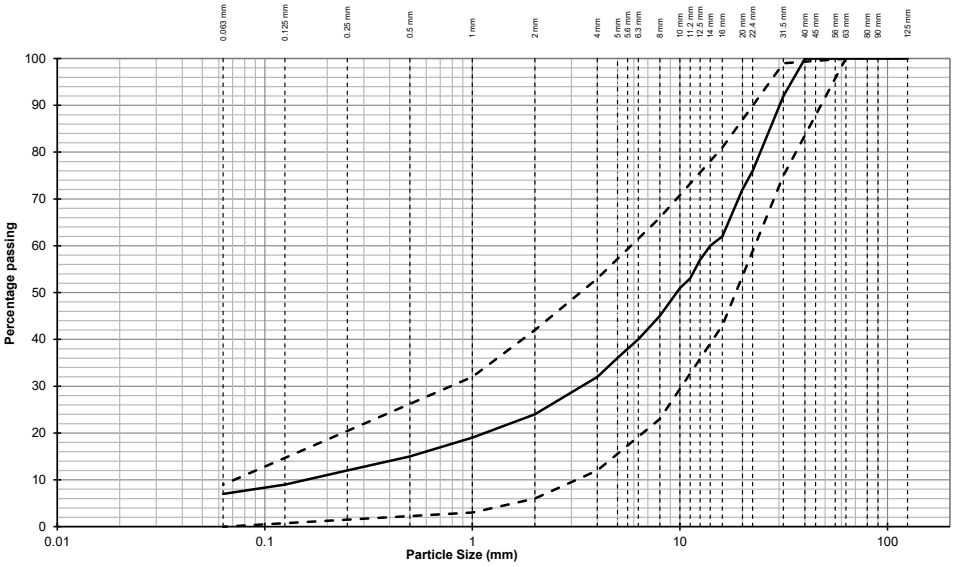
Particle Size Distribution

Client:	Ivy House Environmental Ltd	**Sample ref:**	62051/B8 Imported Grey Type 1	**Date Tested:**	14.09 - 13.10.20
Site:	Mitchell Road Rockingham Corby	**Sampling cert.:**	Available	**Sample size:**	13kg Approx.
		Lab ref.:	62051	**Description:**	Crushed STONE

Sampled by: Kiwa CMT

Source: Site

Sieve Size (mm)	% Passing	Specification Limits (Type 1)	Pass
125	100	-	-
90	100	-	-
80	100	-	-
63	100	**100**	✓
56	100	-	-
45	100	-	-
40	100	-	-
31.5	92	**75-99**	✓
22.4	76	-	-
20	72	-	-
16	62	**43-81**	✓
14	60	-	-
12.5	57	-	-
11.2	53	-	-
10	51	-	-
8	45	**23-66**	✓
6.3	40	-	-
5.6	38	-	-
5	36	-	-
4	32	**12-53**	✓
2	24	**6-42**	✓
1	19	**3-32**	✓
0.5	15	-	
0.25	12	-	
0.125	9	-	
0.063	7.0	**0-9**	✓



Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 8/5 of the Specification for Highway Works Series 800.
Information marked by ^ supplied by the client can affect the validity of the results. These apply only to the locations provided.

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www.kiwa.co.uk/cmt

Client: Ivy House Environmental Ltd.
Scotland Farm
Far Lane
Ockbrook
Derby
DE72 3RX

Date: 16th November 2020

Lab Ref: 62090

Originator: Scott

Order Ref: Verbal

Site: Mitchell Road, Corby NN17 5AF

Samples:

2No. samples weighing approximately 20kg each were sampled by Kiwa CMT Testing on 20th October 2020. Sampling certificates are available on request.

Requirements:

Determine Particle Size Distribution in accordance with **BS EN 933-1: 2012** of 2No. samples, in order to establish if they conform to SHW Type 1 specifications.

Results:

The individual result sheets may be viewed on pages 2 to 3 of this report and test results apply to the samples as received.

Kiwa CMT Testing

Author: L Anaz
Administrator

Checked and Approved by: J Eckford
Senior Geotechnical Technician

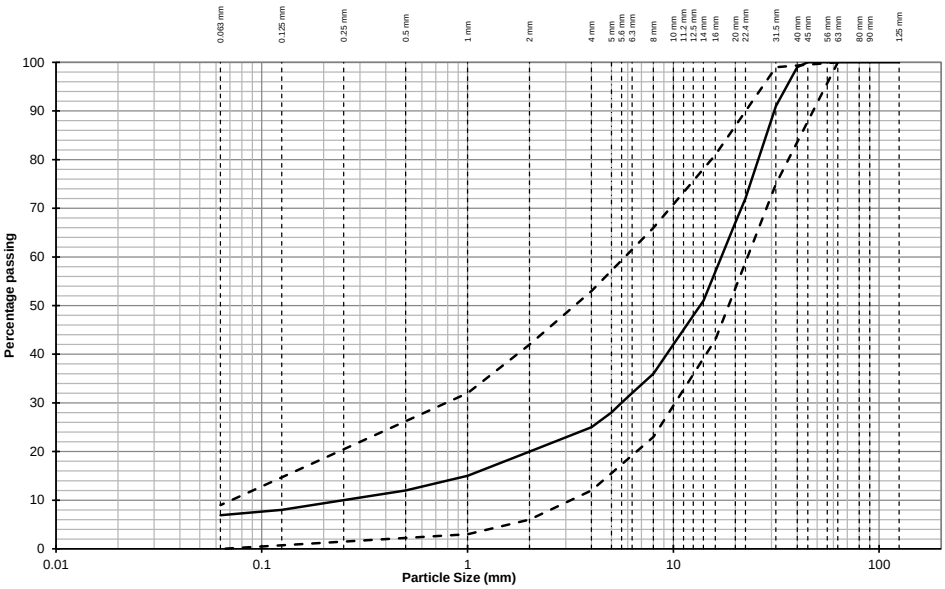
UKAS TESTING
0529

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental Ltd.	**Sample ref:**	62090/B101	**Date Tested:**	23/10-13/11/20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Corby	**Sampling cert.:**	Available	**Sample size:**	11kg Approx.	**Source:**	Site
		Lab ref.:	62090	**Description:**	Crushed Stone		

Sieve Size (mm)	% Passing	Specification Limits (Type 1)	Pass
125	100	-	-
90	100	-	-
80	100	-	-
63	100	**100**	✓
56	100	-	-
45	100	-	-
40	99	-	-
31.5	91	**75-99**	✓
22.4	72	-	-
20	67	-	-
16	57	**43-81**	✓
14	51	-	-
12.5	48	-	-
11.2	45	-	-
10	42	-	-
8	36	**23-66**	✓
6.3	32	-	-
5.6	30	-	-
5	28	-	-
4	25	**12-53**	✓
2	20	**6-42**	✓
1	15	**3-32**	✓
0.5	12	-	
0.25	10	-	
0.125	8	-	
0.063	6.9	**0-9**	✓



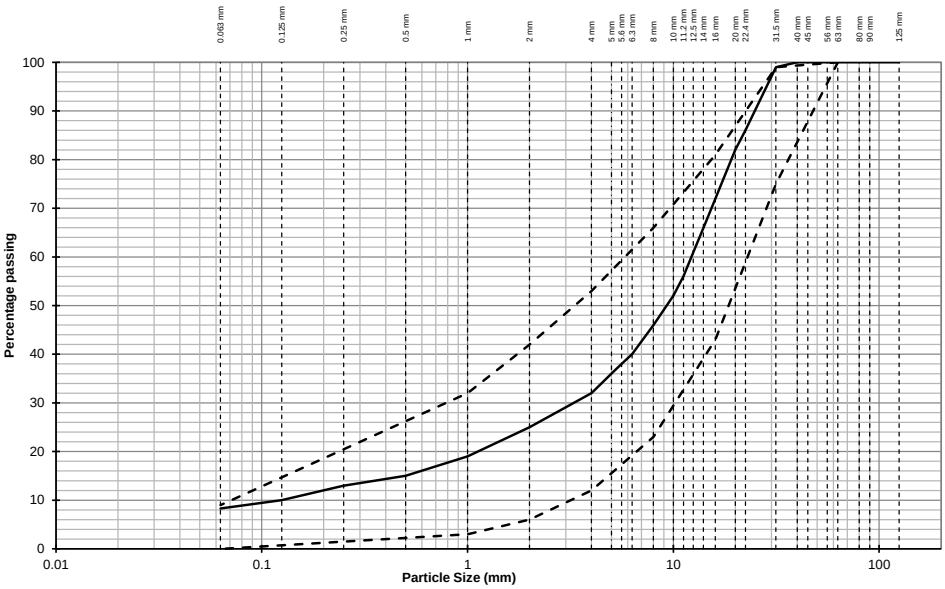
Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 8/5 of the Specification for Highway Works Series 800.

Kiwa CMT

Particle Size Distribution

Client:	Ivy House Environmental Ltd.	**Sample ref:**	62090/B102	**Date Tested:**	23/10-13/11/20	**Sampled by:**	Kiwa CMT
Site:	Mitchell Road Corby	**Sampling cert.:**	Available	**Sample size:**	11kg Approx.	**Source:**	Site
		Lab ref.:	62090	**Description:**	Crushed Stone		

Sieve Size (mm)	% Passing	Specification Limits (Type 1)	Pass
125	100	-	-
90	100	-	-
80	100	-	-
63	100	**100**	✓
56	100	-	-
45	100	-	-
40	100	-	-
31.5	99	**75-99**	✓
22.4	86	-	-
20	82	-	-
16	72	**43-81**	✓
14	66	-	-
12.5	61	-	-
11.2	56	-	-
10	52	-	-
8	46	**23-66**	✓
6.3	40	-	-
5.6	38	-	-
5	36	-	-
4	32	**12-53**	✓
2	25	**6-42**	✓
1	19	**3-32**	✓
0.5	15	-	
0.25	13	-	
0.125	10	-	
0.063	8.3	**0-9**	✓



Comments: Test carried out in accordance with **BS EN 933-1: 2012**
Specification obtained from Table 8/5 of the Specification for Highway Works Series 800.

TERRA TEK
SITE INVESTIGATION & LABORATORY SERVICES

Ivy House Environmental
Scotland Farm
Far Lane
Ockbrook
Derbyshire
DE72 3RX
For the attention of Scott Spencer

Report No: B24526
Issue No 02

LABORATORY TEST REPORT

Project Name	**ROCKINGHAM**		
Project Number	**B24526**	Date samples received	26/06/2020
Your Ref		Date written instructions received	26/06/2020
Purchase Order		Date testing commenced	26/06/2020

Please find enclosed the results as summarised below

Figure / Table	Test Quantity	Description	ISO 17025 Accredited
1	10	Client Specified Suite - Soil	Yes
App S1	~	Sample Descriptions - Soil	N/A
App S2	~	Deviating Samples - Soil	N/A
App S3	~	Summary of In-House Analytical Test Methods - Soil	N/A

Remarks :

Issued by : Stephen Langman Date of Issue : 21/07/2020

Approved Signatories : S. Langman 21/07/2020

G Wilson (JMD/Laboratories Director), S Langman (Laboratory Coordinator)

Key to symbols used in this report
S/C : Testing was sub-contracted

Unless we are notified to the contrary, samples will be disposed after a period of one month from this date.
The results reported relate to samples received in the laboratory only.
All results contained in this report are provisional unless signed by an approved signatory
This report should not be reproduced except in full without the written approval of the laboratory.
Under multisite accreditation the testing contained in this report may have been performed at another Terra Tek laboratory.
The enclosed results remain the property of Terra Tek Limited and we reserve the right to withdraw
our report if we have not received cleared funds in accordance with our standard terms and conditions
Only those results indicated in this report are UKAS accredited and any opinions or interpretations expressed are outside the scope of UKAS accreditation.
Feedback on the this report may be left via our website www.terratek.co.uk/contact-us

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25 YEARS 1990-2015

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Terra Tek Ltd is registered in Scotland No. 121594
Offices in Airdrie, Birmingham, Belfast and Chesham
Head Office : 62 Rochsolloch Road, Airdrie, ML6 9BG

TERRA TEK
SITE INVESTIGATION AND LABORATORY SERVICES

Site: ROCKINGHAM

Client

Engineer

Contract No **B24526**

Sample Identification				Lab Sample ID	Organic Matter %
Hole	Depth m	Sample Ref	Sample Type		
Formation 1	0.50		B	736523	1.5
Formation 2	0.36		B	736524	1.3
Formation 3	0.30		B	736525	1.5
Formation 4	0.50		B	736526	0.9
Pond 1	1.00-1.50		B	736527	1.8
Pond 1	3.00-3.50		B	736528	2.2
Pond 2	0.50-1.00		B	736529	2.4
Pond 2	1.50-2.00		B	736530	2.0
Pond 2	2.50-3.00		B	736531	1.5
Pond 1	2.50-3.00		B	736573	3.7
			Limits of Detection		0.1
			Terra Tek Analysis Method		TP041
			Accreditation M=Mcerts U=UKAS N=No accreditation		U

Originator	Checked & Approved
DAB	S. Langran 21/07/2020

CHEMICAL ANALYSIS

Figure 1

Sheet 1 of 1

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM

Client

Engineer

Contract No **B24526**

Sample Identification											
Exploratory Hole	Depth m	Sample Ref	Sample Type	Lab Sample ID	Date Sampled	Temperature on receipt °C	PRIMARY MATRIX	Secondary Matrix	Additional matrix	% Loss at 30C	% Retained 2mm
Formation 1	0.50		B	736523	Deviating	25.0	CLAY	Fine gravel		14.2	29.2
Formation 2	0.36		B	736524	Deviating	25.0	CLAY	Fine gravel		14.3	31.3
Formation 3	0.30		B	736525	Deviating	25.0	CLAY	Fine gravel		14.8	24.2
Formation 4	0.50		B	736526	Deviating	25.0	CLAY	Fine gravel		11.7	17.2
Pond 1	1.00-1.50		B	736527	Deviating	25.0	CLAY	Fine gravel		7.3	19.2
Pond 1	3.00-3.50		B	736528	Deviating	25.0	Clayey SAND	Fine to medium gravel		13.2	29.6
Pond 2	0.50-1.00		B	736529	Deviating	25.0	CLAY	Fine to medium gravel		15	5.3
Pond 2	1.50-2.00		B	736530	Deviating	25.0	Clayey SAND	Fine to medium gravel		12.1	32.1
Pond 2	2.50-3.00		B	736531	Deviating	25.0	Clayey SAND	Fine to medium gravel		11.2	32.1
Pond 1	2.50-3.00		B	736573	Deviating		Clayey SAND	Fine gravel		12.9	44

Notes

Terra Tek are accredited for clay, sand and loam matrix types only, where they constitute the major component of the sample. Other coarse granular materials such as gravel, are not accredited where they comprise the major component of the sample.

Results are expressed on a dry-weight basis (samples dried at <30°C) except where stated.

The laboratory removes any material > 2mm prior to analysis. The quantity and nature of the material is shown as the secondary and additional matrix types in the above table.

Where a parameter cannot be determined in house it is our policy to use a UKAS/MCERTS accredited laboratory wherever possible. Terra Tek will assume responsibility for the quality of subcontracted tests and the performance of the subcontractor chosen. Where there is no known UKAS/MCERTS laboratory for a particular parameter, a laboratory listed within the Terra Tek Approved Subcontractors List, which is subject to performance assessment, will be selected.

Originator	Checked & Approved		
DAB	S. Langran 21/07/2020	**SAMPLE DESCRIPTIONS**	**Appendix S1** Sheet 1 of 1

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site: ROCKINGHAM

Client:

Engineer:

Contract No **B24526**

Sample Identification						Deviating conditions						
Exploratory Hole	Depth m	Sample Ref	Sample Type	Lab Sample ID	Date Sampled	Sampling date has not been provided	Exceeded maximium holding time for selected test(s)	Presence of headspace in sample vial	Poorly fitting cap or lid	Damaged container		Preservatives used
Formation 2	0.36		B	736524	Deviating							
Formation 3	0.30		B	736525	Deviating							
Formation 4	0.50		B	736526	Deviating							
Pond 1	1.00-1.50		B	736527	Deviating							
Pond 1	3.00-3.50		B	736528	Deviating							
Pond 2	0.50-1.00		B	736529	Deviating							
Pond 2	1.50-2.00		B	736530	Deviating							
Pond 2	2.50-3.00		B	736531	Deviating							
Formation 1	0.50		B	736523	Deviating							
Pond 1	2.50-3.00		B	736573	Deviating							

NOTES
1. Results reported for samples classified as deviating may be compromised. Deviation types are shown as "X" or "Yes" in the table above.
2. The absence of "X" or "Yes" in the table above indicates no reported deviations.
3. Deviations due to use of incorrect sample container are shown on result tables.
4. Deviating results are indicated within result tables.

Originator	Checked & Approved
DAB	S. Langran 21/07/2020

DEVIATING SAMPLES - SOIL

Appendix S2

Sheet 1 of 1

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM

Client

Engineer

Contract No B24526

Method Code	Reference	Description of Method	ISO17025 Accredited	MCERTS Accredited	Wet/Dry Sample Tested
GP001	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.	Preparation of soil samples for chemical analysis	Yes	Yes	N/A
GP012	BS EN 12457-3: Characterisation of Waste - Compliance test for leaching of granular waste materials and sludges (two-stage batch test)	Preparation of soil samples for two-stage leachate test			Dry
TP019	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.	Determination of pH in 2.5:1 water/soil extract using pH meter.	Yes	Yes	Dry
TP032	MAFF Book 427: The Analysis of Agricultural Materials: Method 8	Determination of water soluble boron by colorimetry	Yes		Dry
TP040	APHA/AWWA, 19th edition: Method 3500Cr-D	Determination of hexavalent chromium by colorimetry.	Yes		Dry
TP041	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.	Determination of organic matter by titrimetry.	Yes		Dry
TP042	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.	Determination of loss on ignition at 50-440°C by gravimetry	Yes	Yes	Dry
TP045	GACHAMJA A.M. Chromatography and Analysis: 1992 9-11 (modified)	Determination of polyaromatic hydrocarbons extractable in dichloromethane, by GC/MS	Yes	Yes	Dry
TP046	MEWAM method: Phenols in water and Effluents: 4-aminoantipyrine method	Determination of monohydric phenols by steam distillation/colorimetry	Yes	Yes	Dry
TP047	MEWAM method: Cyanide in Waters etc	Determination of free cyanide by steam distillation/colorimetry	Yes		Dry
TP048	MEWAM method: Cyanide in Waters etc	Determination of total cyanide by steam distillation/colorimetry.	Yes	Yes	Dry
TP049	MEWAM method: Cyanide in Waters etc	Determination of complex cyanide by calculation	Yes		Dry
TP050	MEWAM method: Determination of Thiocyanate ,1985	Determination of thiocyanate by colorimetry	Yes	Yes	Dry
TP051	USEPA Method 9030B	Determination of acid soluble sulphides by steam distillation/colorimetry.	Yes	Yes	Wet
TP067	TNRCC Method 1005: 2001 (modified)	Determination of pentane/acetone extractable petroleum hydrocarbons (C8 - C40) by GC/FID	Yes	Yes	Wet
TP072	In-house documented method	Determination of ammoniacal nitrogen by colorimetry			Dry
TP073	In-house documented method	Determination of anionic detergent (MBAS) by colorimetry			Dry
TP074	In-house documented method	Determination of water soluble fluoride by ion selective electrode			Dry
TP098	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.	Determination of acid soluble chloride by titrimetry			Dry
TP099	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.	Determination of water soluble chloride by titrimetry	Yes	Yes	Dry

Notes

1. Terra Tek (Birmingham) are MCERTS accredited for clay, sand & loam matrix types only, where they constitute the major component of the sample. Other coarse granular materials, ie gravel, are not accredited where they comprise the major component of the sample.
2. Results are expressed on a dry-weight basis (samples dried at 30°C ± 5°C) except where stated.
3. The laboratory removes any material >2mm prior to analysis. The quantity and nature of any material removed from samples is recorded and the information is available on request.
4. The laboratory records the date of analysis of each parameter. This information is available on request.
5. Where a parameter cannot be determined in house it is our policy to use a UKAS/MCERTS accredited laboratory wherever possible. Terra Tek will assume responsibility for the quality of subcontracted tests and the performance of the subcontractor chosen. Where there is no known UKAS/MCERTS laboratory for a particular parameter, a laboratory listed within the Terra Tek Approved Subcontractors list, which is subject to performance assessment, will be selected.

Originator	Checked & Approved
N/A	N/A

SUMMARY OF IN-HOUSE ANALYTICAL TEST METHODS (SOIL)

Appendix S3

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM

Client

Engineer

Contract No B24526

Method Code	Reference	Description of Method	ISO17025 Accredited	MCERTS Accredited	Wet/Dry Sample Tested
TP100	Wisconsin DNR Modified GRO method, Method for Determining Gasoline Range Organics	Determination of Volatile Petroleum Hydrocarbons/GRO.	Yes	Yes	Wet
TP110	USEPA Methods 8082A & 3665A	Determination of Total & Speciated 7 PCB Congeners by GC/MS SIM	Yes	Yes	Wet
TP114	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.	Determination of carbonate in soil (rapid titration method)			Dry
TP126	TNRCC Method 1006 (modified)	Extracted petroleum hydrocarbons from TP067 split into aromatic and aliphatic fractions. Analysed by GC/FID.	Yes		Wet
TP129	In-house documented method	Determination of total sulphur by ICP-OES spectroscopy	Yes	Yes	Dry
TP134	In-house documented method	Determination of water soluble chloride by titrimetry	Yes	Yes	Dry
TP135	USEPA Methods 8100 & 8270D. In-house method TP045	Determination of polyaromatic hydrocarbons extractable in dichloromethane, by GC/MS (with concentration stage)			Dry
TP137	BS7755: Section 3.9: 1995/ISO 11466:1995	Determination of acid extractable metals in soil by ICP-OES	Selected	Selected	Dry
TP145	USEPA Methods 3550C & 8270D	Determination of Semi-Volatile Organic Compounds by GC/MS	Yes	Yes	Wet
TP147	USEPA Methods 8082A & 3665A	Determination of total & speciated WHO 12 PCB Congeners by GC/MS SIM.			Wet
TP150	USEPA Methods 8081B & 8141B	Determination of pesticides and herbicides in soil by GC/MS SIM			Dry
TP152	USEPA Method 556	Determination of carbonyls by GC/MS.			Wet
TP154	USEPA Method 5021. Wisconsin DNR modified GRO method	Determination of volatiles in by GC/MS headspace	Yes	Selected	Wet
TP158	USEPA Method 1671	Determination of glycols by GC/FID DI			Wet
TP169	In-house documented method	Determination of water soluble sulphate in 2:1 water/soil extract by ICP-OES spectroscopy	Yes	Yes	Dry
TP171	In-house documented method	Determination of acid soluble sulphate by ICP-OES spectroscopy	Yes	Yes	Dry
TP174	In-house documented method	Determination of Total Organic Carbon in soils by high temperature combustion & NDIR detection			Dry
TP178	In-house documented method	Determination of water soluble nitrate by ion selective electrode			Dry
TP185	In-house documented method	Determination of loss on ignition at 150-440°C by gravimetry	No	No	Dry

Notes

1. Terra Tek (Birmingham) are MCERTS accredited for clay, sand & loam matrix types only, where they constitute the major component of the sample. Other coarse granular materials, ie gravel, are not accredited where they comprise the major component of the sample.
2. Results are expressed on a dry-weight basis (samples dried at 30°C ± 5°C) except where stated.
3. The laboratory removes any material >2mm prior to analysis. The quantity and nature of any material removed from samples is recorded and the information is available on request.
4. The laboratory records the date of analysis of each parameter. This information is available on request.
5. Where a parameter cannot be determined in house it is our policy to use a UKAS/MCERTS accredited laboratory wherever possible. Terra Tek will assume responsibility for the quality of subcontracted tests and the performance of the subcontractor chosen. Where there is no known UKAS/MCERTS laboratory for a particular parameter, a laboratory listed within the Terra Tek Approved Subcontractors list, which is subject to performance assessment, will be selected.

Originator	Checked & Approved
N/A	N/A

SUMMARY OF IN-HOUSE ANALYTICAL TEST METHODS (SOIL)

Appendix S3

TERRA TEK
SITE INVESTIGATION & LABORATORY SERVICES

Ivy House Environmental
Scotland Farm
Far Lane
Ockbrook
Derbyshire
DE72 3RX
For the attention of Scott Spencer

Report No: B24526
Issue No 01

LABORATORY TEST REPORT

Project Name	**ROCKINGHAM**		
Project Number	**B24526**	Date samples received	26/06/2020
Your Ref		Date written instructions received	26/06/2020
Purchase Order		Date testing commenced	26/06/2020

Please find enclosed the results as summarised below

Figure / Table	Test Quantity	Description	ISO 17025 Accredited
1	10	Summary of Geotechnical Tests	Yes
2-11	10	Atterberg Limit	Yes
12-21	10	Particle Size Distribution	Yes
22-31	10	Moisture Content/Dry Density Relationship	Yes

Remarks :

Issued by : Stephen Langman Date of Issue : 09/07/2020

Approved Signatories : S. Langman 09/07/2020
G Wilson (JMD/Laboratories Director), S Langman (Laboratory Coordinator)

Key to symbols used in this report
S/C : Testing was sub-contracted

Unless we are notified to the contrary, samples will be disposed after a period of one month from this date.
The results reported relate to samples received in the laboratory only.
All results contained in this report are provisional unless signed by an approved signatory
This report should not be reproduced except in full without the written approval of the laboratory.
Under multisite accreditation the testing contained in this report may have been performed at another Terra Tek laboratory.
The enclosed results remain the property of Terra Tek Limited and we reserve the right to withdraw
our report if we have not received cleared funds in accordance with our standard terms and conditions
Only those results indicated in this report are UKAS accredited and any opinions or interpretations expressed are outside the scope of UKAS accreditation.
Feedback on the this report may be left via our website www.terratek.co.uk/contact-us

mCERTS
UKAS TESTING 0126
25 YEARS 1990-2015

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Terra Tek Ltd is registered in Scotland No. 121594
Offices in Airdrie, Birmingham, Belfast and Chesham
Head Office : 62 Rochsolloch Road, Airdrie, ML6 9BG

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site: ROCKINGHAM

Client:

Engineer:

Contract No B24526

Sample Identification							Atterberg limits						Density		Total Stress			
Exploratory Hole	Depth m	Sample Ref	Sample Type	Lab Sample ID	Non Engineering Sample Description	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	Percentage retained 425µm %	Atterberg Classification	Particle Density Mg/m³	Bulk Mg/m³	Dry Mg/m³	Shear Strength kPa	Apparent Cohesion C kPa	Angle of Shearing Resistance Phi	Other Tests
Formation 1	0.50		B	736523	Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.	18	45	17	28	21	CI	2.62						PSD,2.5kg Compaction,BRE SD1 Suite
Formation 2	0.36		B	736524	Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse with one cobble.	18	45	18	27	27	CI	2.64						PSD,2.5kg Compaction,BRE SD1 Suite
Formation 3	0.30		B	736525	Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.	16	45	18	27	27	CI	2.64						PSD,2.5kg Compaction,BRE SD1 Suite
Formation 4	0.50		B	736526	Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse with one cobble.	17	44	19	25	35	CI	2.64						PSD,2.5kg Compaction,BRE SD1 Suite
Pond 1	1.00-1.50		B	736527	Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.	17	39	15	24	14	CI	2.64						PSD,2.5kg Compaction,BRE SD1 Suite
Notes	Opinions and interpretations are outside the scope of UKAS accreditation				UKAS Accredited Test Y/N	Test details are given on the 'Notes on Laboratory Procedures' sheet												See individual report sheets
						Y	Y	Y	Y	Y	-	Y	Y	Y	Y	Y	Y	

Originator	Approved
PM	S. Langran 09/07/2020

SUMMARY OF GEOTECHNICAL TESTS

Figure 1

Sheet 1 of 2

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site: ROCKINGHAM

Client:

Engineer:

Contract No B24526

Sample Identification							Atterberg limits						Density		Total Stress			
Exploratory Hole	Depth m	Sample Ref	Sample Type	Lab Sample ID	Non Engineering Sample Description	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	Percentage retained 425µm %	Atterberg Classification	Particle Density Mg/m³	Bulk Mg/m³	Dry Mg/m³	Shear Strength kPa	Apparent Cohesion C kPa	Angle of Shearing Resistance Phi	Other Tests
Pond 1	2.50-3.00		B	736573	Grey very clayey SAND with much gravel. Gravel is fine to coarse with one cobble.	14	40	18	22	60	CI	2.59						PSD,2.5kg Compaction
Pond 1	3.00-3.50		B	736528	Grey fine to coarse GRAVEL with much very sandy clay and one cobble.	13	39	15	24	59	CI	2.62						PSD,2.5kg Compaction,BRE SD1 Suite
Pond 2	0.50-1.00		B	736529	Light brown very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.	16	40	15	25	18	CI	2.65						PSD,2.5kg Compaction,BRE SD1 Suite
Pond 2	1.50-2.00		B	736530	Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse.	15	35	14	21	37	CL	2.60						PSD,2.5kg Compaction,BRE SD1 Suite
Pond 2	2.50-3.00		B	736531	Grey very clayey silty SAND with much gravel. Gravel is fine to coarse with one cobble.	14	33	19	14	50	CL	2.61						PSD,2.5kg Compaction,BRE SD1 Suite
Notes	Opinions and interpretations are outside the scope of UKAS accreditation				UKAS Accredited Test Y/N	Test details are given on the 'Notes on Laboratory Procedures' sheet												See individual report sheets
						Y	Y	Y	Y	Y	-	Y	Y	Y	Y	Y	Y	

Originator	Approved
PM	S. Langran 09/07/2020

SUMMARY OF GEOTECHNICAL TESTS

Figure 1

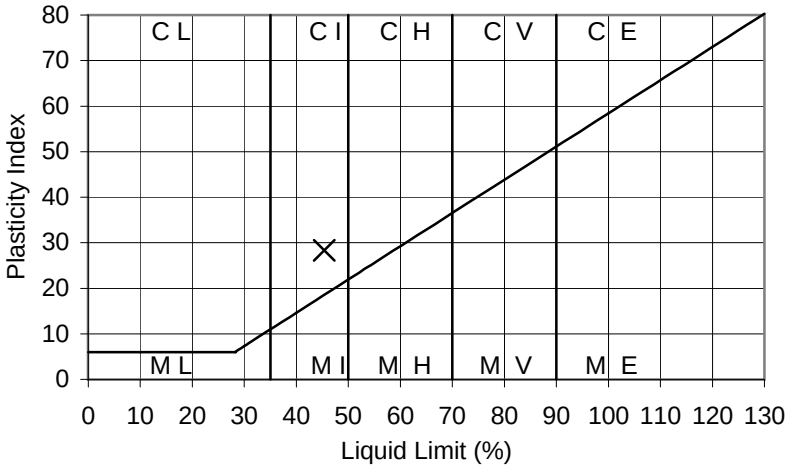
Sheet 2 of 2

Version 051 - 08/11/2013
1220 - LLPL Formation 1 00.50 B - B24526-736523.xls : Sample ID 736523

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Formation 1
		Sample Ref
		Depth (m) 0.50
	Engineer	Sample Type B

Non Engineering Description : Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	18	%
Percentage retained on 425µm sieve :	21	%
Liquid Limit :	45	%
Plastic Limit :	17	%
Plasticity Index :	28	
Equivalent moisture content of material passing 425µm sieve :	23	%
Liquidity Index :	0.21	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 2
LC	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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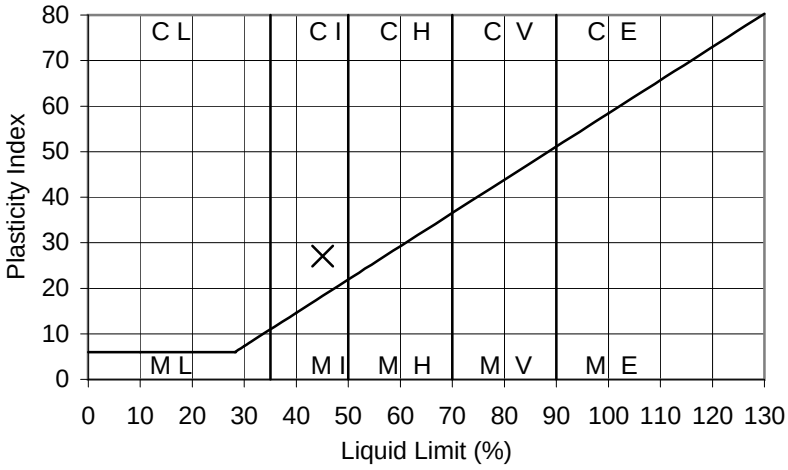
Lab Project No B24526 : 09/07/2020 11:08:41

Version 051 - 08/11/2013
1220 - LLPL Formation 2 00.36 B - B24526-736524.xls : Sample ID 736524

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Formation 2
		Sample Ref
		Depth (m) 0.36
	Engineer	Sample Type B

Non Engineering Description : Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse with one cobble.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	18 %
Percentage retained on 425µm sieve :	27 %
Liquid Limit :	45 %
Plastic Limit :	18 %
Plasticity Index :	27
Equivalent moisture content of material passing 425µm sieve :	25 %
Liquidity Index :	0.26

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 3
IG	S. Langmeu 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

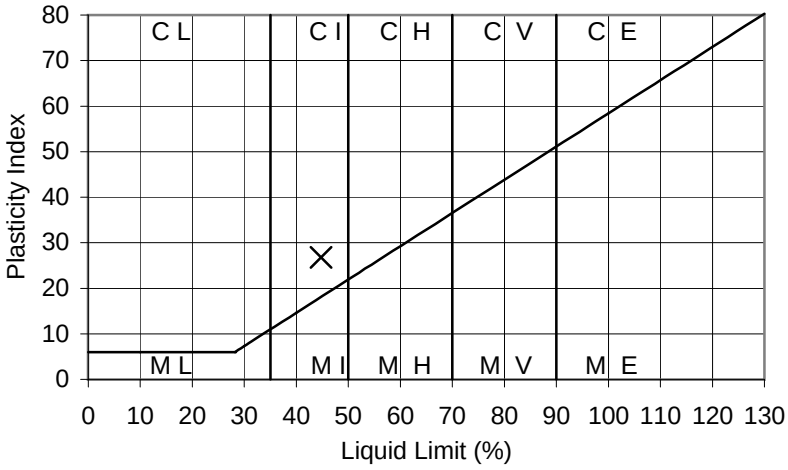
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:08:44

Version 051 - 08/11/2013
1220 - LLPL Formation 3 00.30 B - B24526-736525.xls : Sample ID 736525

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Formation 3
		Sample Ref
		Depth (m) 0.30
	Engineer	Sample Type B

Non Engineering Description : Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	16	%
Percentage retained on 425µm sieve :	27	%
Liquid Limit :	45	%
Plastic Limit :	18	%
Plasticity Index :	27	
Equivalent moisture content of material passing 425µm sieve :	22	%
Liquidity Index :	0.15	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 4
IG	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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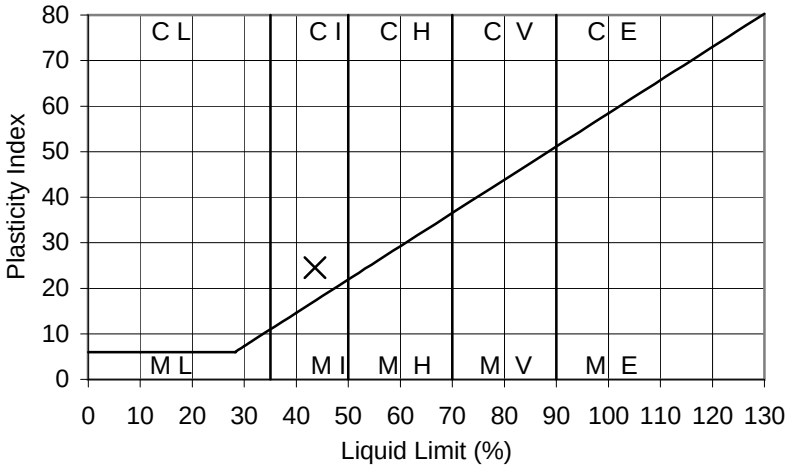
Lab Project No B24526 : 09/07/2020 11:08:47

Version 051 - 08/11/2013
1220 - LLPL Formation 4 00.50 B - B24526-736526.xls : Sample ID 736526

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Formation 4
		Sample Ref
		Depth (m) 0.50
	Engineer	Sample Type B

Non Engineering Description : Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse with one cobble.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	17 %
Percentage retained on 425µm sieve :	35 %
Liquid Limit :	44 %
Plastic Limit :	19 %
Plasticity Index :	25
Equivalent moisture content of material passing 425µm sieve :	26 %
Liquidity Index :	0.28

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 5
IG	S. Langmeu 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

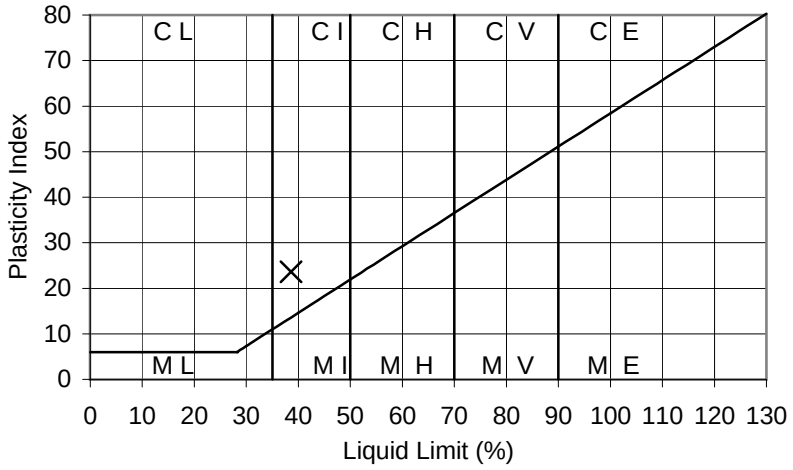
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:08:50

Version 051 - 08/11/2013
1220 - LLPL Pond 1 01.00 B - B24526-736527.xls : Sample ID 736527

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 1
		Sample Ref
	Engineer	Depth (m) 1.00-1.50
		Sample Type B

Non Engineering Description : Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	17	%
Percentage retained on 425µm sieve :	14	%
Liquid Limit :	39	%
Plastic Limit :	15	%
Plasticity Index :	24	
Equivalent moisture content of material passing 425µm sieve :	20	%
Liquidity Index :	0.21	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 6
IG	S. Langmuir 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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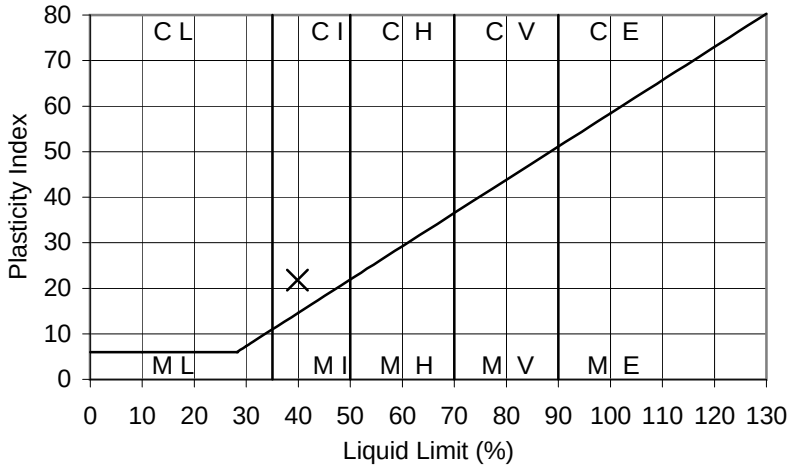
Lab Project No B24526 : 09/07/2020 11:08:53

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 1
		Sample Ref
		Depth (m) 2.50-3.00
	Engineer	Sample Type B

Non Engineering Description : Grey very clayey SAND with much gravel. Gravel is fine to coarse with one cobble.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	14 %
Percentage retained on 425µm sieve :	60 %
Liquid Limit :	40 %
Plastic Limit :	18 %
Plasticity Index :	22
Equivalent moisture content of material passing 425µm sieve :	35 %
Liquidity Index :	0.77

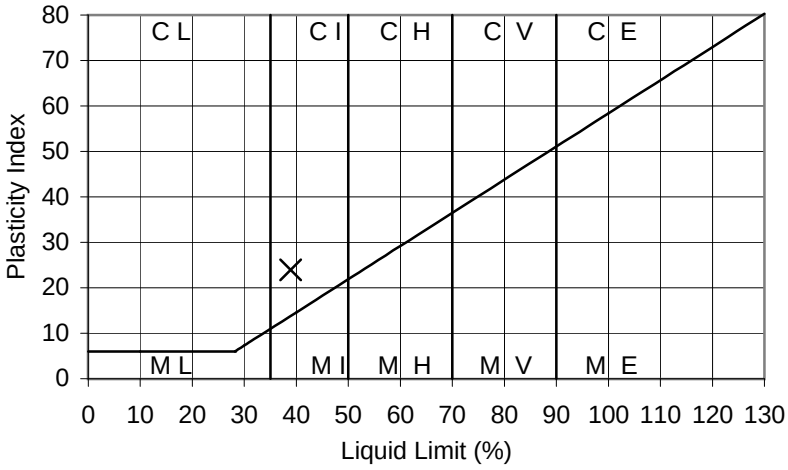
Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 7
IG	S. Langmuir 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

Version 051 - 08/11/2013
1220 - LLPL Pond 1 03.00 B - B24526-736528.xls : Sample ID 736528

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 1
		Sample Ref
		Depth (m) 3.00-3.50
	Engineer	Sample Type B

Non Engineering Description : Grey fine to coarse GRAVEL with much very sandy clay and one cobble.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	13 %
Percentage retained on 425µm sieve :	59 %
Liquid Limit :	39 %
Plastic Limit :	15 %
Plasticity Index :	24
Equivalent moisture content of material passing 425µm sieve :	32 %
Liquidity Index :	0.71

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 8
LC	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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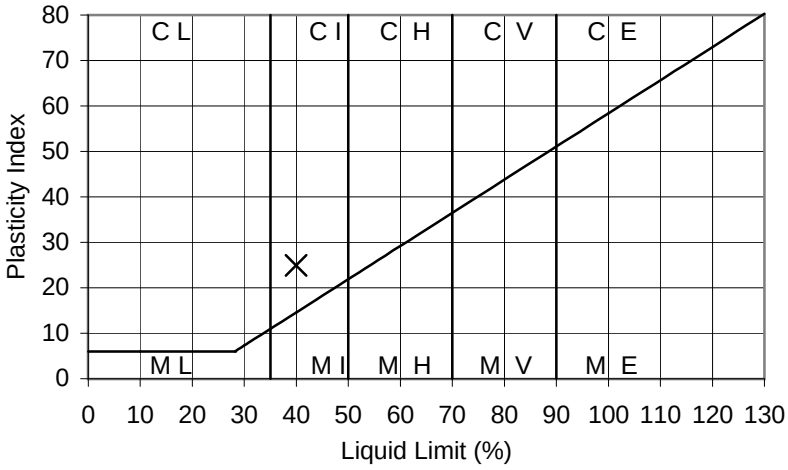
Lab Project No B24526 : 09/07/2020 11:09:00

Version 051 - 08/11/2013
1220 - LLPL Pond 2 00.50 B - B24526-736529.xls : Sample ID 736529

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 2
		Sample Ref
		Depth (m) 0.50-1.00
	Engineer	Sample Type B

Non Engineering Description : Light brown very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	16	%
Percentage retained on 425µm sieve :	18	%
Liquid Limit :	40	%
Plastic Limit :	15	%
Plasticity Index :	25	
Equivalent moisture content of material passing 425µm sieve :	20	%
Liquidity Index :	0.20	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 9
LC	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

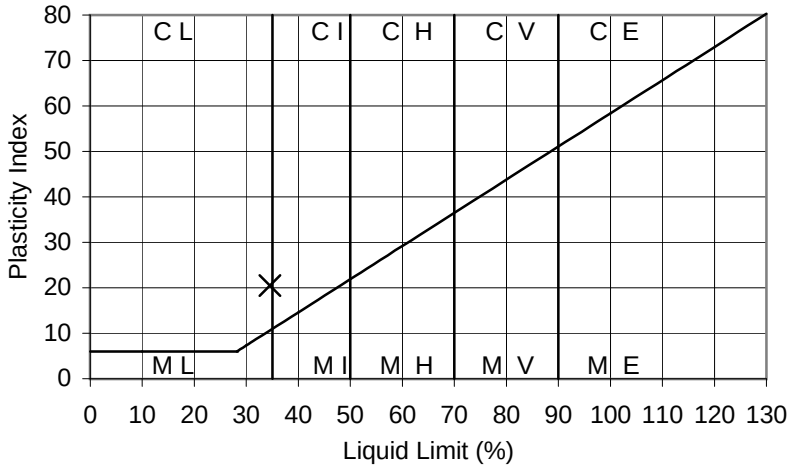
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:03

Version 051 - 08/11/2013
1220 - LLPL Pond 2 01.50 B - B24526-736530.xls : Sample ID 736530

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 2
		Sample Ref
	Engineer	Depth (m) 1.50-2.00
		Sample Type B

Non Engineering Description : Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	15	%
Percentage retained on 425µm sieve :	37	%
Liquid Limit :	35	%
Plastic Limit :	14	%
Plasticity Index :	21	
Equivalent moisture content of material passing 425µm sieve :	24	%
Liquidity Index :	0.48	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 10
LC	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

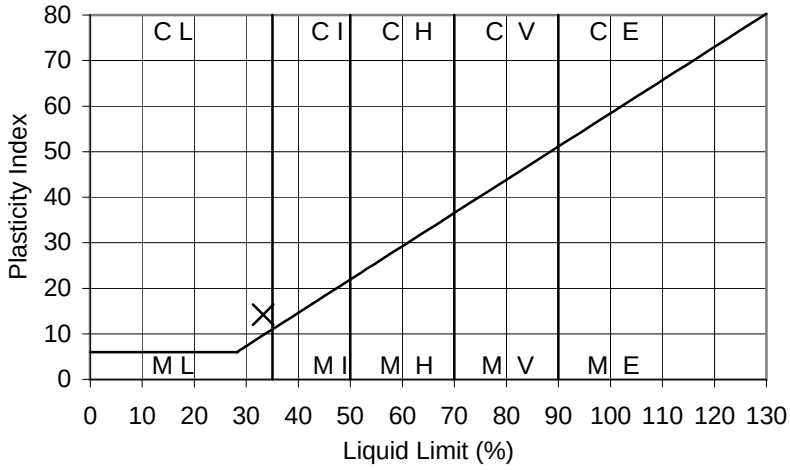
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:06

Version 051 - 08/11/2013
1220 - LLPL Pond 2 02.50 B - B24526-736531.xls : Sample ID 736531

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 2
		Sample Ref
		Depth (m) 2.50-3.00
	Engineer	Sample Type B

Non Engineering Description : Grey very clayey silty SAND with much gravel. Gravel is fine to coarse with one cobble.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	14	%
Percentage retained on 425µm sieve :	50	%
Liquid Limit :	33	%
Plastic Limit :	19	%
Plasticity Index :	14	
Equivalent moisture content of material passing 425µm sieve :	28	%
Liquidity Index :	0.64	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 11
IG	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:09

Version 059 - 24/06/2013
1260 - PSD Formation 1 00.50 B - B24526-736523.xls : Sample ID 736523

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Formation 1
		Sample Ref
		Depth (m) 0.50
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	99
20.0 mm	98
14.0 mm	96
10.0 mm	94
6.30 mm	92
5.00 mm	91
3.35 mm	89
2.00 mm	87
1.18 mm	85
600 µm	81
425 µm	79
300 µm	77
212 µm	73
150 µm	70
63 µm	61

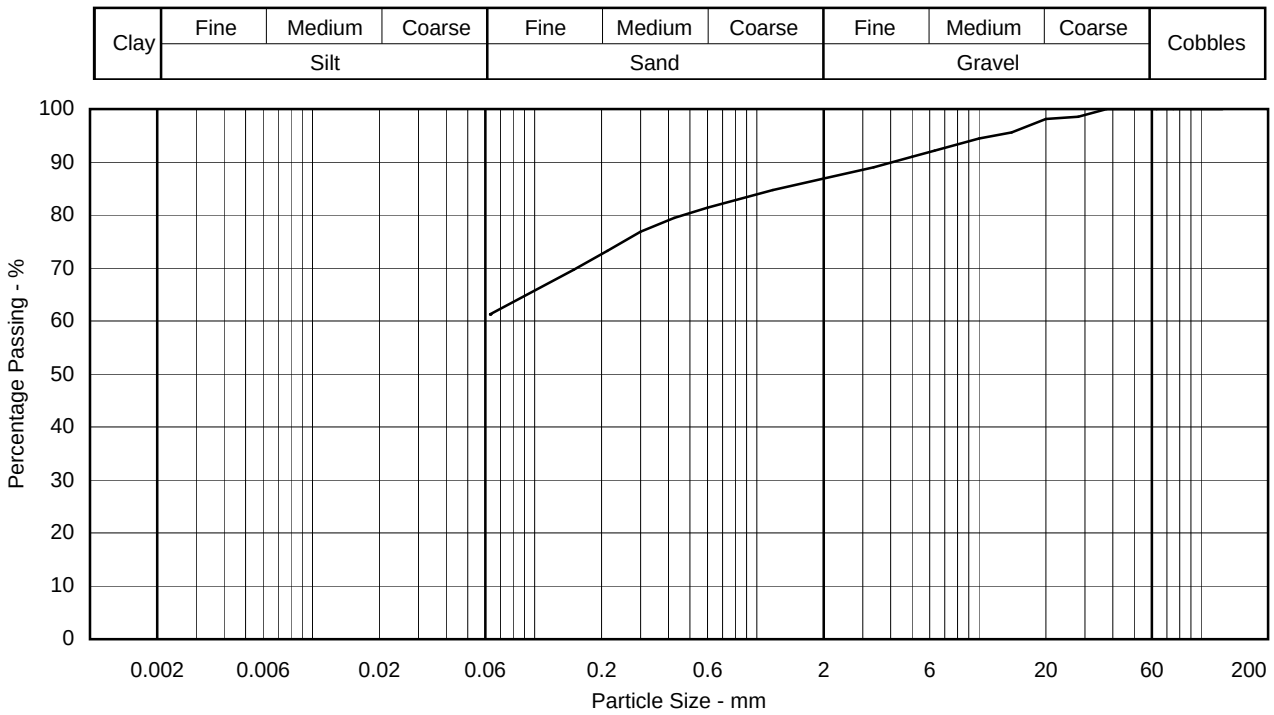
Non Engineering Description

Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Sample Proportions - %	
Cobbles	0.0
Gravel	13.1
Sand	25.6
Silt & Clay	61.3

Particle Diameter - mm	
D100	38
D60	
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 12

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Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:12

Version 059 - 24/06/2013
1260 - PSD Formation 2 00.36 B - B24526-736524.xls : Sample ID 736524

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Formation 2
		Sample Ref
		Depth (m) 0.36
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	94
63.0 mm	94
50.0 mm	94
37.5 mm	93
28.0 mm	92
20.0 mm	92
14.0 mm	91
10.0 mm	90
6.30 mm	87
5.00 mm	86
3.35 mm	84
2.00 mm	82
1.18 mm	80
600 µm	76
425 µm	73
300 µm	70
212 µm	65
150 µm	60
63 µm	50

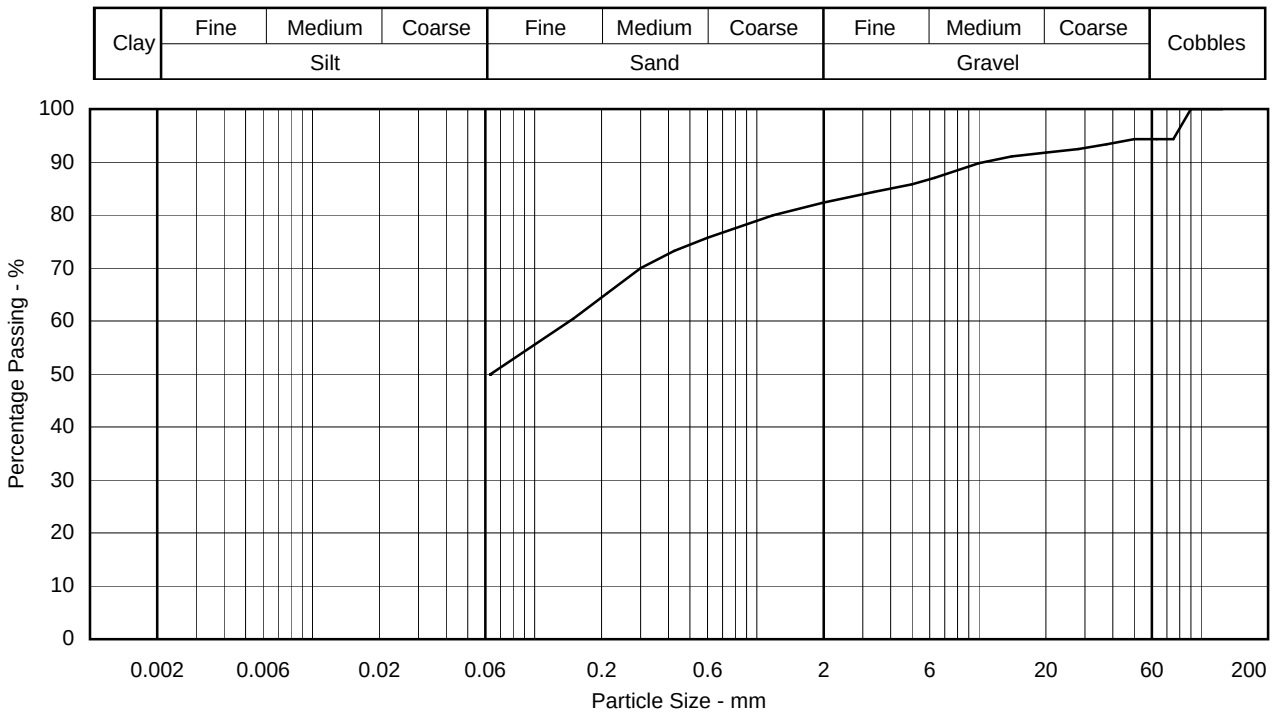
Non Engineering Description

Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse with one cobble.

Sample Proportions - %	
Cobbles	5.7
Gravel	12.0
Sand	32.5
Silt & Clay	49.9

Particle Diameter - mm	
D100	90
D60	0.14
D10	
Uniformity Coefficient	N/A

Notes



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PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 13

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Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:15

Version 059 - 24/06/2013
1260 - PSD Formation 3 00.30 B - B24526-736525.xls : Sample ID 736525

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Formation 3
		Sample Ref
		Depth (m) 0.30
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	98
28.0 mm	97
20.0 mm	95
14.0 mm	93
10.0 mm	90
6.30 mm	86
5.00 mm	84
3.35 mm	82
2.00 mm	80
1.18 mm	78
600 µm	75
425 µm	73
300 µm	70
212 µm	67
150 µm	63
63 µm	54

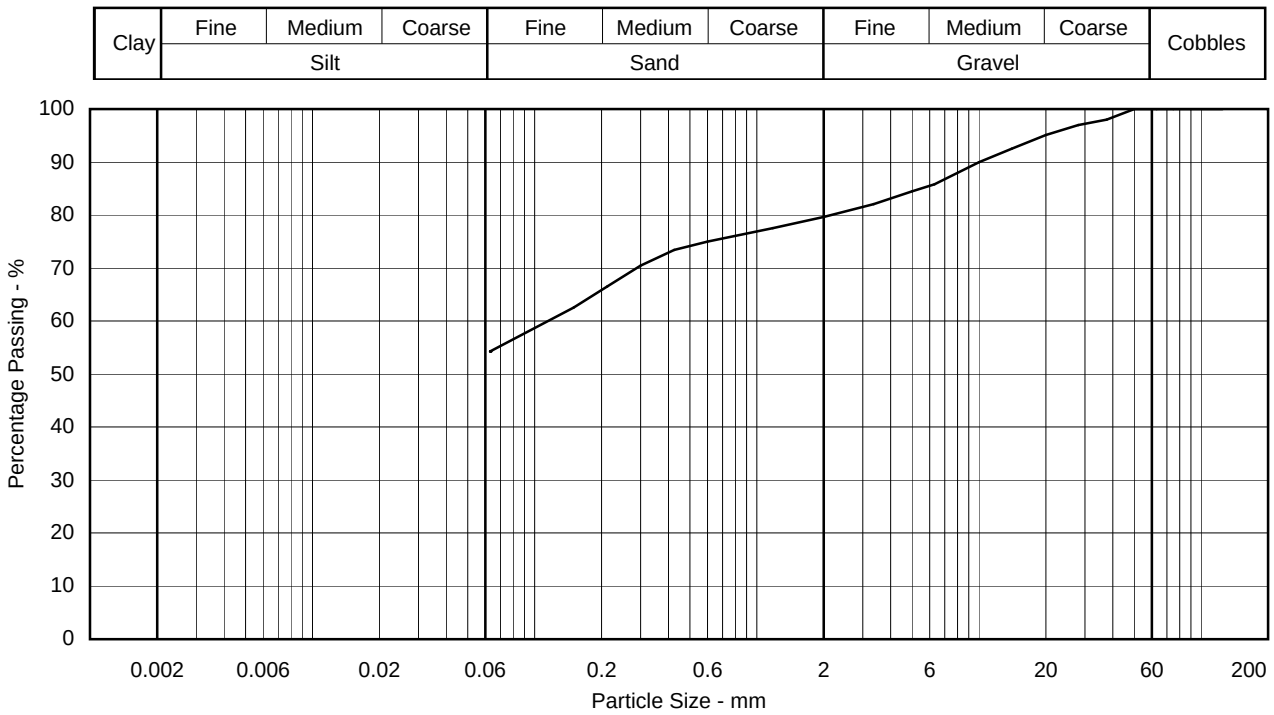
Non Engineering Description

Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Sample Proportions - %	
Cobbles	0.0
Gravel	20.4
Sand	25.4
Silt & Clay	54.3

Particle Diameter - mm	
D100	50
D60	0.12
D10	
Uniformity Coefficient	N/A

Notes



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PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 14

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Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:18

Version 059 - 24/06/2013
1260 - PSD Formation 4 00.50 B - B24526-736526.xls : Sample ID 736526

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Formation 4
		Sample Ref
		Depth (m) 0.50
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	94
63.0 mm	94
50.0 mm	94
37.5 mm	94
28.0 mm	93
20.0 mm	89
14.0 mm	85
10.0 mm	82
6.30 mm	79
5.00 mm	77
3.35 mm	75
2.00 mm	73
1.18 mm	71
600 µm	67
425 µm	65
300 µm	63
212 µm	58
150 µm	53
63 µm	44

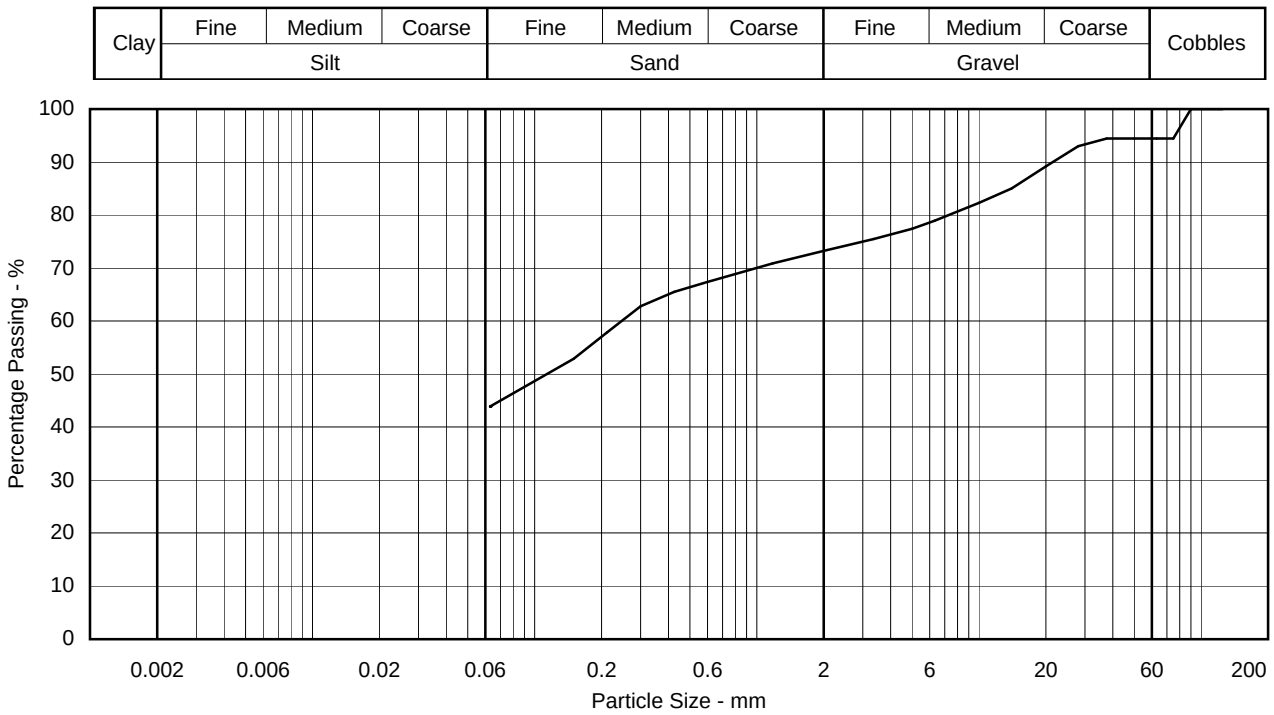
Non Engineering Description

Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse with one cobble.

Sample Proportions - %	
Cobbles	5.6
Gravel	21.2
Sand	29.3
Silt & Clay	43.9

Particle Diameter - mm	
D100	90
D60	0.25
D10	
Uniformity Coefficient	N/A

Notes



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PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 15

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Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:21

Version 059 - 24/06/2013
1260 - PSD Pond 1 01.00 B - B24526-736527.xls : Sample ID 736527

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Pond 1
		Sample Ref
		Depth (m) 1.00-1.50
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	99
20.0 mm	99
14.0 mm	97
10.0 mm	96
6.30 mm	94
5.00 mm	94
3.35 mm	92
2.00 mm	91
1.18 mm	90
600 µm	88
425 µm	86
300 µm	84
212 µm	78
150 µm	73
63 µm	64

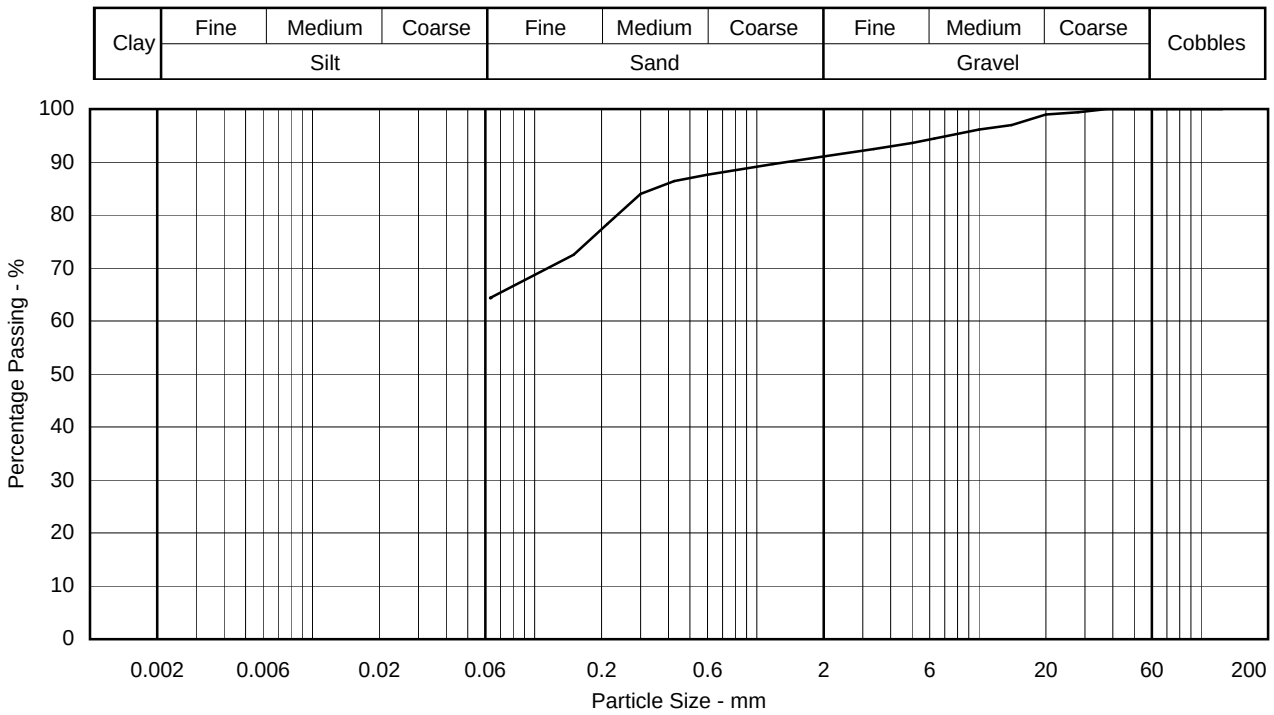
Non Engineering Description

Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Sample Proportions - %	
Cobbles	0.0
Gravel	9.0
Sand	26.7
Silt & Clay	64.4

Particle Diameter - mm	
D100	38
D60	
D10	
Uniformity Coefficient	N/A

Notes



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PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 16

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Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:23

Version 059 - 24/06/2013
1260 - PSD Pond 1 02.50 B - B24526-736573.xls : Sample ID 736573

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Pond 1
		Sample Ref
		Depth (m) 2.50-3.00
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	97
50.0 mm	97
37.5 mm	93
28.0 mm	85
20.0 mm	76
14.0 mm	70
10.0 mm	65
6.30 mm	60
5.00 mm	57
3.35 mm	53
2.00 mm	49
1.18 mm	46
600 µm	42
425 µm	40
300 µm	39
212 µm	36
150 µm	33
63 µm	21

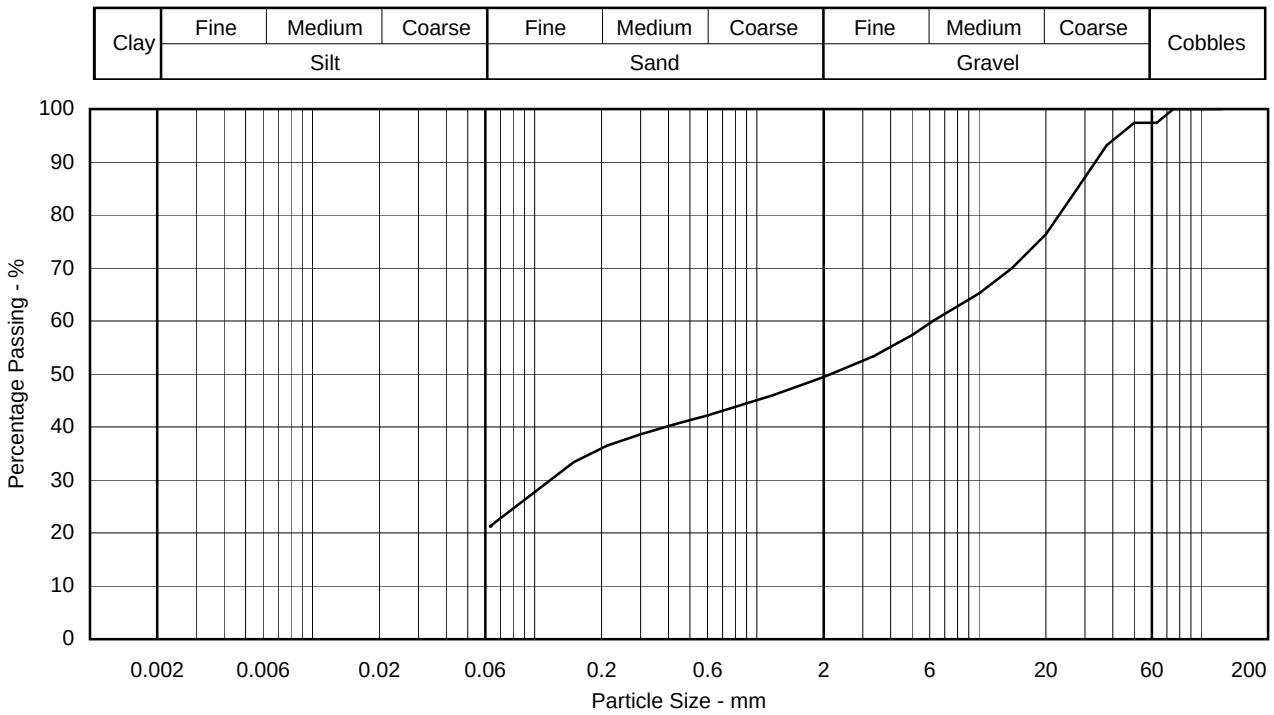
Non Engineering Description

Grey very clayey SAND with much gravel. Gravel is fine to coarse with one cobble.

Sample Proportions - %	
Cobbles	2.6
Gravel	48.0
Sand	28.2
Silt & Clay	21.3

Particle Diameter - mm	
D100	75
D60	6.2
D10	
Uniformity Coefficient	N/A

Notes



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PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 17

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Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:26

Version 059 - 24/06/2013
1260 - PSD Pond 1 03.00 B - B24526-736528.xls : Sample ID 736528

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Pond 1
		Sample Ref
		Depth (m) 3.00-3.50
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	96
50.0 mm	96
37.5 mm	93
28.0 mm	82
20.0 mm	72
14.0 mm	68
10.0 mm	64
6.30 mm	57
5.00 mm	55
3.35 mm	51
2.00 mm	48
1.18 mm	45
600 µm	42
425 µm	41
300 µm	39
212 µm	37
150 µm	34
63 µm	22

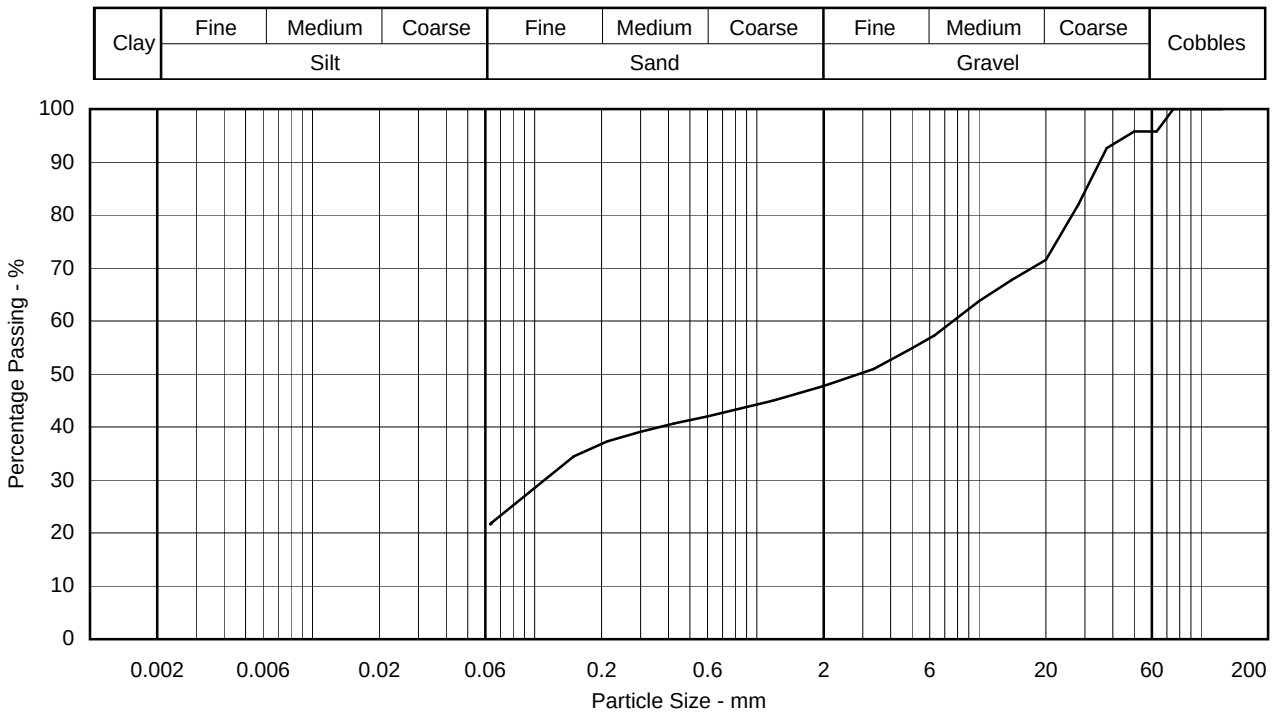
Non Engineering Description

Grey fine to coarse GRAVEL with much very sandy clay and one cobble.

Sample Proportions - %	
Cobbles	4.3
Gravel	48.0
Sand	26.0
Silt & Clay	21.7

Particle Diameter - mm	
D100	75
D60	7.7
D10	
Uniformity Coefficient	N/A

Notes



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PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

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Lab Project No B24526 : 09/07/2020 11:09:35

Version 059 - 24/06/2013
1260 - PSD Pond 2 00.50 B - B24526-736529.xls : Sample ID 736529

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site	ROCKINGHAM	**Contract No** **B24526**
Client		Hole: Pond 2
Engineer		Sample Ref
		Depth (m): 0.50-1.00
		Sample Type: B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	98
20.0 mm	97
14.0 mm	95
10.0 mm	93
6.30 mm	92
5.00 mm	91
3.35 mm	89
2.00 mm	88
1.18 mm	86
600 µm	83
425 µm	82
300 µm	80
212 µm	77
150 µm	69
63 µm	59

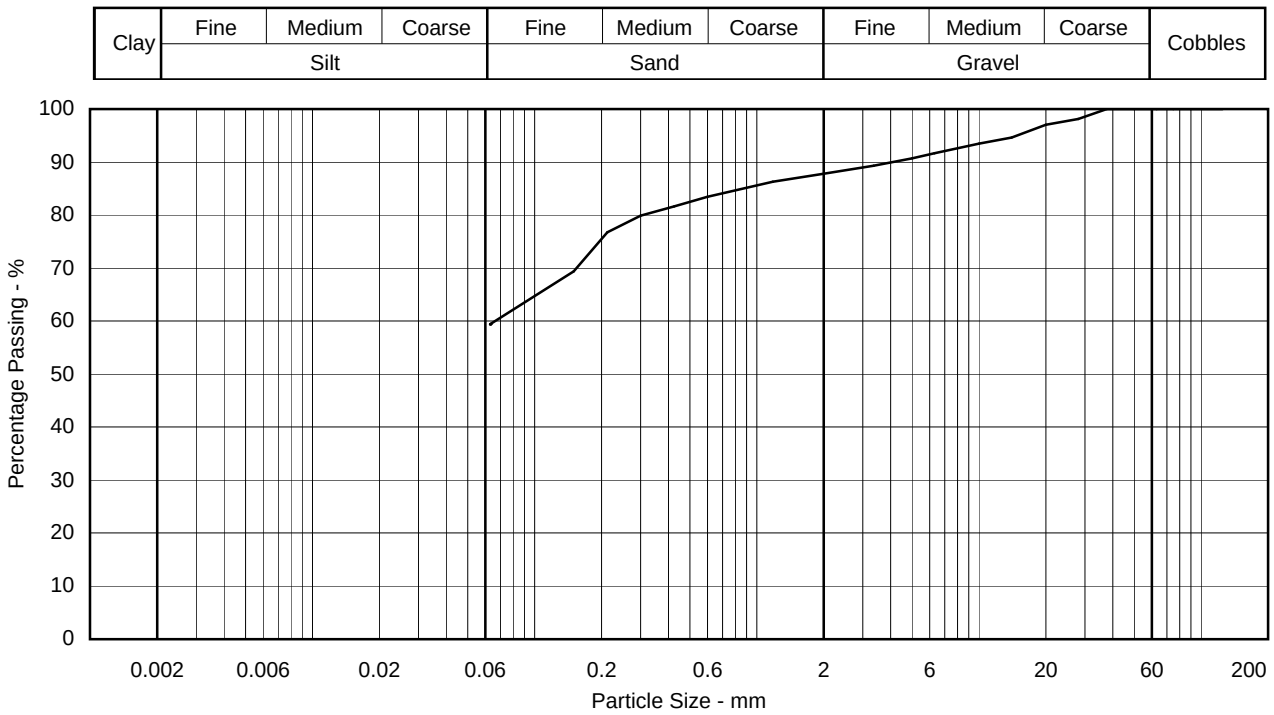
Non Engineering Description

Light brown very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Sample Proportions - %	
Cobbles	0.0
Gravel	12.2
Sand	28.4
Silt & Clay	59.4

Particle Diameter - mm	
D100	38
D60	0.067
D10	
Uniformity Coefficient	N/A

Notes



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PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 19

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Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:38

Version 059 - 24/06/2013
1260 - PSD Pond 2 01.50 B - B24526-736530.xls : Sample ID 736530

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Pond 2
		Sample Ref
		Depth (m) 1.50-2.00
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	97
37.5 mm	95
28.0 mm	92
20.0 mm	88
14.0 mm	83
10.0 mm	80
6.30 mm	77
5.00 mm	75
3.35 mm	72
2.00 mm	69
1.18 mm	67
600 µm	64
425 µm	63
300 µm	62
212 µm	60
150 µm	57
63 µm	34

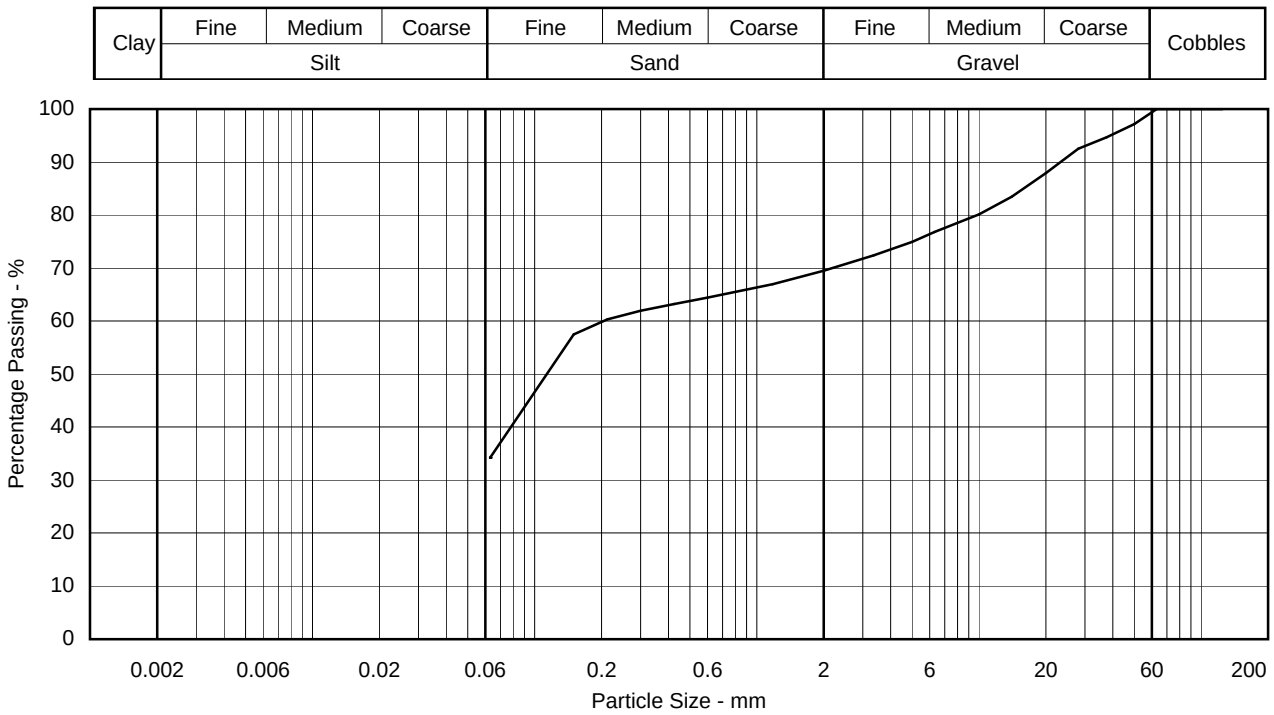
Non Engineering Description

Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse.

Sample Proportions - %	
Cobbles	0.6
Gravel	29.9
Sand	35.2
Silt & Clay	34.2

Particle Diameter - mm	
D100	63
D60	0.20
D10	
Uniformity Coefficient	N/A

Notes



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PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 20

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Lab Project No B24526 : 09/07/2020 11:09:41

Version 059 - 24/06/2013
1260 - PSD Pond 2 02.50 B - B24526-736531.xls : Sample ID 736531

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site	ROCKINGHAM	**Contract No** **B24526**
Client		Hole: Pond 2
Engineer		Sample Ref
		Depth (m): 2.50-3.00
		Sample Type: B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	97
50.0 mm	97
37.5 mm	92
28.0 mm	86
20.0 mm	80
14.0 mm	75
10.0 mm	72
6.30 mm	67
5.00 mm	65
3.35 mm	62
2.00 mm	59
1.18 mm	55
600 µm	51
425 µm	50
300 µm	48
212 µm	47
150 µm	45
63 µm	28

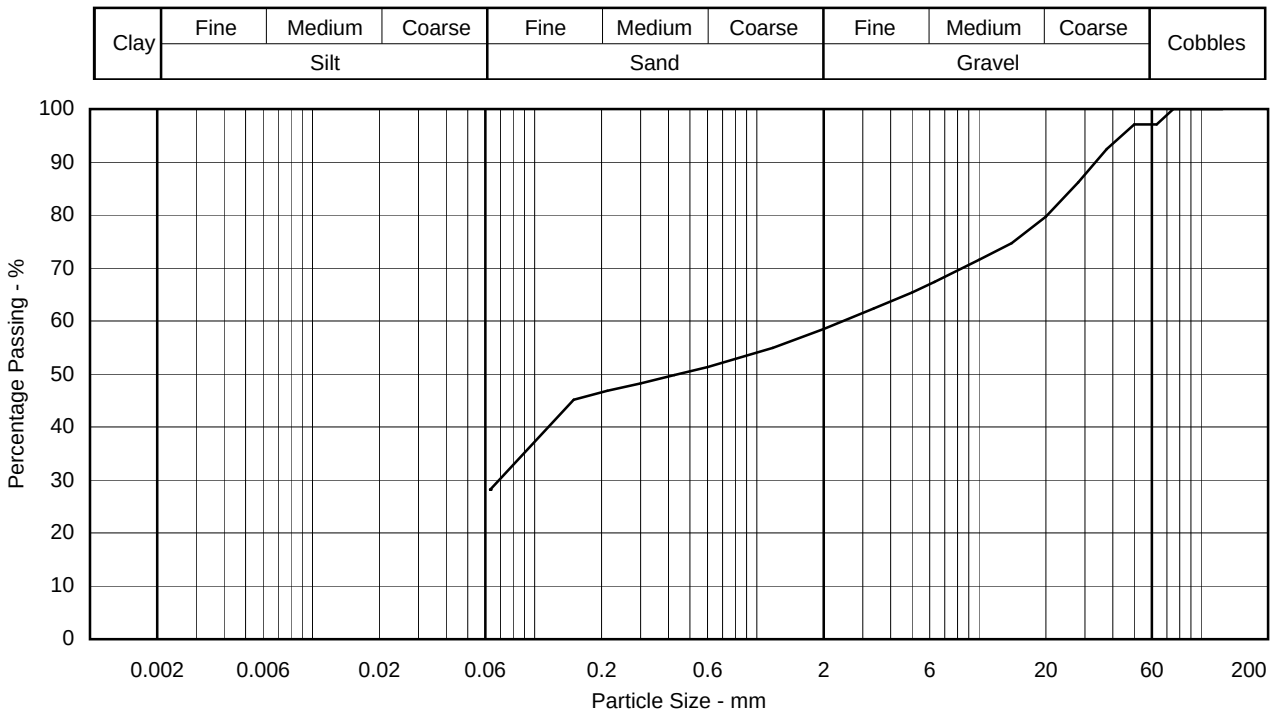
Non Engineering Description

Grey very clayey silty SAND with much gravel. Gravel is fine to coarse with one cobble.

Sample Proportions - %	
Cobbles	2.9
Gravel	38.6
Sand	30.3
Silt & Clay	28.2

Particle Diameter - mm	
D100	75
D60	2.4
D10	
Uniformity Coefficient	N/A

Notes



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PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 21

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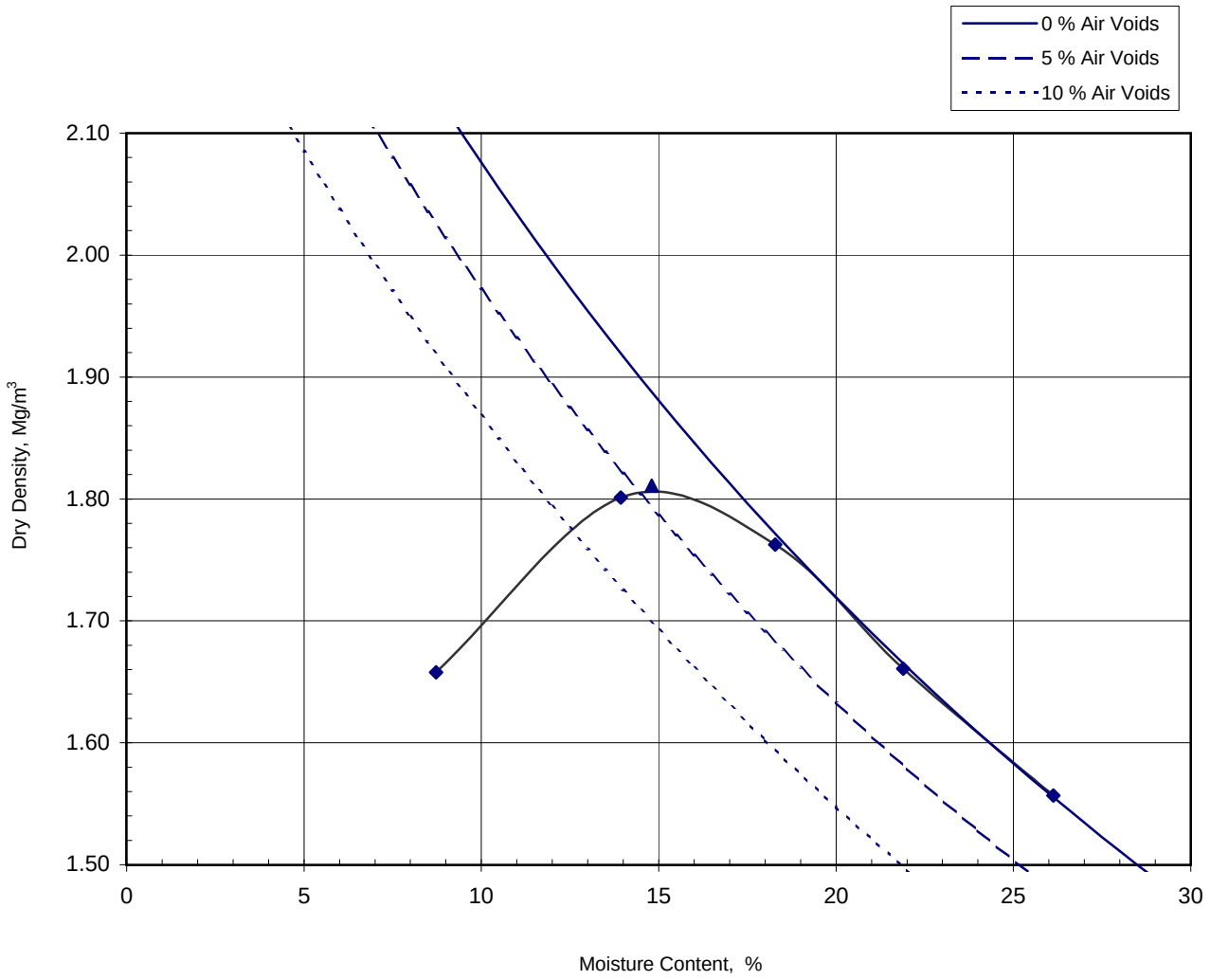
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:44

Version 019 - 05/09/2013
1410 - Comp Formation 1 00.50 B - B24526-736523.xls : Sample ID 736523

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Formation 1
		Sample Ref
	Engineer	Depth (m) 0.50
		Sample Type B



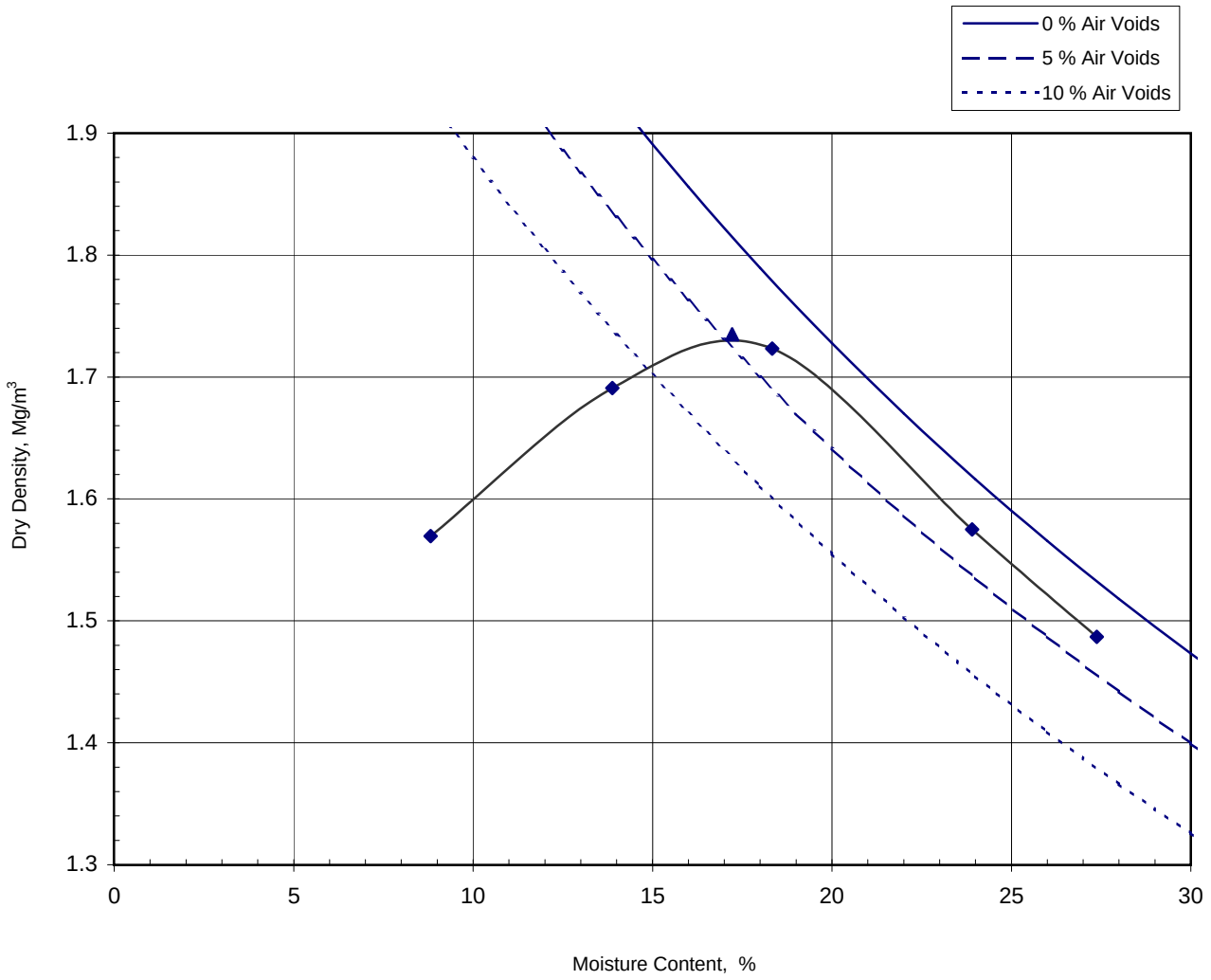
Non Engineering Description		Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	0
Mass Retained on 20.0 mm Sieve	%	2
Particle Density - Measured	Mg/m³	2.62
Natural Moisture Content	%	18
Maximum Dry Density	Mg/m³	1.81
Optimum Moisture Content	%	14.8

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 22**
IG	S. Langran 09/07/2020		Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:47

Version 019 - 05/09/2013
1410 - Comp Formation 2 00.36 B - B24526-736524.xls : Sample ID 736524

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Formation 2
		Sample Ref
		Depth (m) 0.36
	Engineer	Sample Type B



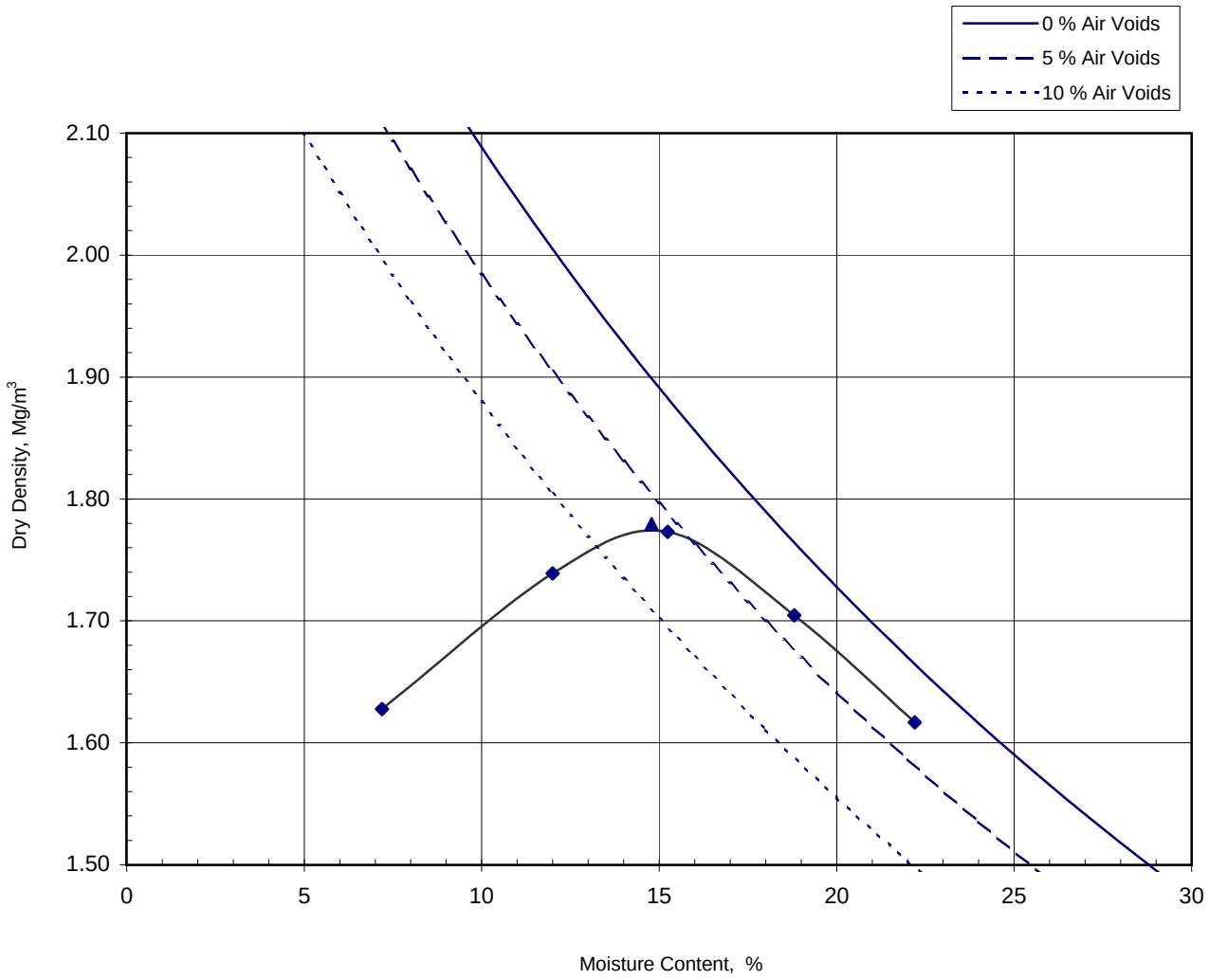
Non Engineering Description		Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse with one cobble.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	7
Mass Retained on 20.0 mm Sieve	%	1
Particle Density - Measured	Mg/m³	2.64
Natural Moisture Content	%	18
Maximum Dry Density	Mg/m³	1.73
Optimum Moisture Content	%	17.2

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 23**
IG	S. Langran 09/07/2020		Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:55

Version 019 - 05/09/2013
1410 - Comp Formation 3 00.30 B - B24526-736525.xls : Sample ID 736525

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Formation 3
		Sample Ref
	Engineer	Depth (m) 0.30
		Sample Type B



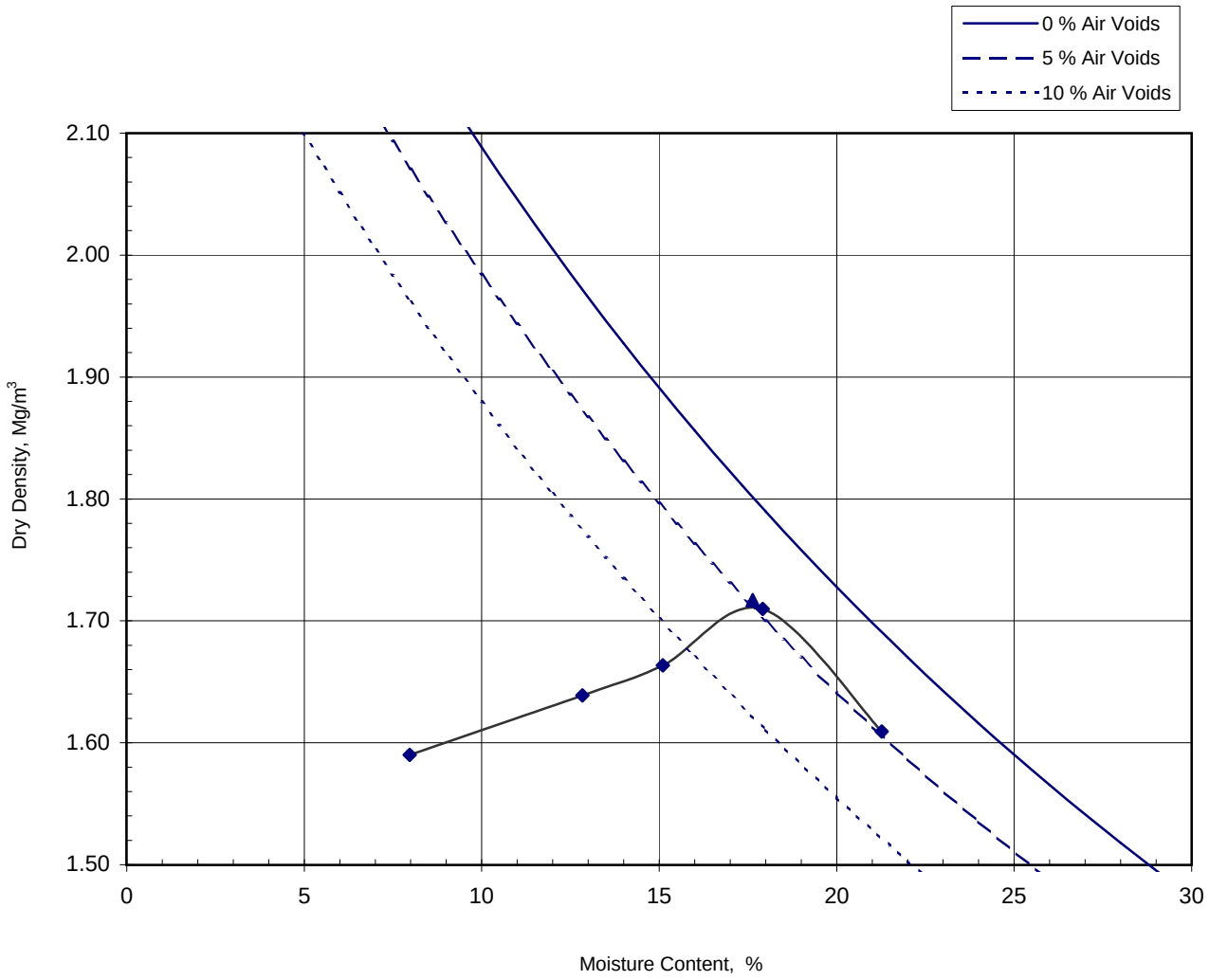
Non Engineering Description		Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	2
Mass Retained on 20.0 mm Sieve	%	3
Particle Density - Measured	Mg/m³	2.64
Natural Moisture Content	%	16
Maximum Dry Density	Mg/m³	1.78
Optimum Moisture Content	%	14.8

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 24**
IG	S. Langran 09/07/2020		Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:58

Version 019 - 05/09/2013
1410 - Comp Formation 4 00.50 B - B24526-736526.xls : Sample ID 736526

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Formation 4
		Sample Ref
		Depth (m) 0.50
	Engineer	Sample Type B



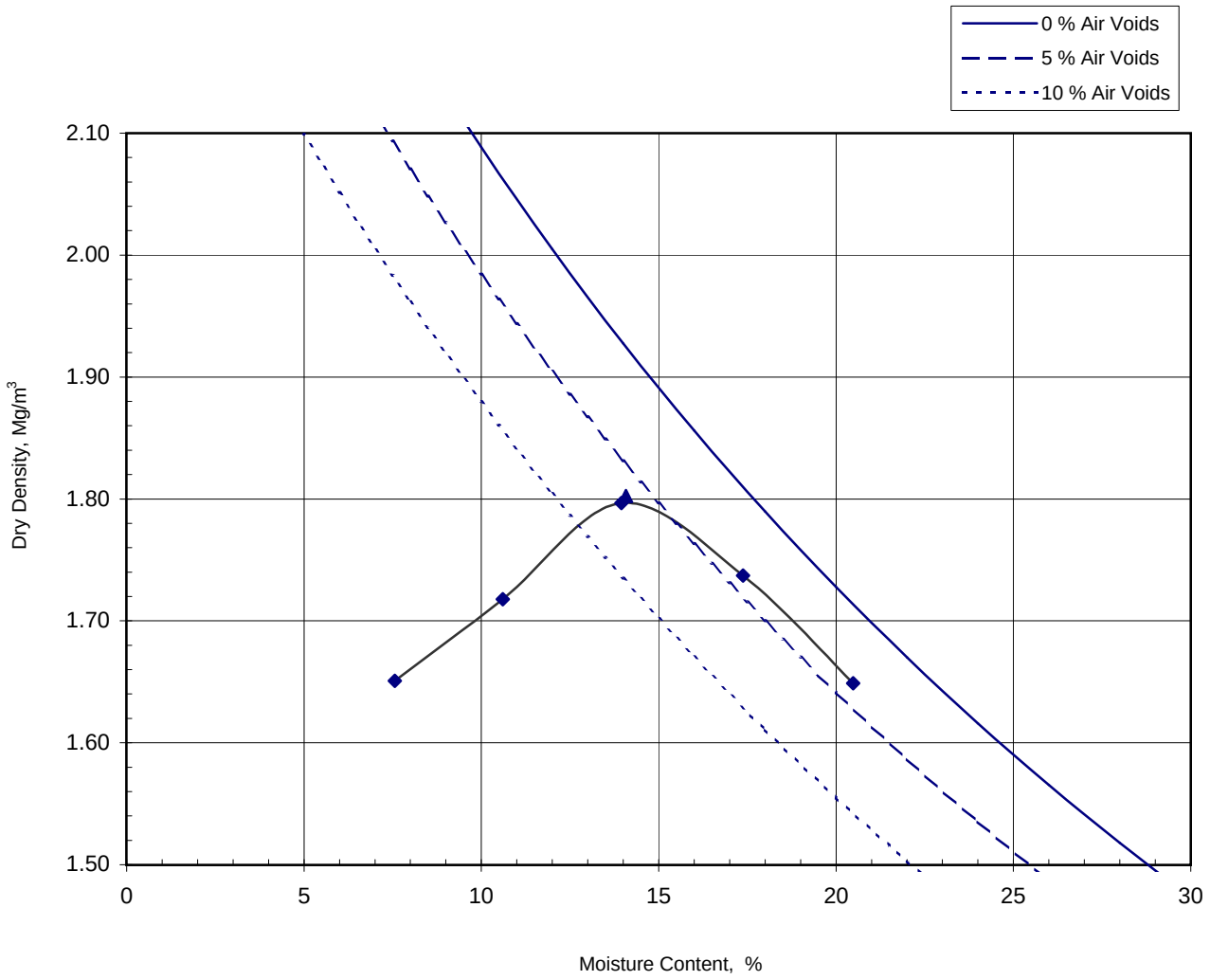
Non Engineering Description		Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse with one cobble.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	6
Mass Retained on 20.0 mm Sieve	%	5
Particle Density - Measured	Mg/m³	2.64
Natural Moisture Content	%	17
Maximum Dry Density	Mg/m³	1.72
Optimum Moisture Content	%	17.6

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 25**
IG	S. Langran 09/07/2020		Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:00

Version 019 - 05/09/2013
1410 - Comp Pond 1 01.00 B - B24526-736527.xls : Sample ID 736527

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 1
		Sample Ref
	Engineer	Depth (m) 1.00-1.50
		Sample Type B



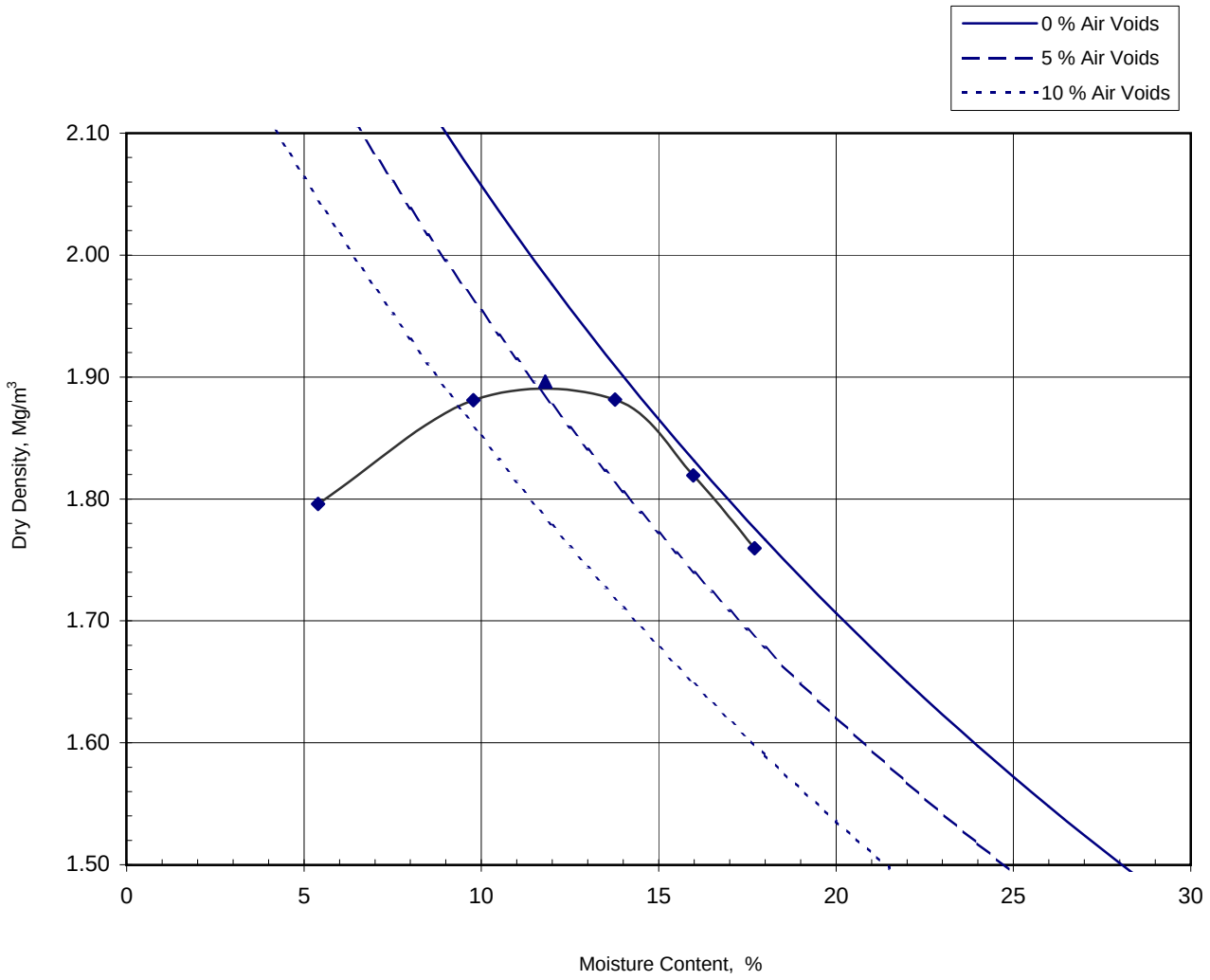
Non Engineering Description		Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	0
Mass Retained on 20.0 mm Sieve	%	1
Particle Density - Measured	Mg/m³	2.64
Natural Moisture Content	%	17
Maximum Dry Density	Mg/m³	1.80
Optimum Moisture Content	%	14.1

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 26**
IG	S. Langran 09/07/2020		Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:04

Version 019 - 05/09/2013
1410 - Comp Pond 1 02.50 B - B24526-736573.xls : Sample ID 736573

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 1
		Sample Ref
	Engineer	Depth (m) 2.50-3.00
		Sample Type B



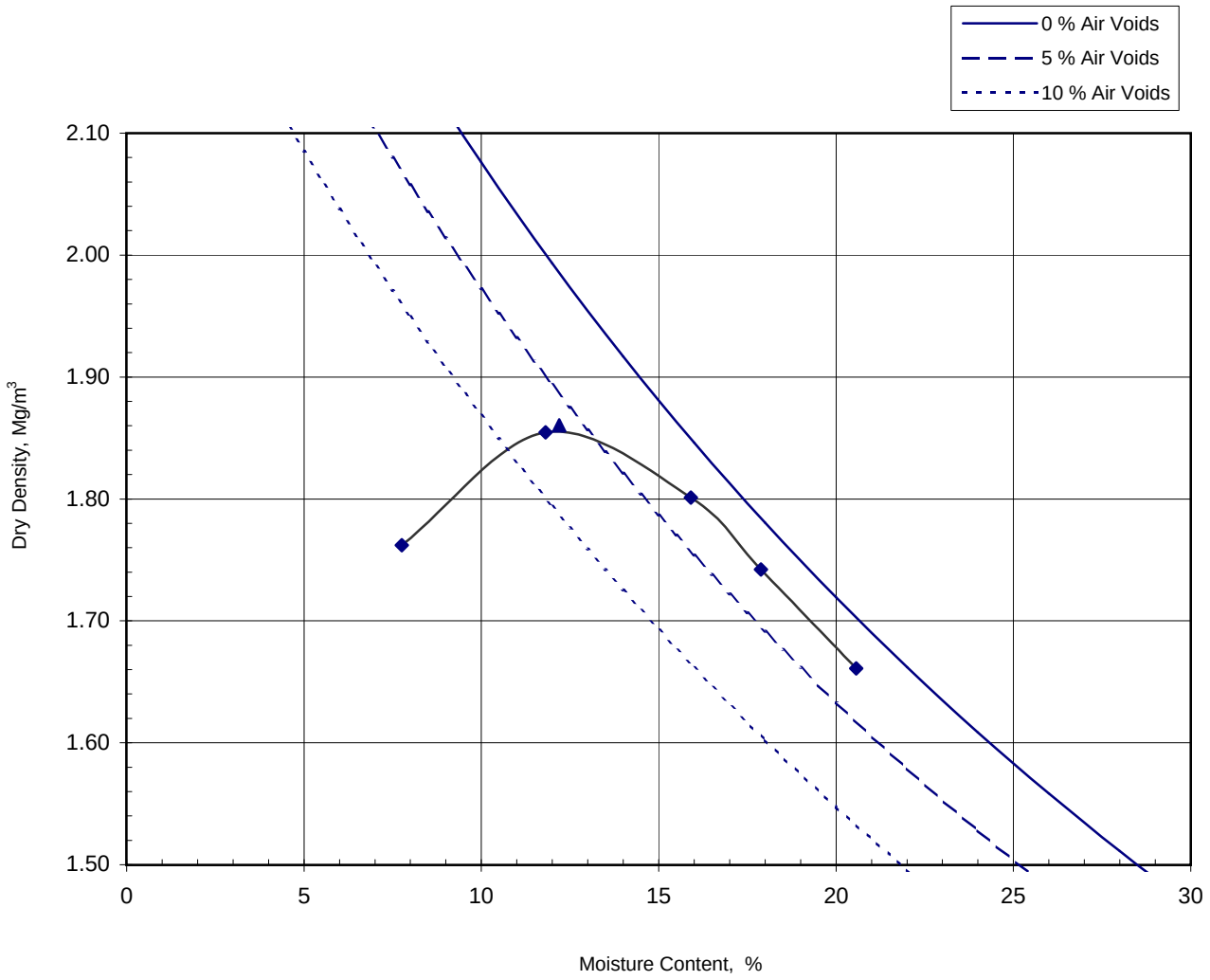
Non Engineering Description		Grey very clayey SAND with much gravel. Gravel is fine to coarse with one cobble.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	7
Mass Retained on 20.0 mm Sieve	%	17
Particle Density - Measured	Mg/m³	2.59
Natural Moisture Content	%	14
Maximum Dry Density	Mg/m³	1.90
Optimum Moisture Content	%	11.8

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 27**
IG	S. Langran 09/07/2020		Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:06

Version 019 - 05/09/2013
1410 - Comp Pond 1 03.00 B - B24526-736528.xls : Sample ID 736528

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 1
		Sample Ref
	Engineer	Depth (m) 3.00-3.50
		Sample Type B



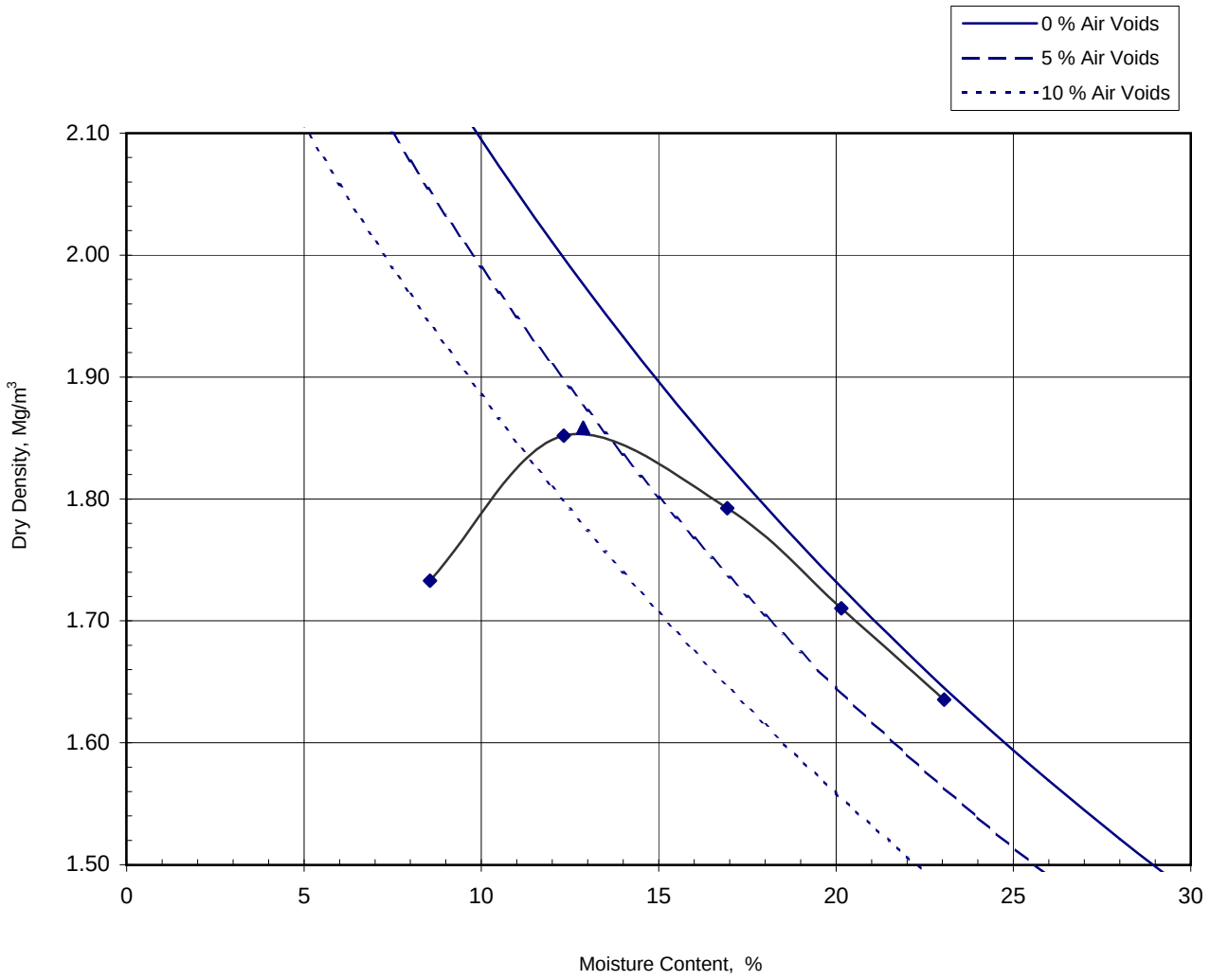
Non Engineering Description		Grey fine to coarse GRAVEL with much very sandy clay and one cobble.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	7
Mass Retained on 20.0 mm Sieve	%	21
Particle Density - Measured	Mg/m³	2.62
Natural Moisture Content	%	13
Maximum Dry Density	Mg/m³	1.86
Optimum Moisture Content	%	12.2

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 28**
IG	S. Langran 09/07/2020		Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:09

Version 019 - 05/09/2013
1410 - Comp Pond 2 00.50 B - B24526-736529.xls : Sample ID 736529

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 2
	Engineer	Sample Ref Depth (m) 0.50-1.00 Sample Type B



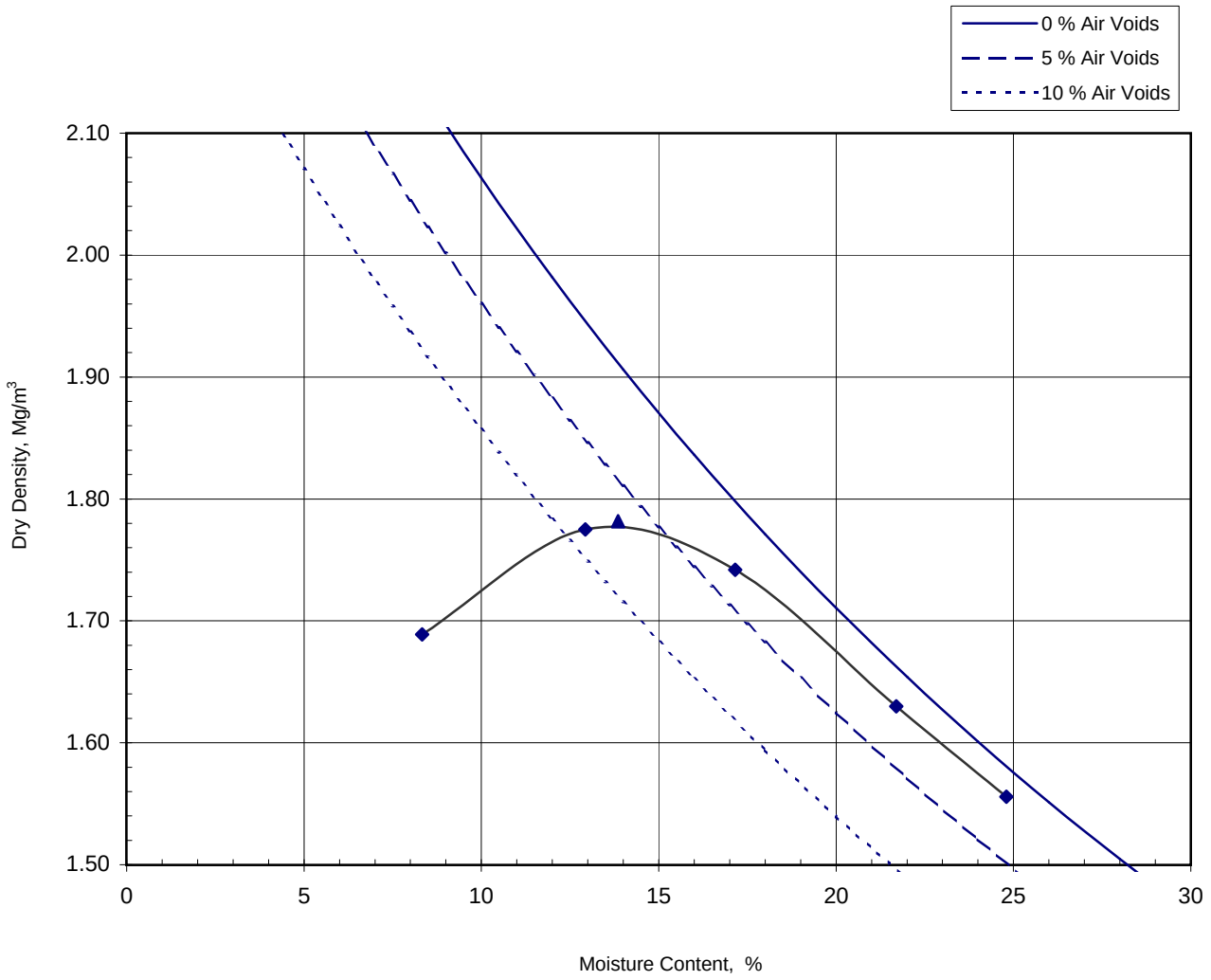
Non Engineering Description		Light brown very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	0
Mass Retained on 20.0 mm Sieve	%	3
Particle Density - Measured	Mg/m³	2.65
Natural Moisture Content	%	16
Maximum Dry Density	Mg/m³	1.86
Optimum Moisture Content	%	12.9

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 29**
IG	S. Langran 09/07/2020		Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:12

Version 019 - 05/09/2013
1410 - Comp Pond 2 01.50 B - B24526-736530.xls : Sample ID 736530

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 2
		Sample Ref
	Engineer	Depth (m) 1.50-2.00
		Sample Type B



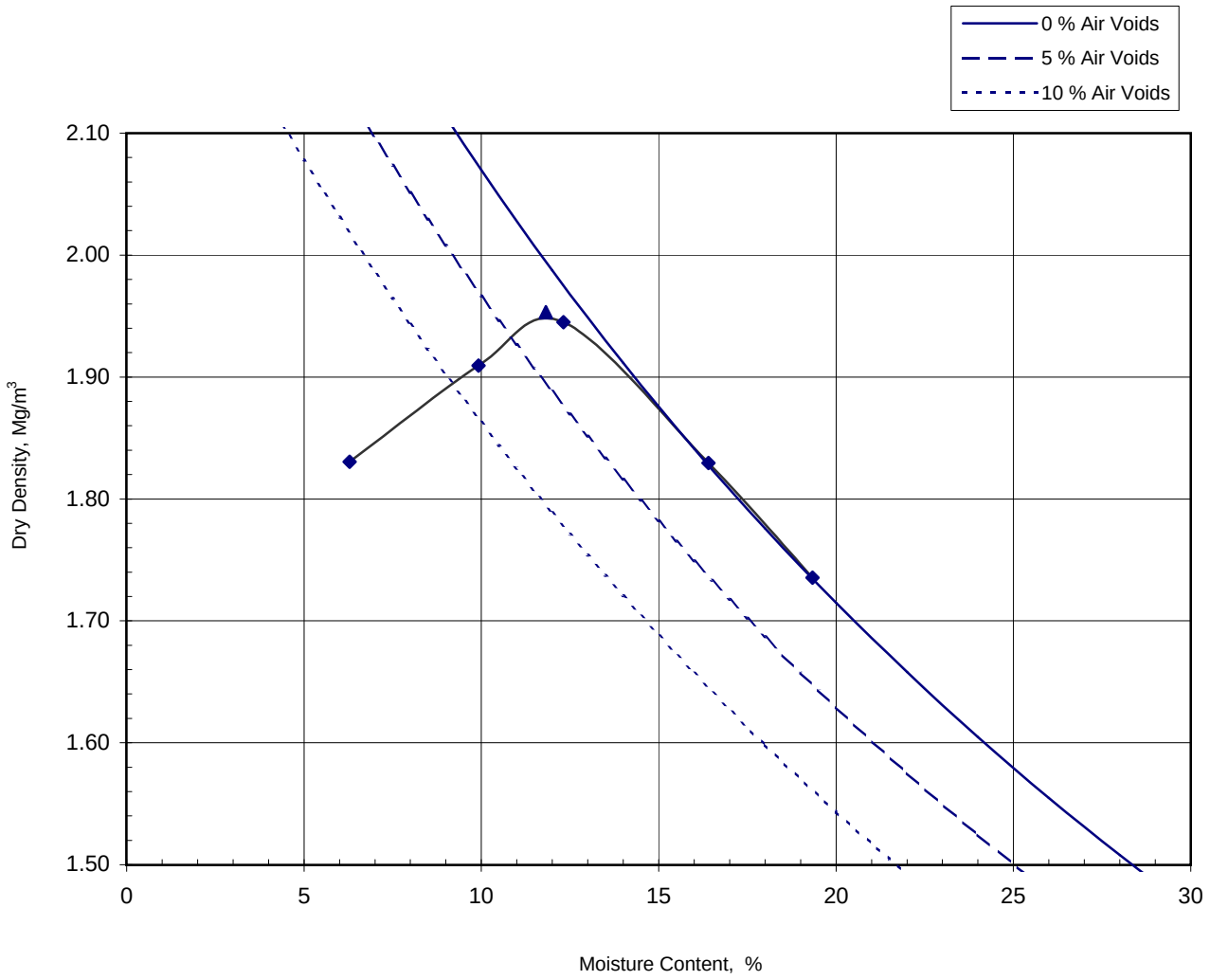
Non Engineering Description		Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	5
Mass Retained on 20.0 mm Sieve	%	7
Particle Density - Measured	Mg/m³	2.60
Natural Moisture Content	%	15
Maximum Dry Density	Mg/m³	1.78
Optimum Moisture Content	%	13.9

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 30**
IG	S. Langran 09/07/2020		Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:15

Version 019 - 05/09/2013
1410 - Comp Pond 2 02.50 B - B24526-736531.xls : Sample ID 736531

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 2
		Sample Ref
	Engineer	Depth (m) 2.50-3.00
		Sample Type B



Non Engineering Description		Grey very clayey silty SAND with much gravel. Gravel is fine to coarse with one cobble.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	8
Mass Retained on 20.0 mm Sieve	%	12
Particle Density - Measured	Mg/m³	2.61
Natural Moisture Content	%	14
Maximum Dry Density	Mg/m³	1.95
Optimum Moisture Content	%	11.8

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 31**
IG	S. Langran 09/07/2020		Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:18

LABORATORY TEST CERTIFICATE
MATERIALS LABORATORY

Certificate No: 20/1518 (IV.131.20.SS)

To : Scott Spencer

Client : Ivy House Environmental Ltd
Scotland Farm
Ockbrook
Derby, DE72 3RX

Date: 20/03/2020

Dear Sirs,

FIELD & LABORATORY TESTING

Introduction

We refer to samples supplied from Rockingham Raceway on the 11th May 2020.

Sampling : Client

Sample Reference : A2714 - A2721

Description: : See attached

Date Sampled : 11th May 2020

Date Tested: 13th May - 2nd June 2020

Source : See attached

Test Results;

Please see attached

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When a statement of conformity is requested for a test result against limits set out in a standard or specification (e.g. BS EN ISO, SHW) that already considers measurement uncertainty, MATtest Laboratories decision rule is to follow conformity requirements of the applicable standard or specification.
Results reported only relate to the items tested/ received.

Remarks;

Approved for Issue: _____

Position: Technical Manager

Issuing Office:

☑ **Head Office & Central**
Unit 5 Draycott Mills, Off Market Street, Draycott, Derby, DE72 3NB

☐ **North West**
Unit 15 Park Court, Sherdley Business Park, St. Helens, Merseyside, WA9 5GZ

Tel: 03333 202521 Web: www.mattestlaboratories.co.uk

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LABORATORY TEST CERTIFICATE

Certificate No 20/1518 Rev 1

To : Scott Spencer

Order No

Client : Ivy House

Dear Sirs,

DETEMINATION OF MOISTURE CONTENT - BS 1377 : PART 2 : 1990: CLAUSE 3

Introduction

We refer to a sample taken from Rockingham on the 11/05/2020

Material & Source

Sampled by:	Client
Sample Reference:	A2714
Description:	Brown Gravelly Clay
Location:	TP3 @1.5m
Date Sampled:	11/05/2020
Source:	Ex site
Date Tested:	13-14/05/2020
Sampling Certificate:	Schedule only.

Test Results;

MOISTURE CONTENT % 17

Comments;

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Remarks;

Approved for Issue Date 05/06/2020
John Pullar
Technical Manager

Unit 5, Draycott Mills
Off Market Street
Draycott
Derby
DE72 3NB
Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

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LABORATORY TEST CERTIFICATE
MATERIALS LABORATORY

Certificate No: 20/1518 (IV.131.20.SS) Rev 1

To : Scott Spencer

Client : Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby, DE72 3RX

Date: 07/06/2020

Dear Sirs,

FIELD & LABORATORY TESTING

Introduction

We refer to samples taken from Rockingham on the 11 May 2020.

Tested By	:	MATtest Laboratories Ltd
Sample Reference	:	A2714-A2721
Description	:	See reports
Date Sampled	:	11th May 2020
Date Tested	:	13 May - 02 June 2020
Source	:	See Reports
Weather	:	N/A

Test Results;

Please see attached

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Remarks;

Approved for Issue: _____

Position: Technical Manager

Issuing Office:

☑ **Head Office & Central**
Unit 5 Draycott Mills, Off Market Street, Draycott, Derby, DE72 3NB

☐ **North West**
Unit 15 Park Court, Sherdley Business Park, St. Helens, Merseyside, WA9 5GZ

Tel: 03333 202521 Web: www.mattestlaboratories.co.uk

7806

MAT test Laboratories Limited
Materials Testing & Consultancy

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2714

Client:
Ivy House Environmental Ltd
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

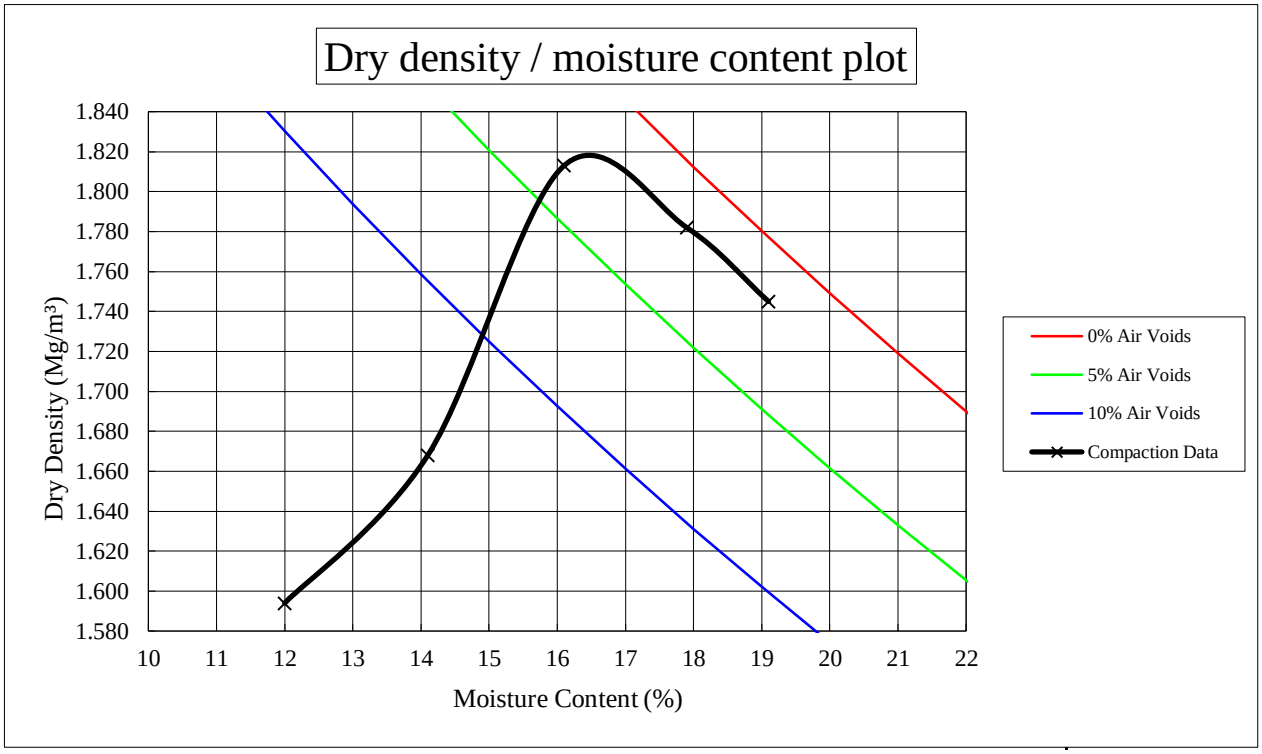
DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP BY COMPACTION BS 1377 : Part 4

We refer to a sample taken from Rockingham on the 11th May 2020.

Material & Source

Sampled by:	Client	Sampling Certificate:	Schedule only
Description:	Brown gravelly Clay	Date Sampled:	11/05/2020
Date Tested:	19 - 26/05/2020	Source:	Ex Site
Location:	TP3 @1.5m	Sample Ref:	A2714

Test Results:



Optimum Moisture Content : 16%	Maximum Dry Density: 1.82 Mg/m³
Test Method: Clause 3.3 (2.5Kg Rammer)	
Particle Density: 2.69 Mg/m³ (measured)	
Proportion of sample > 37.5mm : 0%	Proportion of sample > 20mm: 4%
Grading Zone: 2	

Approved for Issue: _____ Date: 07/06/2020

J. Pullar Technical Manager

MLR 007 - BS 1377 OMC /MDD

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2714

Client: **Ivy House Environmental Limited**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Particle Density - BS 1377-2:1990 Clause 8.2 (Gas Jar Method)

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	Client
Sample Reference	A2714
Location	TP3 @1.5m
Date Sampled	11/05/2020
Source	Ex site
Date Tested	13-15 May 2020
Sampling Certificate	Schedule only

Test Results:

Particle Density - 2.69 Mg/m³

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All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020

John Pullar
Technical Manager

Unit 5, Draycott Mills
Off Market Street
Draycott
Derby
DE72 3NB
Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2714

Client: Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Moisture Content - BS 1377-2:1990 Clause 3
Determination of Plastic Limit - BS 1377-2:1990 Clause 5.3
Determination of Liquid Limit - BS 1377-2:1990 Clause 4.4
Determination of Plasticity Index - BS 1377-2:1990 Clause 5.4

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	: Client
Sample Reference	: A2714
Location	: TP3 @1.5m
Date Sampled	: 11th May 2020
Source	: Ex site
Date Tested	: 13 - 18 May 2020
Sampling Certificate	: Schedule only

Test Results:	A2714
Moisture Content :	**17%**
Liquid Limit :	**45**
Plastic Limit :	**17**
Plasticity Index :	**28**
% retained on 425 micron	**23**
Description / Designation	**Brown gravelly Clay**

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Remarks;

Approved for Issue Date 07/06/2020

John Pullar
Technical Manager

Unit 5, Draycott Mills
Off Market Street
Draycott
Derby
DE72 3NB
Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

LABORATORY TEST CERTIFICATE

Certificate No 20/1518

To : Scott Spencer

Order No

Client : Ivy House

Dear Sirs,

DETEMINATION OF MOISTURE CONTENT - BS 1377 : PART 2 : 1990: CLAUSE 3

Introduction

We refer to a sample taken from Rockingham on the 11/05/2020

Material & Source

Sampled by:	Client
Sample Reference:	A2715
Description:	Brown Gravelly Clay
Location:	TP3 @2.0-3.0m
Date Sampled:	11/05/2020
Source:	Ex site
Date Tested:	13-14/05/2020
Sampling Certificate:	Schedule only.

Test Results;

MOISTURE CONTENT % 20

Comments;

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Remarks;

Approved for Issue Date 05/06/2020
John Pullar
Technical Manager

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DE72 3NB
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e-mail: info@mattestlabs.co.uk

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MAT test Laboratories Limited
Materials Testing & Consultancy

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2715

Client:
Ivy House Environmental Ltd
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

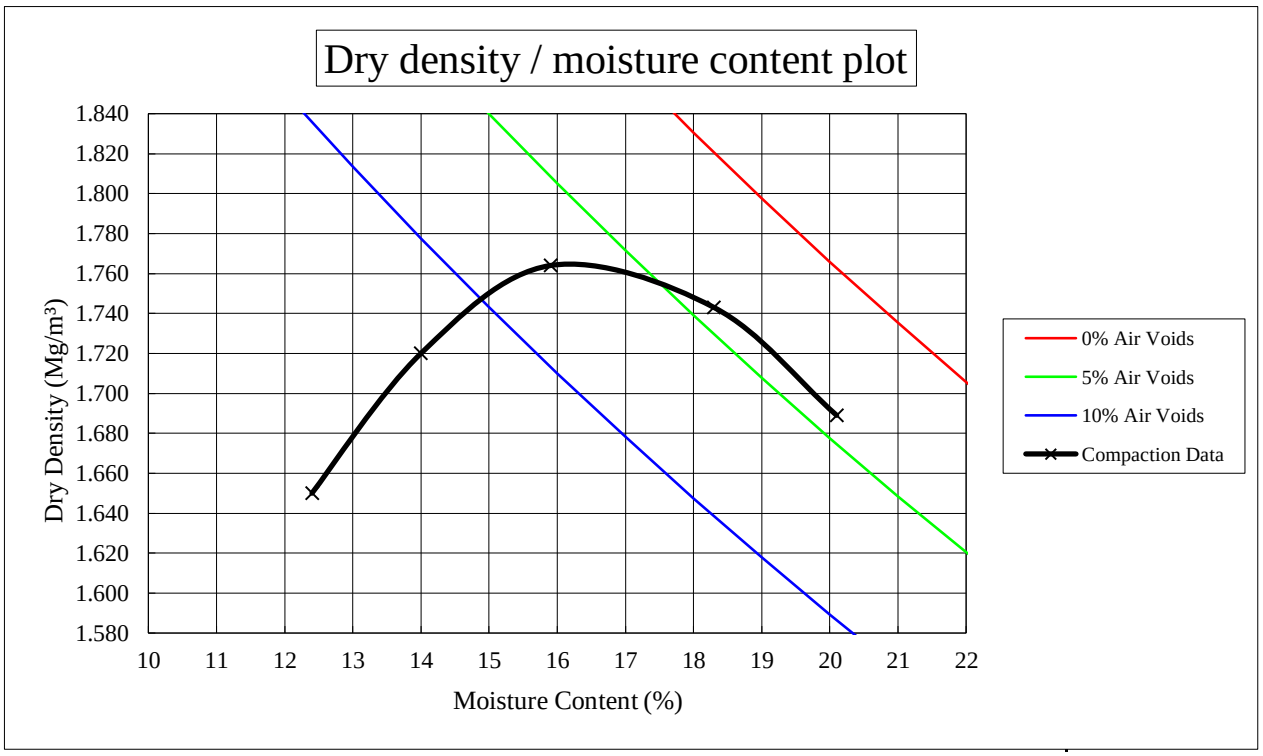
DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP BY COMPACTION BS 1377 : Part 4

We refer to a sample taken from Rockingham on the 11th May 2020.

Material & Source

Sampled by:	Client	Sampling Certificate:	Schedule only
Description:	Brown gravelly Clay	Date Sampled:	11/05/2020
Date Tested:	18 - 27/05/2020	Source:	Ex Site
Location:	TP3 @2.0-3.0m	Sample Ref:	A2715

Test Results:



Optimum Moisture Content : 16%	Maximum Dry Density: 1.76 Mg/m³
Test Method: Clause 3.3 (2.5Kg Rammer)	
Particle Density: 2.73 Mg/m³ (measured)	
Proportion of sample > 37.5mm : 0%	Proportion of sample > 20mm: 5%
Grading Zone: 2	

Approved for Issue: _____ Date: 07/06/2020

J. Pullar Technical Manager

MLR 007 - BS 1377 OMC /MDD

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2715

Client: **Ivy House Environmental Limited**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Particle Density - BS 1377-2:1990 Clause 8.2 (Gas Jar Method)

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	Client
Sample Reference	A2715
Location	TP3 @2.0-3.0m
Date Sampled	11/05/2020
Source	Ex site
Date Tested	14-15 May 2020
Sampling Certificate	Schedule only

Test Results:

Particle Density - 2.73 Mg/m³

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All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020

John Pullar
Technical Manager

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Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2715

Client: Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Moisture Content - BS 1377-2:1990 Clause 3
Determination of Plastic Limit - BS 1377-2:1990 Clause 5.3
Determination of Liquid Limit - BS 1377-2:1990 Clause 4.4
Determination of Plasticity Index - BS 1377-2:1990 Clause 5.4

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	: Client
Sample Reference	: A2715
Location	: TP3 @2.0-3.0m
Date Sampled	: 11th May 2020
Source	: Ex site
Date Tested	: 13 - 18 May 2020
Sampling Certificate	: Schedule only

Test Results:	A2715
Moisture Content :	**20%**
Liquid Limit :	**38**
Plastic Limit :	**16**
Plasticity Index :	**22**
% retained on 425 micron	**23**
Description / Designation	**Brown gravelly Clay**

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Remarks;

Approved for Issue Date 07/06/2020

John Pullar
Technical Manager

Unit 5, Draycott Mills
Off Market Street
Draycott
Derby
DE72 3NB
Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

LABORATORY TEST CERTIFICATE

Certificate No 20/1518

To : Scott Spencer

Order No

Client : Ivy House

Dear Sirs,

DETEMINATION OF MOISTURE CONTENT - BS 1377 : PART 2 : 1990: CLAUSE 3

Introduction

We refer to a sample taken from Rockingham on the 11/05/2020

Material & Source

Sampled by:	Client
Sample Reference:	A2716
Description:	Brown Gravelly Clay
Location:	TP4 @1.5-2.0m
Date Sampled:	11/05/2020
Source:	Ex site
Date Tested:	13-14/05/2020
Sampling Certificate:	Schedule only.

Test Results;

MOISTURE CONTENT % 24

Comments;

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020
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Technical Manager

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7806

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MAT test Laboratories Limited
Materials Testing & Consultancy

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2716

Client: **Ivy House Environmental Ltd**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

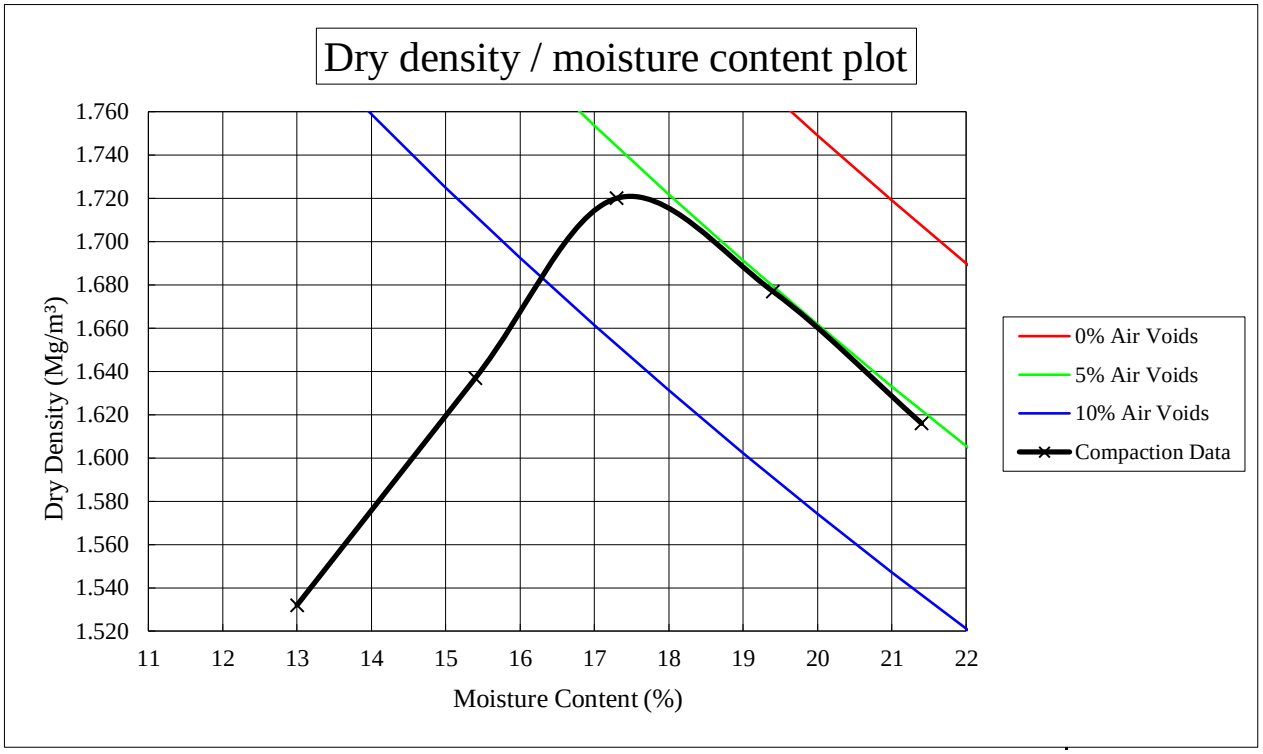
DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP BY COMPACTION BS 1377 : Part 4

We refer to a sample taken from Rockingham on the 11th May 2020.

Material & Source

Sampled by:	Client	Sampling Certificate:	Schedule only
Description:	Brown gravelly Clay	Date Sampled:	11/05/2020
Date Tested:	27/05-02/06/2020	Source:	Ex Site
Location:	TP4 @1.5-2.0m	Sample Ref:	A2716

Test Results:



Optimum Moisture Content : 17%	Maximum Dry Density: 1.72 Mg/m³
Test Method: Clause 3.3 (2.5Kg Rammer)	
Particle Density: 2.69 Mg/m³ (measured)	
Proportion of sample > 37.5mm : 0%	Proportion of sample > 20mm: 5%
Grading Zone: 2	

Approved for Issue: _____ Date: 07/06/2020

J. Pullar Technical Manager

MLR 007 - BS 1377 OMC /MDD

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2716

Client: **Ivy House Environmental Limited**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Particle Density - BS 1377-2:1990 Clause 8.2 (Gas Jar Method)

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	Client
Sample Reference	A2716
Location	TP4 @1.5-2.0m
Date Sampled	11/05/2020
Source	Ex site
Date Tested	15-18 May 2020
Sampling Certificate	Schedule only

Test Results:

Particle Density - 2.69 Mg/m³

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Remarks;

Approved for Issue Date 05/06/2020

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LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2716

Client: Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Moisture Content - BS 1377-2:1990 Clause 3
Determination of Plastic Limit - BS 1377-2:1990 Clause 5.3
Determination of Liquid Limit - BS 1377-2:1990 Clause 4.4
Determination of Plasticity Index - BS 1377-2:1990 Clause 5.4

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	: Client
Sample Reference	: A2716
Location	: TP4 @1.5-2.0m
Date Sampled	: 11th May 2020
Source	: Ex site
Date Tested	: 13 - 27 May 2020
Sampling Certificate	: Schedule only

Test Results:	A2716
Moisture Content :	**24%**
Liquid Limit :	**35**
Plastic Limit :	**17**
Plasticity Index :	**18**
% retained on 425 micron	**26**
Description / Designation	**Brown gravelly Clay**

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Remarks;

Approved for Issue Date 07/06/2020

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LABORATORY TEST CERTIFICATE

Certificate No 20/1518

To : Scott Spencer

Order No

Client : Ivy House

Dear Sirs,

DETEMINATION OF MOISTURE CONTENT - BS 1377 : PART 2 : 1990: CLAUSE 3

Introduction

We refer to a sample taken from Rockingham on the 11/05/2020

Material & Source

Sampled by:	Client
Sample Reference:	A2717
Description:	Brown Gravelly Clay
Location:	TP5 @2.0-3.0m
Date Sampled:	11/05/2020
Source:	Ex site
Date Tested:	15-18/05/2020
Sampling Certificate:	Schedule only.

Test Results;

MOISTURE CONTENT % 21

Comments;

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Remarks;

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MAT test Laboratories Limited
Materials Testing & Consultancy

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2717

Client:
Ivy House Environmental Ltd
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

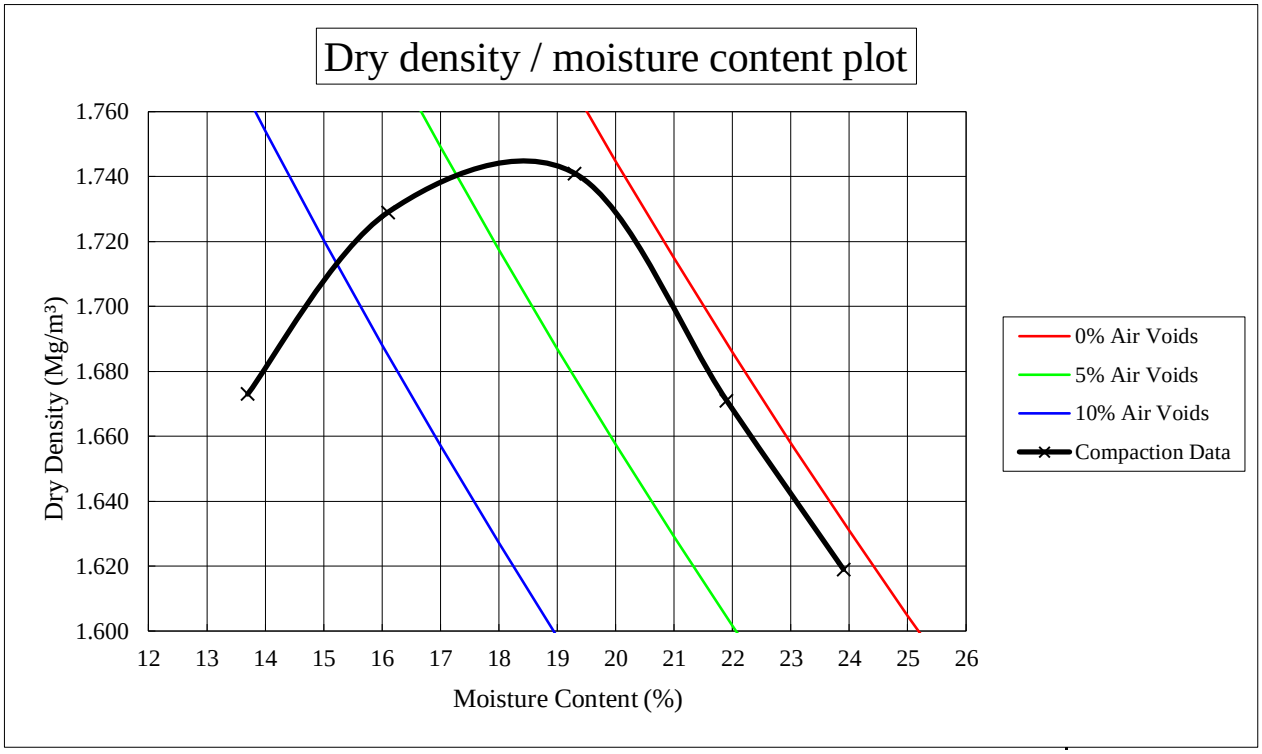
DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP BY COMPACTION BS 1377 : Part 4

We refer to a sample taken from Rockingham on the 11th May 2020.

Material & Source

Sampled by:	Client	Sampling Certificate:	Schedule only
Description:	Brown gravelly Clay	Date Sampled:	11/05/2020
Date Tested:	27/05-03/06/2020	Source:	Ex Site
Location:	TP5 @2.0-3.0m	Sample Ref:	A2717

Test Results:



Optimum Moisture Content : 18%	Maximum Dry Density: 1.74 Mg/m³
Test Method: Clause 3.3 (2.5Kg Rammer)	
Particle Density: 2.68 Mg/m³ (measured)	
Proportion of sample > 37.5mm : 0%	Proportion of sample > 20mm: 3%
Grading Zone: 2	

Approved for Issue: JPullar _____ Date: 07/06/2020

J. Pullar Technical Manager

MLR 007 - BS 1377 OMC /MDD

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2717

Client: **Ivy House Environmental Limited**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Particle Density - BS 1377-2:1990 Clause 8.2 (Gas Jar Method)

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	Client
Sample Reference	A2717
Location	TP5 @2.0-3.0m
Date Sampled	11/05/2020
Source	Ex site
Date Tested	18-19 May 2020
Sampling Certificate	Schedule only

Test Results:

Particle Density - 2.68 Mg/m³

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

Approved for Issue Date 05/06/2020

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LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2717

Client: Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Moisture Content - BS 1377-2:1990 Clause 3
Determination of Plastic Limit - BS 1377-2:1990 Clause 5.3
Determination of Liquid Limit - BS 1377-2:1990 Clause 4.4
Determination of Plasticity Index - BS 1377-2:1990 Clause 5.4

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	: Client
Sample Reference	: A2717
Location	: TP5 @2.0-3.0m
Date Sampled	: 11th May 2020
Source	: Ex site
Date Tested	: 15 - 27 May 2020
Sampling Certificate	: Schedule only

Test Results:	A2717
Moisture Content :	**21%**
Liquid Limit :	**36**
Plastic Limit :	**19**
Plasticity Index :	**17**
% retained on 425 micron	**24**
Description / Designation	**Brown gravelly Clay**

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

Approved for Issue Date 07/06/2020

John Pullar
Technical Manager

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LABORATORY TEST CERTIFICATE

Certificate No 20/1518

To : Scott Spencer

Order No

Client : Ivy House

Dear Sirs,

DETEMINATION OF MOISTURE CONTENT - BS 1377 : PART 2 : 1990: CLAUSE 3

Introduction

We refer to a sample taken from Rockingham on the 11/05/2020

Material & Source

Sampled by:	Client
Sample Reference:	A2719
Description:	Brown Gravelly Clay
Location:	TP8 @0.5-1.5m
Date Sampled:	11/05/2020
Source:	Ex site
Date Tested:	15-18/05/2020
Sampling Certificate:	Schedule only.

Test Results;

MOISTURE CONTENT % 21

Comments;

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Remarks;

Approved for Issue Date 05/06/2020
John Pullar
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7806

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MAT test Laboratories Limited
Materials Testing & Consultancy

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2719

Client:
Ivy House Environmental Ltd
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

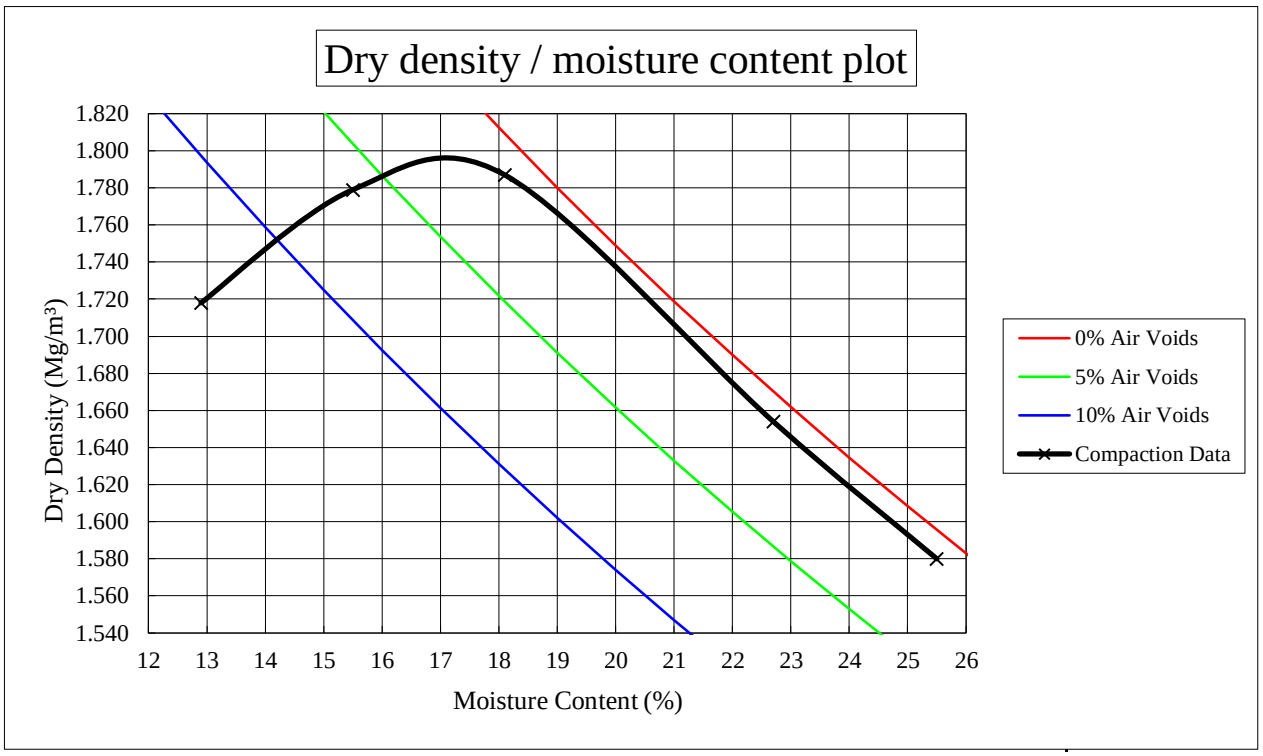
DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP BY COMPACTION BS 1377 : Part 4

We refer to a sample taken from Rockingham on the 11th May 2020.

Material & Source

Sampled by:	Client	Sampling Certificate:	Schedule only
Description:	Brown gravelly Clay	Date Sampled:	11/05/2020
Date Tested:	27/05-05/06/2020	Source:	Ex Site
Location:	TP8 @0.5-1.5m	Sample Ref:	A2719

Test Results:



Optimum Moisture Content : 17%	Maximum Dry Density: 1.80 Mg/m³
Test Method: Clause 3.3 (2.5Kg Rammer)	
Particle Density: 2.69 Mg/m³ (measured)	
Proportion of sample > 37.5mm : 0%	Proportion of sample > 20mm: 5%
Grading Zone: 2	

Approved for Issue: _____ Date: 07/06/2020

J. Pullar Technical Manager

MLR 007 - BS 1377 OMC /MDD

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2719

Client: **Ivy House Environmental Limited**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Particle Density - BS 1377-2:1990 Clause 8.2 (Gas Jar Method)

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	Client
Sample Reference	A2719
Location	TP8 @0.5-1.5m
Date Sampled	11/05/2020
Source	Ex site
Date Tested	19-21 May 2020
Sampling Certificate	Schedule only

Test Results:

Particle Density - 2.69 Mg/m³

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

Approved for Issue Date 05/06/2020

John Pullar
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LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2719

Client: Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Moisture Content - BS 1377-2:1990 Clause 3
Determination of Plastic Limit - BS 1377-2:1990 Clause 5.3
Determination of Liquid Limit - BS 1377-2:1990 Clause 4.4
Determination of Plasticity Index - BS 1377-2:1990 Clause 5.4

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	: Client
Sample Reference	: A2719
Location	: TP8 @0.5-1.5m
Date Sampled	: 11th May 2020
Source	: Ex site
Date Tested	: 15 - 28 May 2020
Sampling Certificate	: Schedule only

Test Results:	A2719
Moisture Content :	**21%**
Liquid Limit :	**34**
Plastic Limit :	**17**
Plasticity Index :	**17**
% retained on 425 micron	**32**
Description / Designation	**Brown gravelly Clay**

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

Approved for Issue Date 07/06/2020

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Technical Manager

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Derby
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e-mail: info@mattestlabs.co.uk

2531

ANALYTICAL TEST REPORT

Contract no: 86094

Contract name: Rockingham

Client reference: -

Clients name: MATtest Laboratories

Clients address: Unit 5, Draycott Mills
Off Market Street
Draycott, Derby
DE72 3NB

Samples received: 14 May 2020

Analysis started: 14 May 2020

Analysis completed: 20 May 2020

Report issued: 20 May 2020

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by:
Dave Bowerbank
Customer Support Hero

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.
Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
86094-1	A2717	2.00-3.00	Clay with Gravel	-	-	15.9
86094-2	A2718	1.50	Clay with Gravel	-	-	16.5
86094-3	A2720	3.00	Clay with Gravel	-	-	16.6
86094-4	A2721	1.50	Clay with Gravel	-	-	18.3

Chemtech Environmental Limited

SOILS

Lab number			86094-1	86094-2	86094-3	86094-4
Sample id			A2717	A2718	A2720	A2721
Location			TP5	TP7	TP8	TP9
Depth (m)			2.00-3.00	1.50	3.00	1.50
Date sampled			11/05/2020	11/05/2020	11/05/2020	11/05/2020
Test	**Method**	**Units**				
pH	CE004 M	units	8.4	8.4	8.2	9.0
Sulphate (total)	CE062 M	mg/kg SO_4	5118	6306	3136	5018

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry	M	100	mg/kg SO_4

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
86094-1	A2717	2.00-3.00	N	
86094-2	A2718	1.50	N	
86094-3	A2720	3.00	N	
86094-4	A2721	1.50	N	

TERRA TEK
SITE INVESTIGATION & LABORATORY SERVICES

Ivy House Environmental
Scotland Farm
Far Lane
Ockbrook
Derbyshire
DE72 3RX
For the attention of Scott Spencer

Report No: B24526
Issue No 01

LABORATORY TEST REPORT

Project Name	**ROCKINGHAM**		
Project Number	**B24526**	Date samples received	26/06/2020
Your Ref		Date written instructions received	26/06/2020
Purchase Order		Date testing commenced	26/06/2020

Please find enclosed the results as summarised below

Figure / Table	Test Quantity	Description	ISO 17025 Accredited
1	10	Summary of Geotechnical Tests	Yes
2-11	10	Atterberg Limit	Yes
12-21	10	Particle Size Distribution	Yes
22-31	10	Moisture Content/Dry Density Relationship	Yes

Remarks :

Issued by : Stephen Langman Date of Issue : 09/07/2020

Approved Signatories : S. Langman 09/07/2020
G Wilson (JMD/Laboratories Director), S Langman (Laboratory Coordinator)

Key to symbols used in this report
S/C : Testing was sub-contracted

Unless we are notified to the contrary, samples will be disposed after a period of one month from this date.
The results reported relate to samples received in the laboratory only.
All results contained in this report are provisional unless signed by an approved signatory
This report should not be reproduced except in full without the written approval of the laboratory.
Under multisite accreditation the testing contained in this report may have been performed at another Terra Tek laboratory.
The enclosed results remain the property of Terra Tek Limited and we reserve the right to withdraw
our report if we have not received cleared funds in accordance with our standard terms and conditions
Only those results indicated in this report are UKAS accredited and any opinions or interpretations expressed are outside the scope of UKAS accreditation.
Feedback on the this report may be left via our website www.terratek.co.uk/contact-us

mCERTS
UKAS TESTING 0126
25 YEARS 1990-2015

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birmingham@terratek.co.uk
www.terratek.co.uk
Terra Tek Ltd is registered in Scotland No. 121594
Offices in Airdrie, Birmingham, Belfast and Chesham
Head Office : 62 Rochsolloch Road, Airdrie, ML6 9BG

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site: ROCKINGHAM

Client:

Engineer:

Contract No B24526

Sample Identification							Atterberg limits						Density		Total Stress			
Exploratory Hole	Depth m	Sample Ref	Sample Type	Lab Sample ID	Non Engineering Sample Description	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	Percentage retained 425µm %	Atterberg Classification	Particle Density Mg/m³	Bulk Mg/m³	Dry Mg/m³	Shear Strength kPa	Apparent Cohesion C kPa	Angle of Shearing Resistance Phi	Other Tests
Formation 1	0.50		B	736523	Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.	18	45	17	28	21	CI	2.62						PSD,2.5kg Compaction,BRE SD1 Suite
Formation 2	0.36		B	736524	Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse with one cobble.	18	45	18	27	27	CI	2.64						PSD,2.5kg Compaction,BRE SD1 Suite
Formation 3	0.30		B	736525	Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.	16	45	18	27	27	CI	2.64						PSD,2.5kg Compaction,BRE SD1 Suite
Formation 4	0.50		B	736526	Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse with one cobble.	17	44	19	25	35	CI	2.64						PSD,2.5kg Compaction,BRE SD1 Suite
Pond 1	1.00-1.50		B	736527	Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.	17	39	15	24	14	CI	2.64						PSD,2.5kg Compaction,BRE SD1 Suite
Notes	Opinions and interpretations are outside the scope of UKAS accreditation				UKAS Accredited Test Y/N	Test details are given on the 'Notes on Laboratory Procedures' sheet												See individual report sheets
						Y	Y	Y	Y	Y	-	Y	Y	Y	Y	Y	Y	

Originator	Approved
PM	S. Langran 09/07/2020

SUMMARY OF GEOTECHNICAL TESTS

Figure 1

Sheet 1 of 2

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site: ROCKINGHAM

Client:

Engineer:

Contract No B24526

Sample Identification							Atterberg limits						Density		Total Stress			
Exploratory Hole	Depth m	Sample Ref	Sample Type	Lab Sample ID	Non Engineering Sample Description	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	Percentage retained 425µm %	Atterberg Classification	Particle Density Mg/m³	Bulk Mg/m³	Dry Mg/m³	Shear Strength kPa	Apparent Cohesion C kPa	Angle of Shearing Resistance Phi	Other Tests
Pond 1	2.50-3.00		B	736573	Grey very clayey SAND with much gravel. Gravel is fine to coarse with one cobble.	14	40	18	22	60	CI	2.59						PSD,2.5kg Compaction
Pond 1	3.00-3.50		B	736528	Grey fine to coarse GRAVEL with much very sandy clay and one cobble.	13	39	15	24	59	CI	2.62						PSD,2.5kg Compaction,BRE SD1 Suite
Pond 2	0.50-1.00		B	736529	Light brown very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.	16	40	15	25	18	CI	2.65						PSD,2.5kg Compaction,BRE SD1 Suite
Pond 2	1.50-2.00		B	736530	Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse.	15	35	14	21	37	CL	2.60						PSD,2.5kg Compaction,BRE SD1 Suite
Pond 2	2.50-3.00		B	736531	Grey very clayey silty SAND with much gravel. Gravel is fine to coarse with one cobble.	14	33	19	14	50	CL	2.61						PSD,2.5kg Compaction,BRE SD1 Suite
Notes	Opinions and interpretations are outside the scope of UKAS accreditation				UKAS Accredited Test Y/N	Test details are given on the 'Notes on Laboratory Procedures' sheet												See individual report sheets
						Y	Y	Y	Y	Y	-	Y	Y	Y	Y	Y	Y	

Originator	Approved
PM	S. Langran 09/07/2020

SUMMARY OF GEOTECHNICAL TESTS

Figure 1

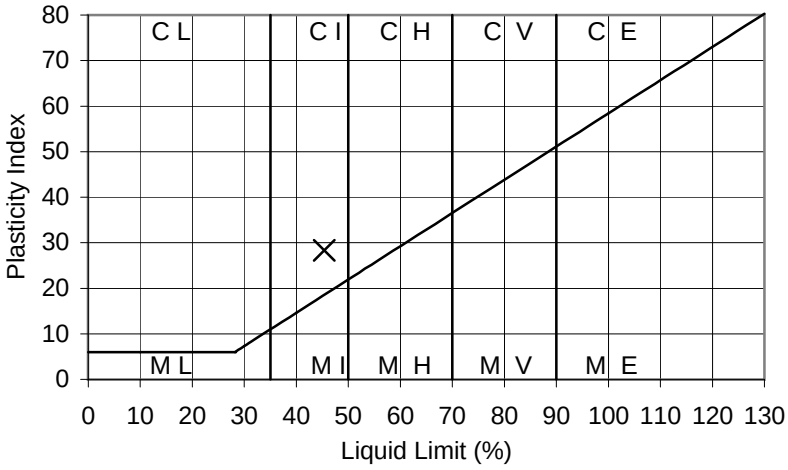
Sheet 2 of 2

Version 051 - 08/11/2013
1220 - LLPL Formation 1 00.50 B - B24526-736523.xls : Sample ID 736523

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Formation 1
		Sample Ref
		Depth (m) 0.50
	Engineer	Sample Type B

Non Engineering Description : Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	18	%
Percentage retained on 425µm sieve :	21	%
Liquid Limit :	45	%
Plastic Limit :	17	%
Plasticity Index :	28	
Equivalent moisture content of material passing 425µm sieve :	23	%
Liquidity Index :	0.21	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 2
LC	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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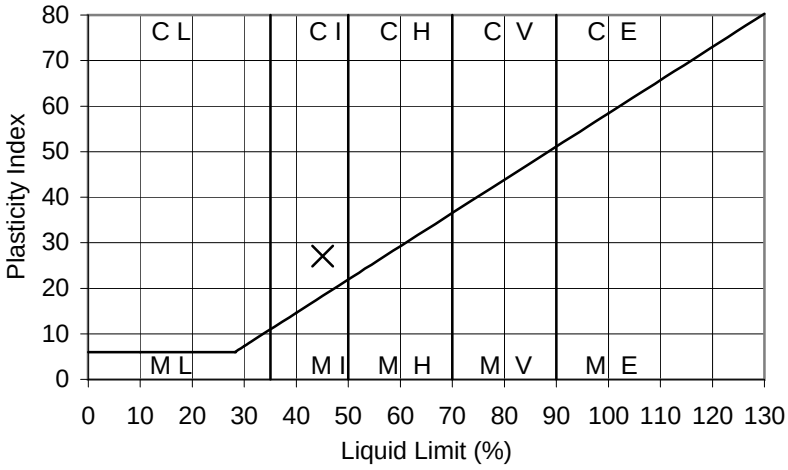
Lab Project No B24526 : 09/07/2020 11:08:41

Version 051 - 08/11/2013
1220 - LLPL Formation 2 00.36 B - B24526-736524.xls : Sample ID 736524

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Formation 2
		Sample Ref
		Depth (m) 0.36
	Engineer	Sample Type B

Non Engineering Description : Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse with one cobble.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	18 %
Percentage retained on 425µm sieve :	27 %
Liquid Limit :	45 %
Plastic Limit :	18 %
Plasticity Index :	27
Equivalent moisture content of material passing 425µm sieve :	25 %
Liquidity Index :	0.26

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 3
IG	S. Langmeu 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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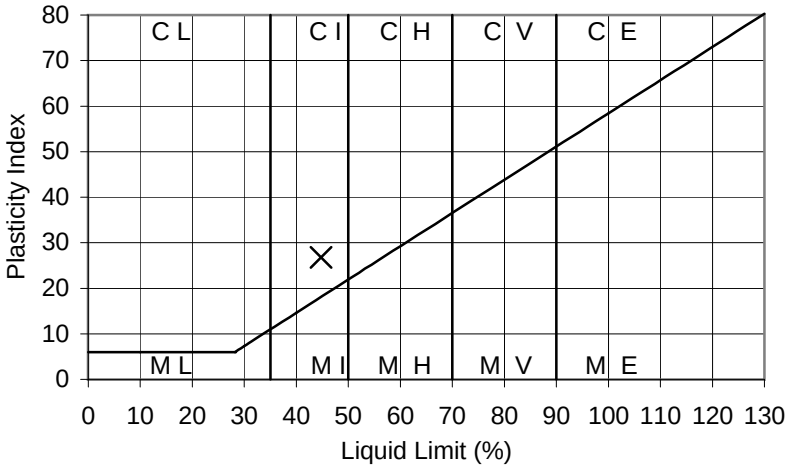
Lab Project No B24526 : 09/07/2020 11:08:44

Version 051 - 08/11/2013
1220 - LLPL Formation 3 00.30 B - B24526-736525.xls : Sample ID 736525

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Formation 3
		Sample Ref
		Depth (m) 0.30
	Engineer	Sample Type B

Non Engineering Description : Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	16	%
Percentage retained on 425µm sieve :	27	%
Liquid Limit :	45	%
Plastic Limit :	18	%
Plasticity Index :	27	
Equivalent moisture content of material passing 425µm sieve :	22	%
Liquidity Index :	0.15	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 4
IG	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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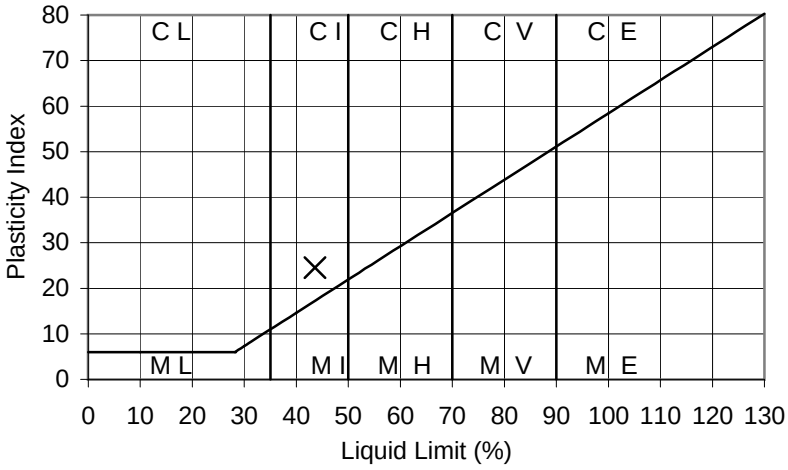
Lab Project No B24526 : 09/07/2020 11:08:47

Version 051 - 08/11/2013
1220 - LLPL Formation 4 00.50 B - B24526-736526.xls : Sample ID 736526

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Formation 4
		Sample Ref
		Depth (m) 0.50
	Engineer	Sample Type B

Non Engineering Description : Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse with one cobble.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	17 %
Percentage retained on 425µm sieve :	35 %
Liquid Limit :	44 %
Plastic Limit :	19 %
Plasticity Index :	25
Equivalent moisture content of material passing 425µm sieve :	26 %
Liquidity Index :	0.28

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 5
IG	S. Langmeu 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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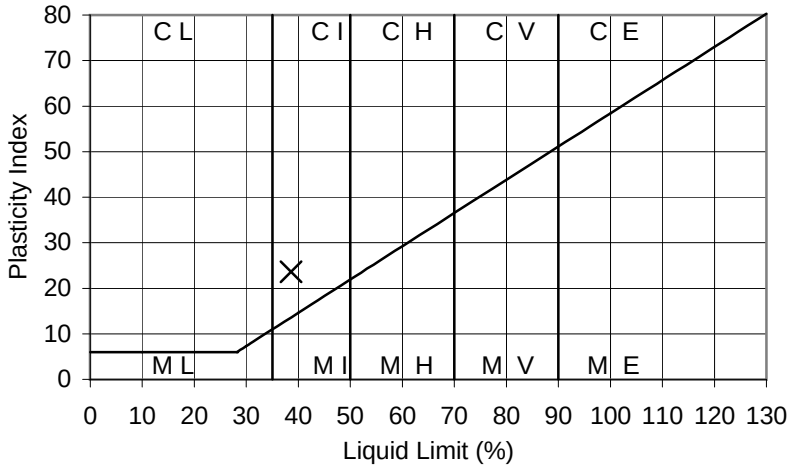
Lab Project No B24526 : 09/07/2020 11:08:50

Version 051 - 08/11/2013
1220 - LLPL Pond 1 01.00 B - B24526-736527.xls : Sample ID 736527

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 1
		Sample Ref
	Engineer	Depth (m) 1.00-1.50
		Sample Type B

Non Engineering Description : Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	17	%
Percentage retained on 425µm sieve :	14	%
Liquid Limit :	39	%
Plastic Limit :	15	%
Plasticity Index :	24	
Equivalent moisture content of material passing 425µm sieve :	20	%
Liquidity Index :	0.21	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 6
IG	S. Langmuir 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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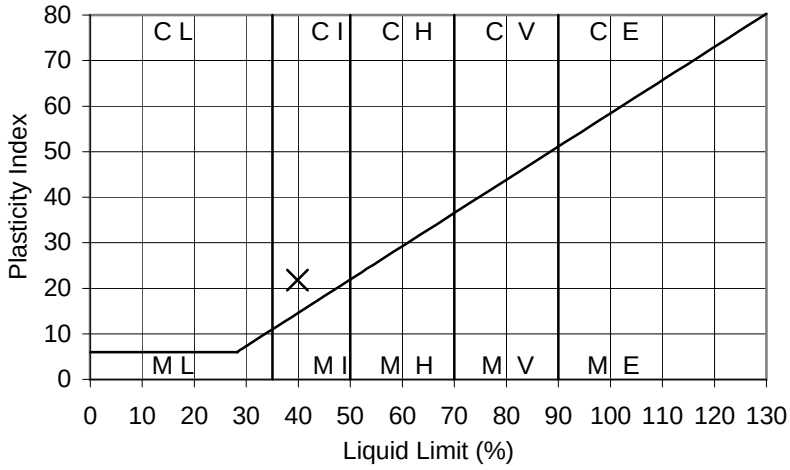
Lab Project No B24526 : 09/07/2020 11:08:53

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 1
		Sample Ref
		Depth (m) 2.50-3.00
	Engineer	Sample Type B

Non Engineering Description : Grey very clayey SAND with much gravel. Gravel is fine to coarse with one cobble.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	14 %
Percentage retained on 425µm sieve :	60 %
Liquid Limit :	40 %
Plastic Limit :	18 %
Plasticity Index :	22
Equivalent moisture content of material passing 425µm sieve :	35 %
Liquidity Index :	0.77

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 7
IG	S. Langmuir 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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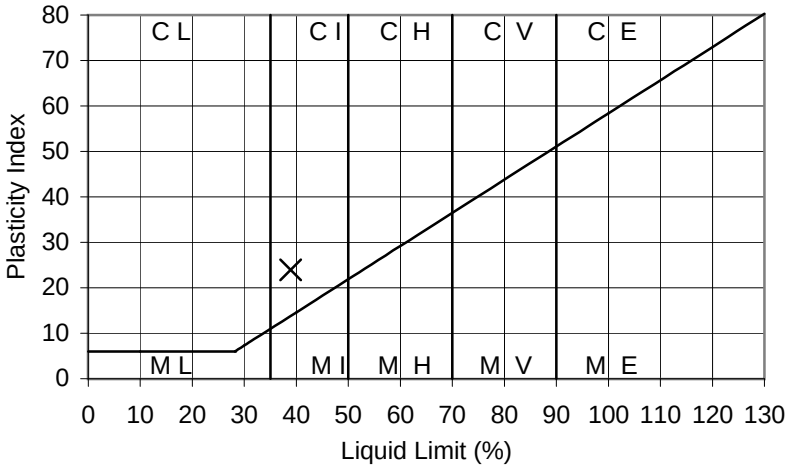
1220 - LLPL Pond 1 03.00 B - B24526-736528.xls : Sample ID 736528

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 1
		Sample Ref
		Depth (m) 3.00-3.50
	Engineer	Sample Type B

Non Engineering Description : Grey fine to coarse GRAVEL with much very sandy clay and one cobble.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	13 %
Percentage retained on 425µm sieve :	59 %
Liquid Limit :	39 %
Plastic Limit :	15 %
Plasticity Index :	24
Equivalent moisture content of material passing 425µm sieve :	32 %
Liquidity Index :	0.71

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 8
LC	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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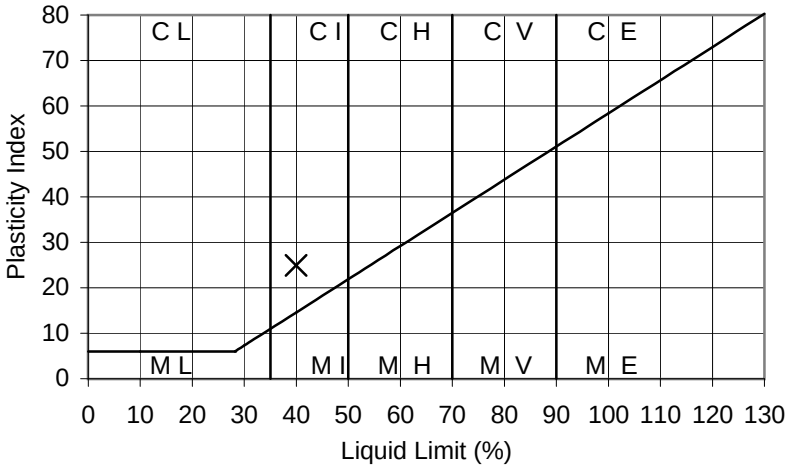
Lab Project No B24526 : 09/07/2020 11:09:00

Version 051 - 08/11/2013
1220 - LLPL Pond 2 00.50 B - B24526-736529.xls : Sample ID 736529

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 2
		Sample Ref
		Depth (m) 0.50-1.00
	Engineer	Sample Type B

Non Engineering Description : Light brown very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	16	%
Percentage retained on 425µm sieve :	18	%
Liquid Limit :	40	%
Plastic Limit :	15	%
Plasticity Index :	25	
Equivalent moisture content of material passing 425µm sieve :	20	%
Liquidity Index :	0.20	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 9
LC	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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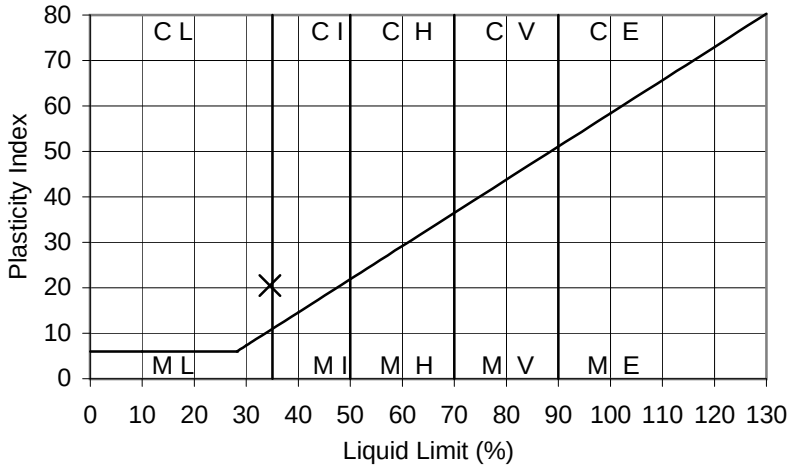
Lab Project No B24526 : 09/07/2020 11:09:03

Version 051 - 08/11/2013
1220 - LLPL Pond 2 01.50 B - B24526-736530.xls : Sample ID 736530

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 2
		Sample Ref
	Engineer	Depth (m) 1.50-2.00
		Sample Type B

Non Engineering Description : Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	15	%
Percentage retained on 425µm sieve :	37	%
Liquid Limit :	35	%
Plastic Limit :	14	%
Plasticity Index :	21	
Equivalent moisture content of material passing 425µm sieve :	24	%
Liquidity Index :	0.48	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 10
LC	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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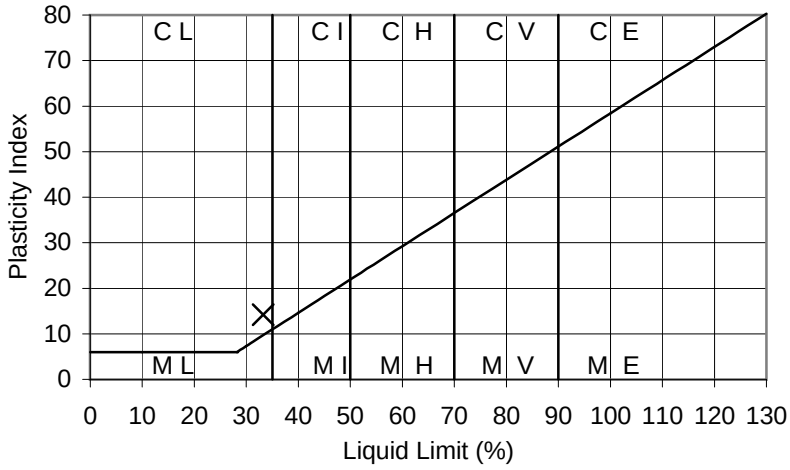
Lab Project No B24526 : 09/07/2020 11:09:06

Version 051 - 08/11/2013
1220 - LLPL Pond 2 02.50 B - B24526-736531.xls : Sample ID 736531

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 2
		Sample Ref
		Depth (m) 2.50-3.00
	Engineer	Sample Type B

Non Engineering Description : Grey very clayey silty SAND with much gravel. Gravel is fine to coarse with one cobble.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	14	%
Percentage retained on 425µm sieve :	50	%
Liquid Limit :	33	%
Plastic Limit :	19	%
Plasticity Index :	14	
Equivalent moisture content of material passing 425µm sieve :	28	%
Liquidity Index :	0.64	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 11
IG	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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Lab Project No B24526 : 09/07/2020 11:09:09

Version 059 - 24/06/2013
1260 - PSD Formation 1 00.50 B - B24526-736523.xls : Sample ID 736523

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Formation 1
		Sample Ref
		Depth (m) 0.50
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	99
20.0 mm	98
14.0 mm	96
10.0 mm	94
6.30 mm	92
5.00 mm	91
3.35 mm	89
2.00 mm	87
1.18 mm	85
600 µm	81
425 µm	79
300 µm	77
212 µm	73
150 µm	70
63 µm	61

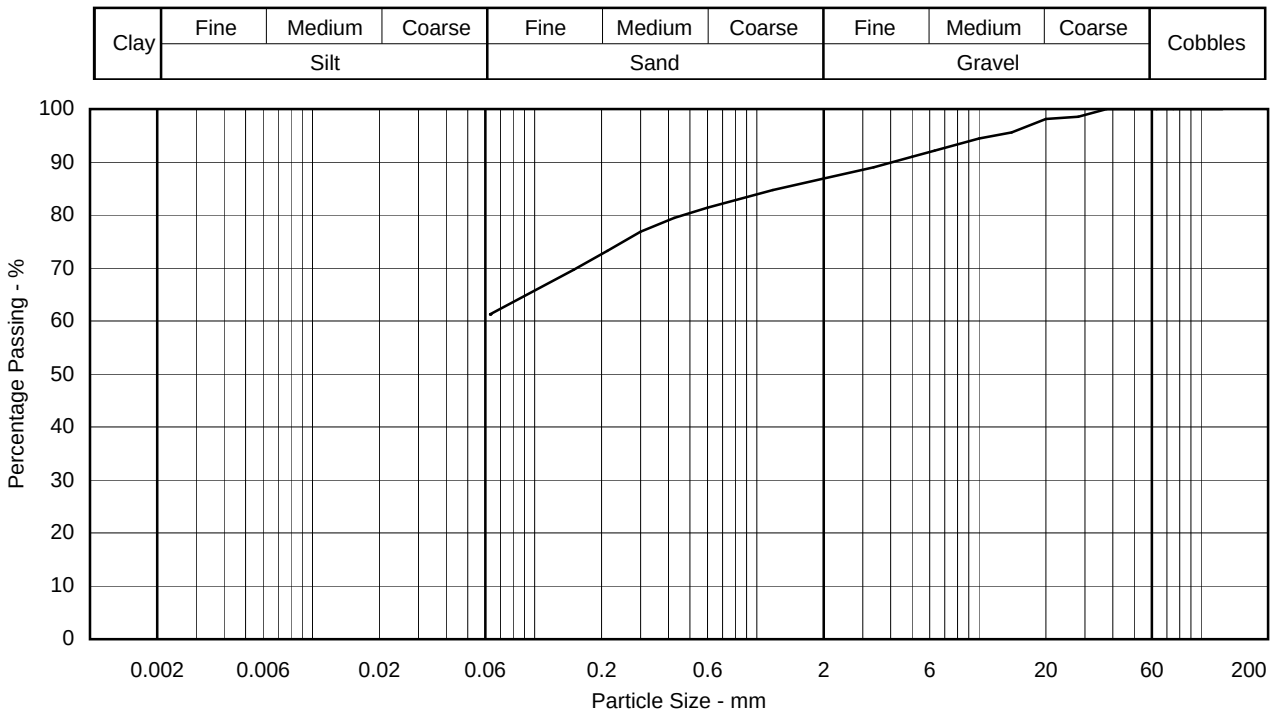
Non Engineering Description

Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Sample Proportions - %	
Cobbles	0.0
Gravel	13.1
Sand	25.6
Silt & Clay	61.3

Particle Diameter - mm	
D100	38
D60	
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 12

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:12

Version 059 - 24/06/2013
1260 - PSD Formation 2 00.36 B - B24526-736524.xls : Sample ID 736524

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Formation 2
		Sample Ref
		Depth (m) 0.36
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	94
63.0 mm	94
50.0 mm	94
37.5 mm	93
28.0 mm	92
20.0 mm	92
14.0 mm	91
10.0 mm	90
6.30 mm	87
5.00 mm	86
3.35 mm	84
2.00 mm	82
1.18 mm	80
600 µm	76
425 µm	73
300 µm	70
212 µm	65
150 µm	60
63 µm	50

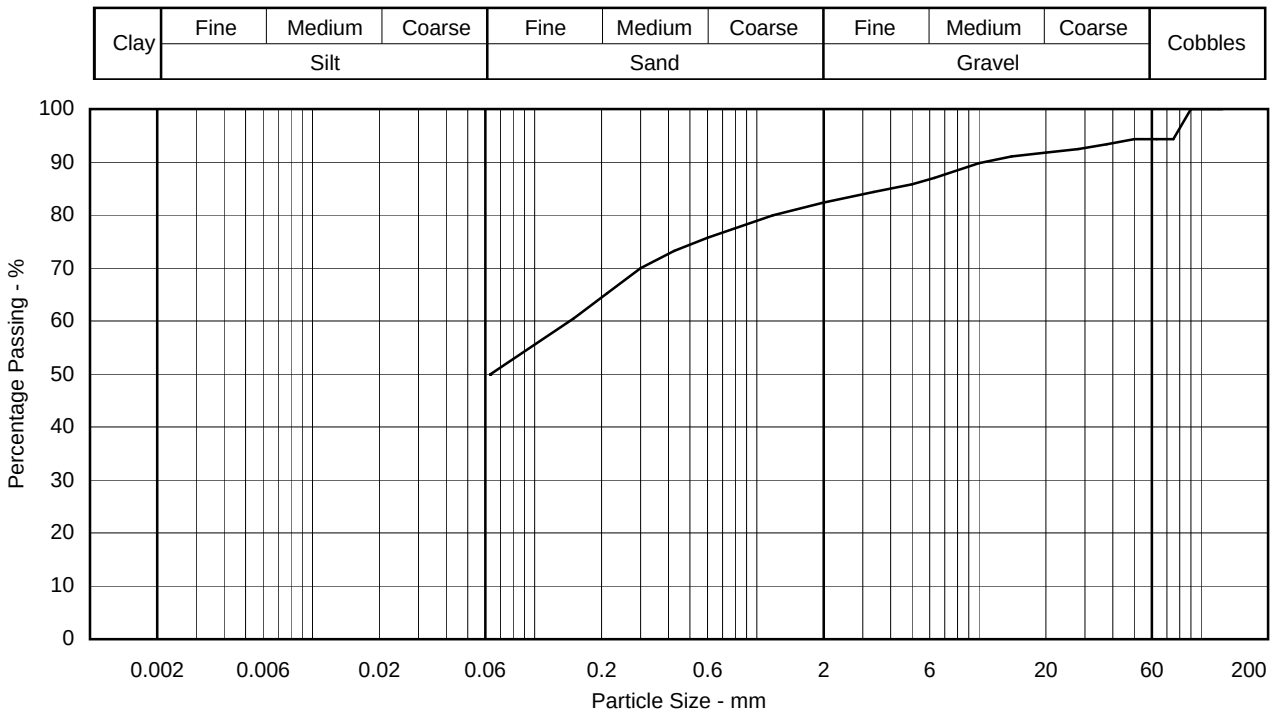
Non Engineering Description

Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse with one cobble.

Sample Proportions - %	
Cobbles	5.7
Gravel	12.0
Sand	32.5
Silt & Clay	49.9

Particle Diameter - mm	
D100	90
D60	0.14
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 13

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:15

Version 059 - 24/06/2013
1260 - PSD Formation 3 00.30 B - B24526-736525.xls : Sample ID 736525

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Formation 3
		Sample Ref
		Depth (m) 0.30
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	98
28.0 mm	97
20.0 mm	95
14.0 mm	93
10.0 mm	90
6.30 mm	86
5.00 mm	84
3.35 mm	82
2.00 mm	80
1.18 mm	78
600 µm	75
425 µm	73
300 µm	70
212 µm	67
150 µm	63
63 µm	54

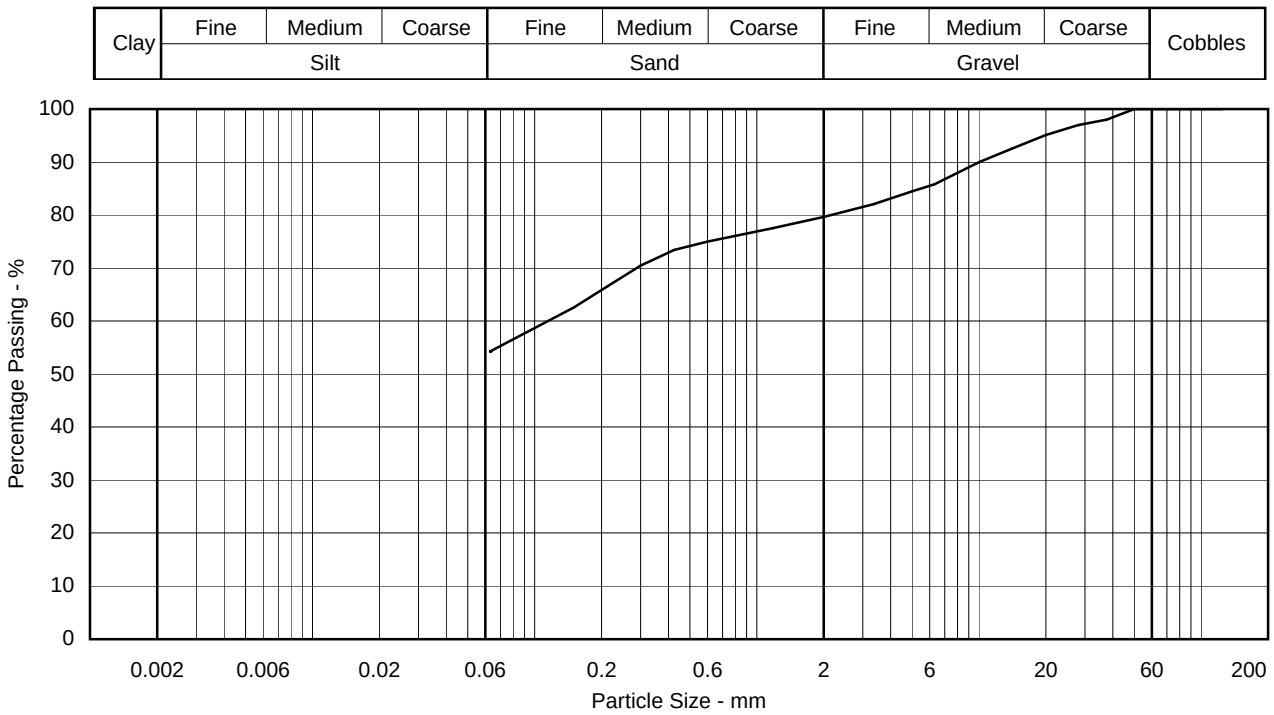
Non Engineering Description

Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Sample Proportions - %	
Cobbles	0.0
Gravel	20.4
Sand	25.4
Silt & Clay	54.3

Particle Diameter - mm	
D100	50
D60	0.12
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 14

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:18

Version 059 - 24/06/2013
1260 - PSD Formation 4 00.50 B - B24526-736526.xls : Sample ID 736526

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Formation 4
		Sample Ref
		Depth (m) 0.50
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	94
63.0 mm	94
50.0 mm	94
37.5 mm	94
28.0 mm	93
20.0 mm	89
14.0 mm	85
10.0 mm	82
6.30 mm	79
5.00 mm	77
3.35 mm	75
2.00 mm	73
1.18 mm	71
600 µm	67
425 µm	65
300 µm	63
212 µm	58
150 µm	53
63 µm	44

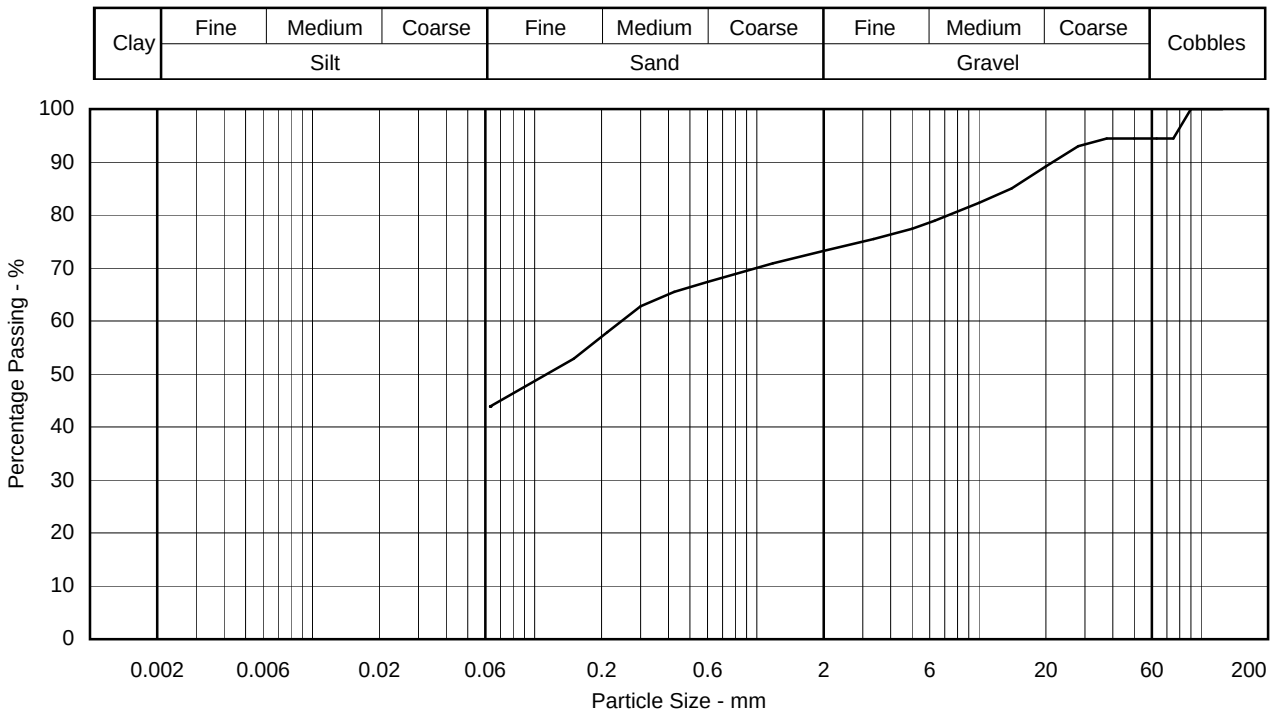
Non Engineering Description

Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse with one cobble.

Sample Proportions - %	
Cobbles	5.6
Gravel	21.2
Sand	29.3
Silt & Clay	43.9

Particle Diameter - mm	
D100	90
D60	0.25
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 15

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:21

Version 059 - 24/06/2013
1260 - PSD Pond 1 01.00 B - B24526-736527.xls : Sample ID 736527

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Pond 1
		Sample Ref
		Depth (m) 1.00-1.50
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	99
20.0 mm	99
14.0 mm	97
10.0 mm	96
6.30 mm	94
5.00 mm	94
3.35 mm	92
2.00 mm	91
1.18 mm	90
600 µm	88
425 µm	86
300 µm	84
212 µm	78
150 µm	73
63 µm	64

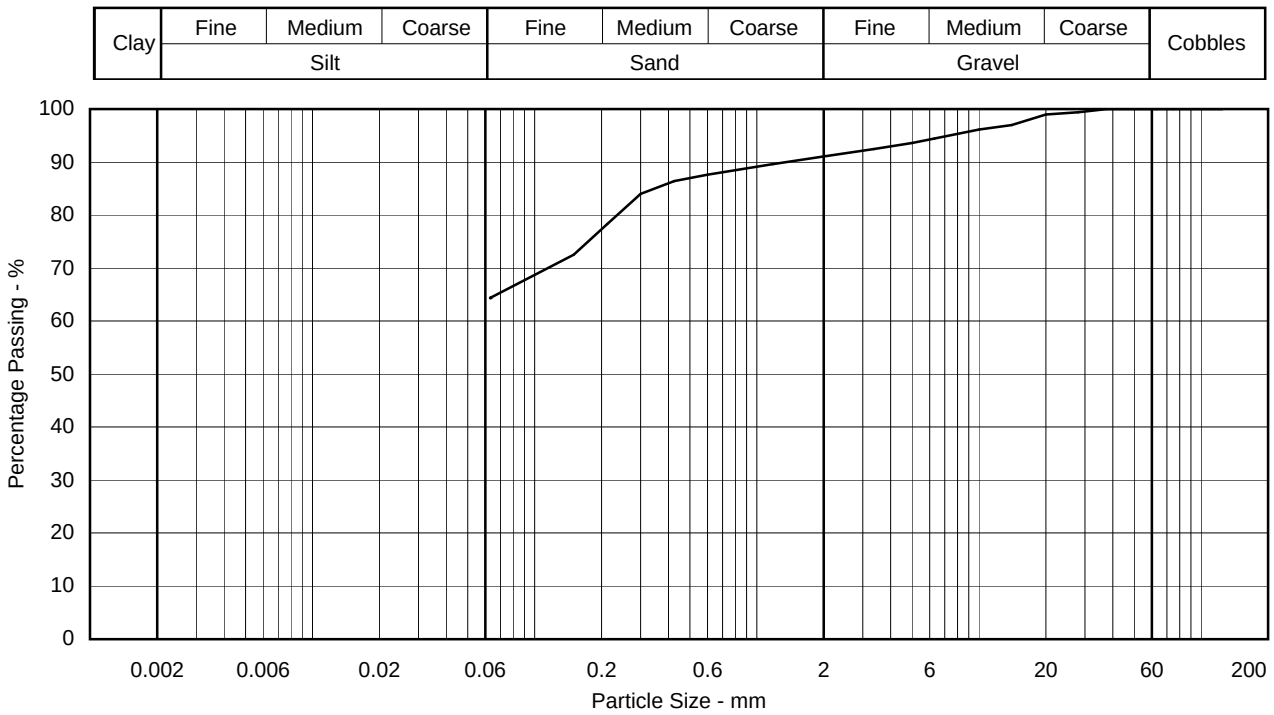
Non Engineering Description

Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Sample Proportions - %	
Cobbles	0.0
Gravel	9.0
Sand	26.7
Silt & Clay	64.4

Particle Diameter - mm	
D100	38
D60	
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 16

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:23

Version 059 - 24/06/2013
1260 - PSD Pond 1 02.50 B - B24526-736573.xls : Sample ID 736573

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Pond 1
		Sample Ref
		Depth (m) 2.50-3.00
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	97
50.0 mm	97
37.5 mm	93
28.0 mm	85
20.0 mm	76
14.0 mm	70
10.0 mm	65
6.30 mm	60
5.00 mm	57
3.35 mm	53
2.00 mm	49
1.18 mm	46
600 µm	42
425 µm	40
300 µm	39
212 µm	36
150 µm	33
63 µm	21

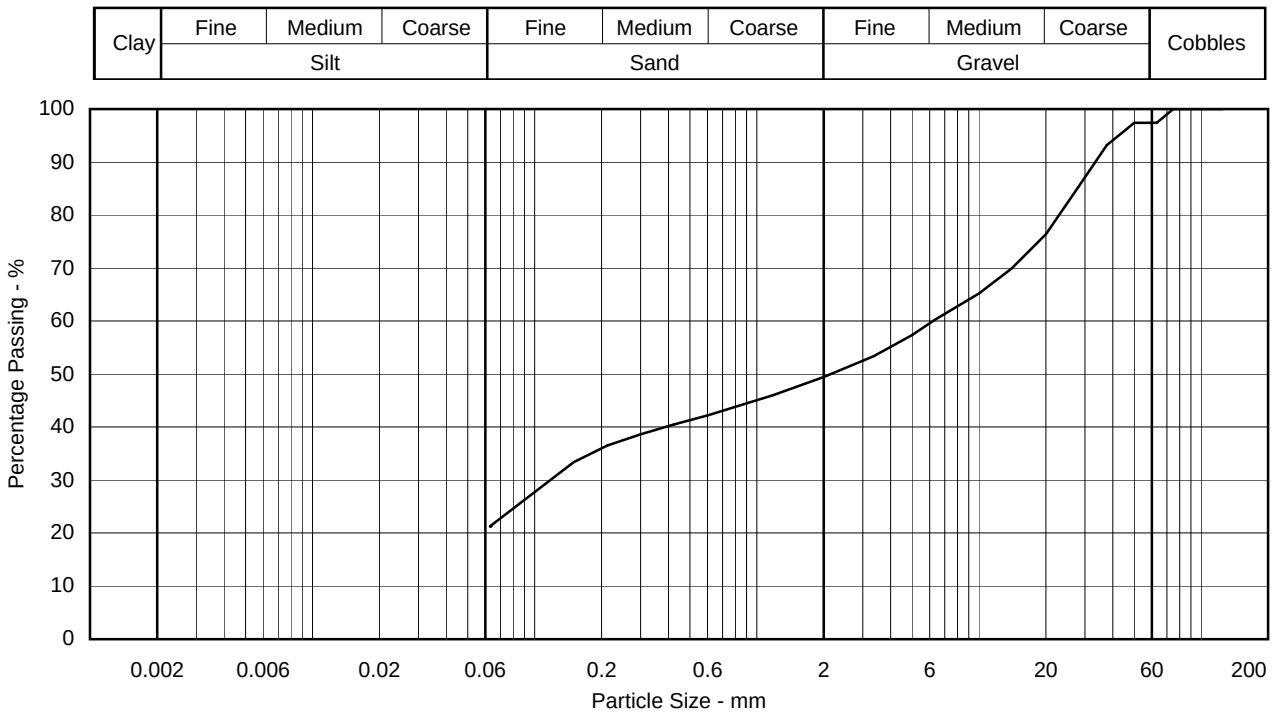
Non Engineering Description

Grey very clayey SAND with much gravel. Gravel is fine to coarse with one cobble.

Sample Proportions - %	
Cobbles	2.6
Gravel	48.0
Sand	28.2
Silt & Clay	21.3

Particle Diameter - mm	
D100	75
D60	6.2
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 17

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:26

Version 059 - 24/06/2013
1260 - PSD Pond 1 03.00 B - B24526-736528.xls : Sample ID 736528

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Pond 1
		Sample Ref
		Depth (m) 3.00-3.50
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	96
50.0 mm	96
37.5 mm	93
28.0 mm	82
20.0 mm	72
14.0 mm	68
10.0 mm	64
6.30 mm	57
5.00 mm	55
3.35 mm	51
2.00 mm	48
1.18 mm	45
600 µm	42
425 µm	41
300 µm	39
212 µm	37
150 µm	34
63 µm	22

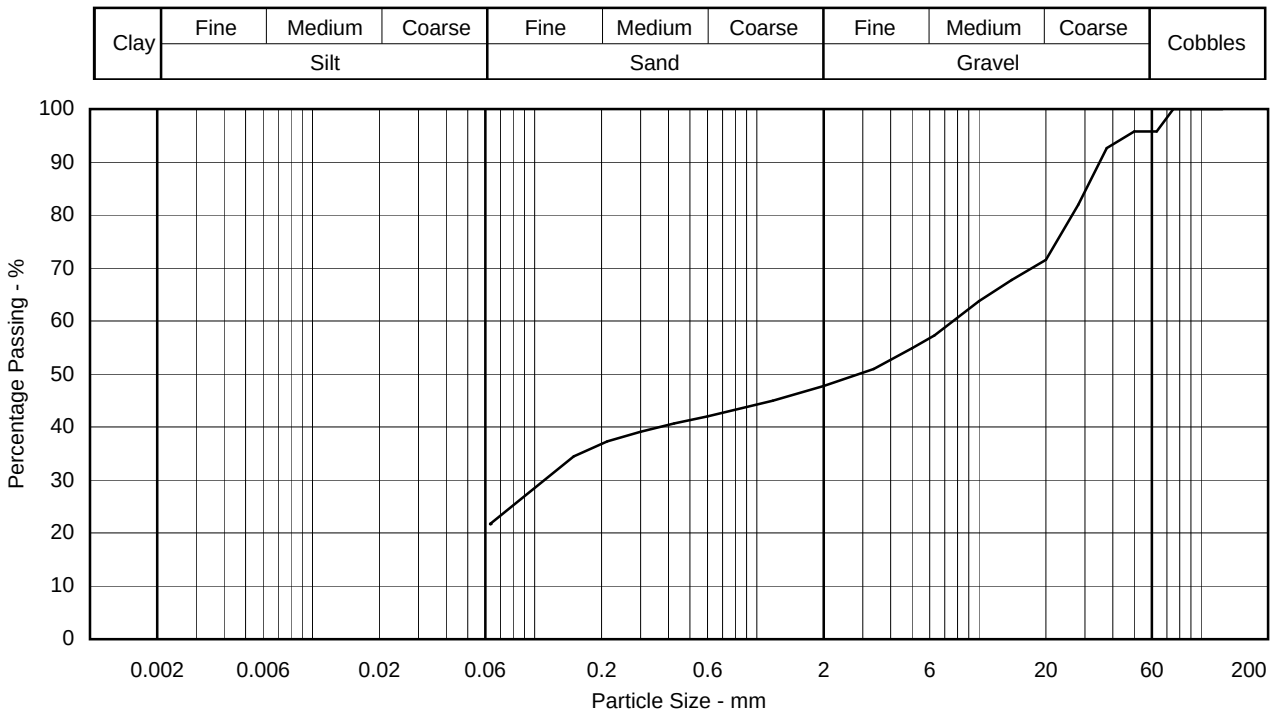
Non Engineering Description

Grey fine to coarse GRAVEL with much very sandy clay and one cobble.

Sample Proportions - %	
Cobbles	4.3
Gravel	48.0
Sand	26.0
Silt & Clay	21.7

Particle Diameter - mm	
D100	75
D60	7.7
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 18

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:35

Version 059 - 24/06/2013
1260 - PSD Pond 2 00.50 B - B24526-736529.xls : Sample ID 736529

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site	ROCKINGHAM	**Contract No** **B24526**
Client		Hole: Pond 2
Engineer		Sample Ref
		Depth (m): 0.50-1.00
		Sample Type: B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	98
20.0 mm	97
14.0 mm	95
10.0 mm	93
6.30 mm	92
5.00 mm	91
3.35 mm	89
2.00 mm	88
1.18 mm	86
600 µm	83
425 µm	82
300 µm	80
212 µm	77
150 µm	69
63 µm	59

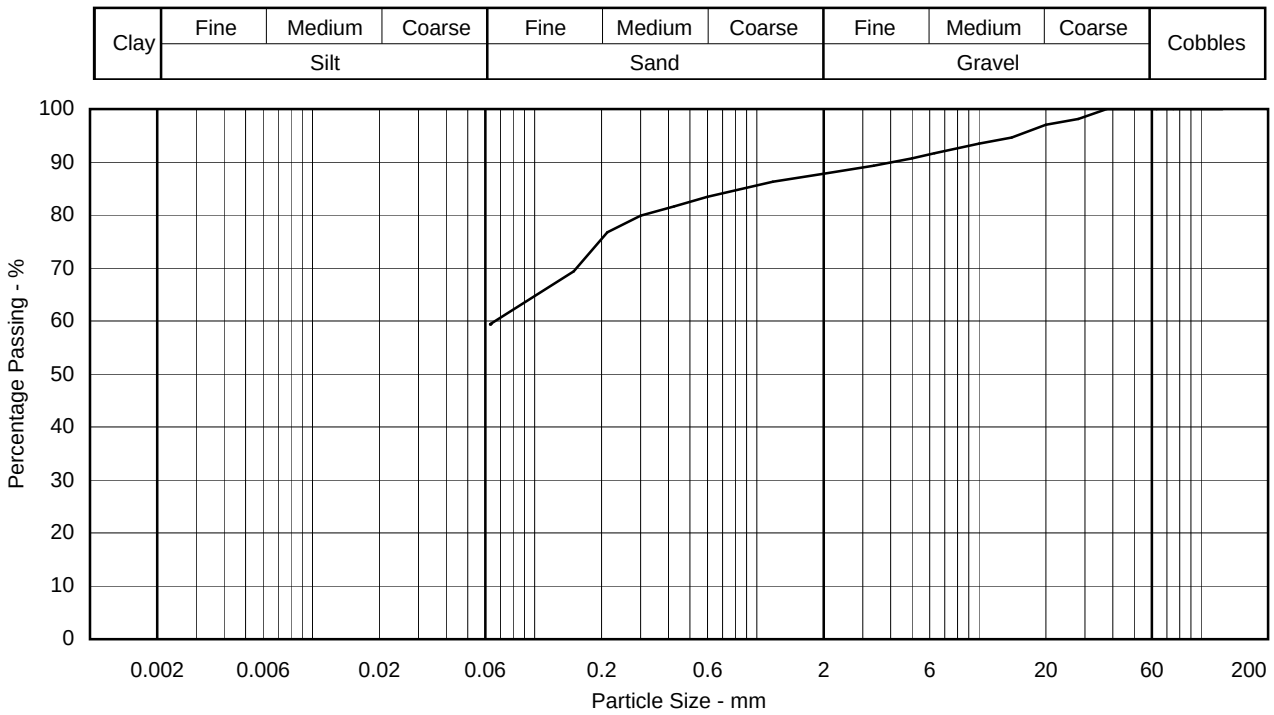
Non Engineering Description

Light brown very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Sample Proportions - %	
Cobbles	0.0
Gravel	12.2
Sand	28.4
Silt & Clay	59.4

Particle Diameter - mm	
D100	38
D60	0.067
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 19

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:38

Version 059 - 24/06/2013
1260 - PSD Pond 2 01.50 B - B24526-736530.xls : Sample ID 736530

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Pond 2
		Sample Ref
		Depth (m) 1.50-2.00
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	97
37.5 mm	95
28.0 mm	92
20.0 mm	88
14.0 mm	83
10.0 mm	80
6.30 mm	77
5.00 mm	75
3.35 mm	72
2.00 mm	69
1.18 mm	67
600 µm	64
425 µm	63
300 µm	62
212 µm	60
150 µm	57
63 µm	34

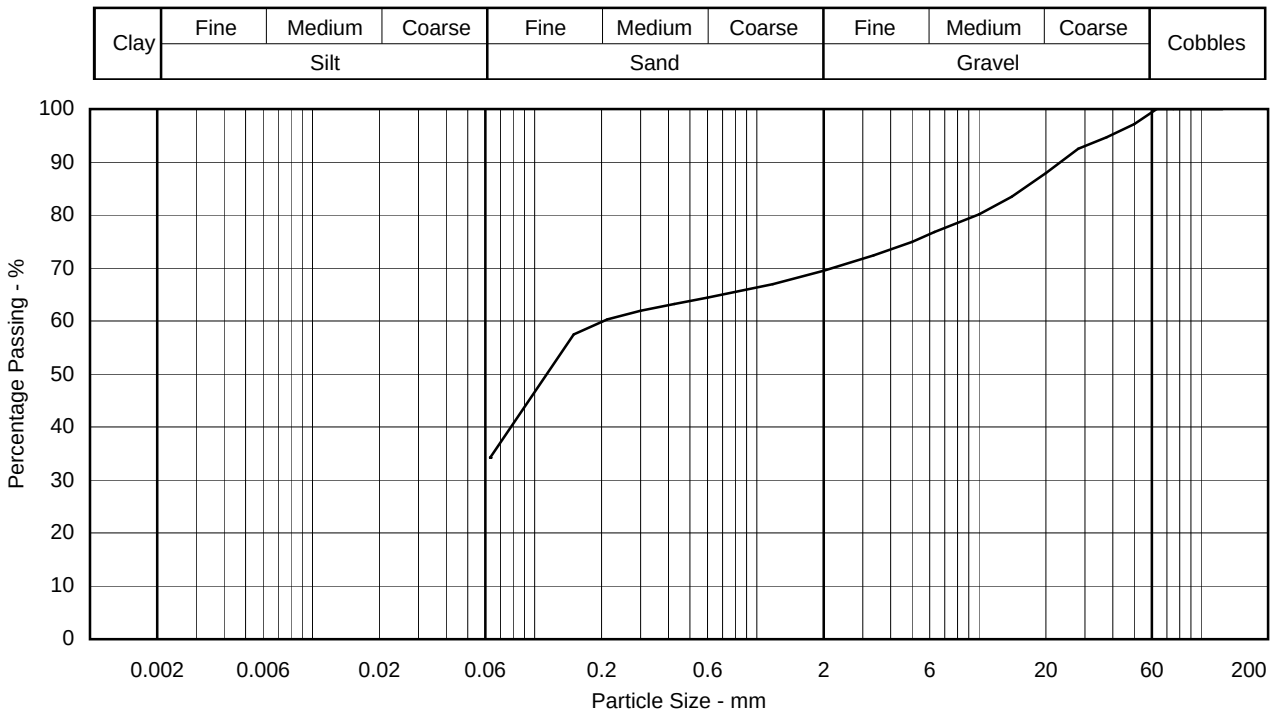
Non Engineering Description

Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse.

Sample Proportions - %	
Cobbles	0.6
Gravel	29.9
Sand	35.2
Silt & Clay	34.2

Particle Diameter - mm	
D100	63
D60	0.20
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 20

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:41

Version 059 - 24/06/2013
1260 - PSD Pond 2 02.50 B - B24526-736531.xls : Sample ID 736531

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site	ROCKINGHAM	**Contract No** **B24526**
Client		Hole: Pond 2
Engineer		Sample Ref
		Depth (m): 2.50-3.00
		Sample Type: B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	97
50.0 mm	97
37.5 mm	92
28.0 mm	86
20.0 mm	80
14.0 mm	75
10.0 mm	72
6.30 mm	67
5.00 mm	65
3.35 mm	62
2.00 mm	59
1.18 mm	55
600 µm	51
425 µm	50
300 µm	48
212 µm	47
150 µm	45
63 µm	28

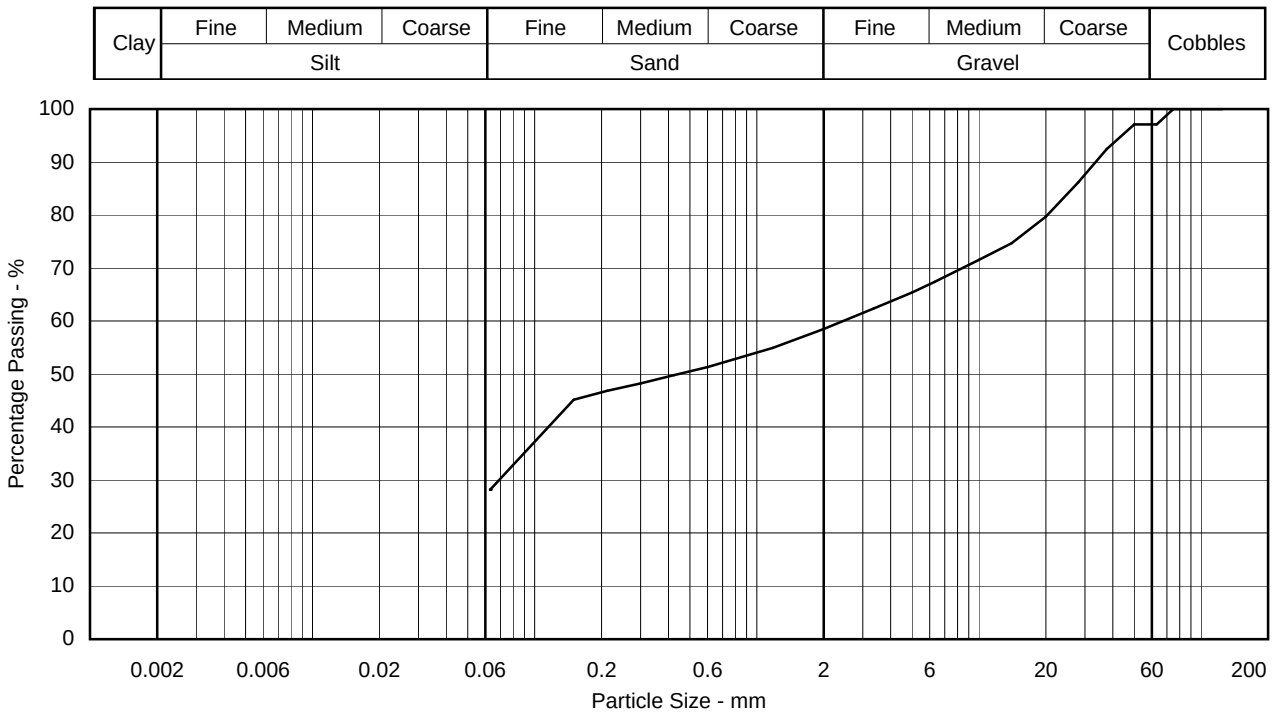
Non Engineering Description

Grey very clayey silty SAND with much gravel. Gravel is fine to coarse with one cobble.

Sample Proportions - %	
Cobbles	2.9
Gravel	38.6
Sand	30.3
Silt & Clay	28.2

Particle Diameter - mm	
D100	75
D60	2.4
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

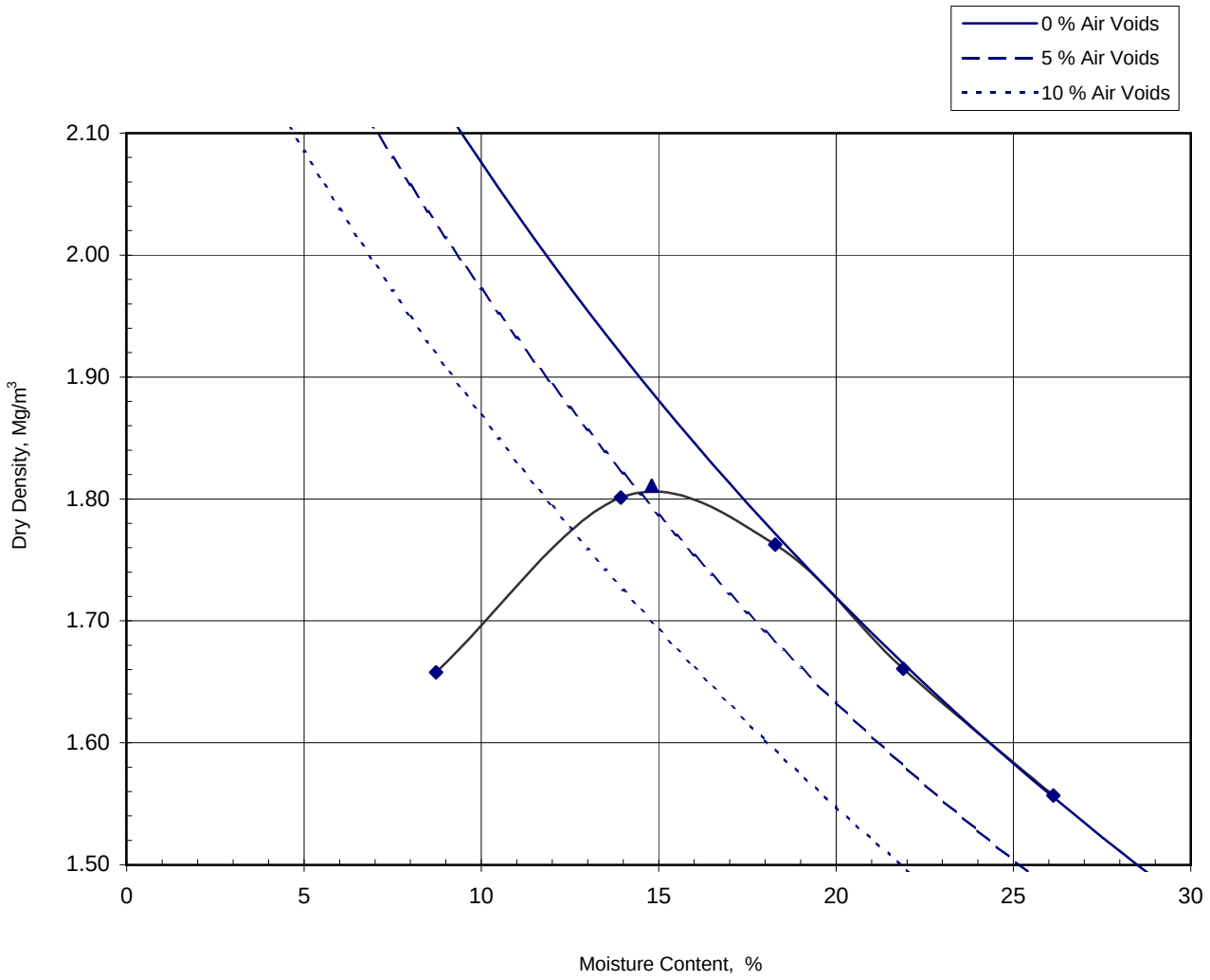
Figure 21

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:44

Version 019 - 05/09/2013
1410 - Comp Formation 1 00.50 B - B24526-736523.xls : Sample ID 736523

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Formation 1
		Sample Ref
	Engineer	Depth (m) 0.50
		Sample Type B



Non Engineering Description		Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	0
Mass Retained on 20.0 mm Sieve	%	2
Particle Density - Measured	Mg/m³	2.62
Natural Moisture Content	%	18
Maximum Dry Density	Mg/m³	1.81
Optimum Moisture Content	%	14.8

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 22**
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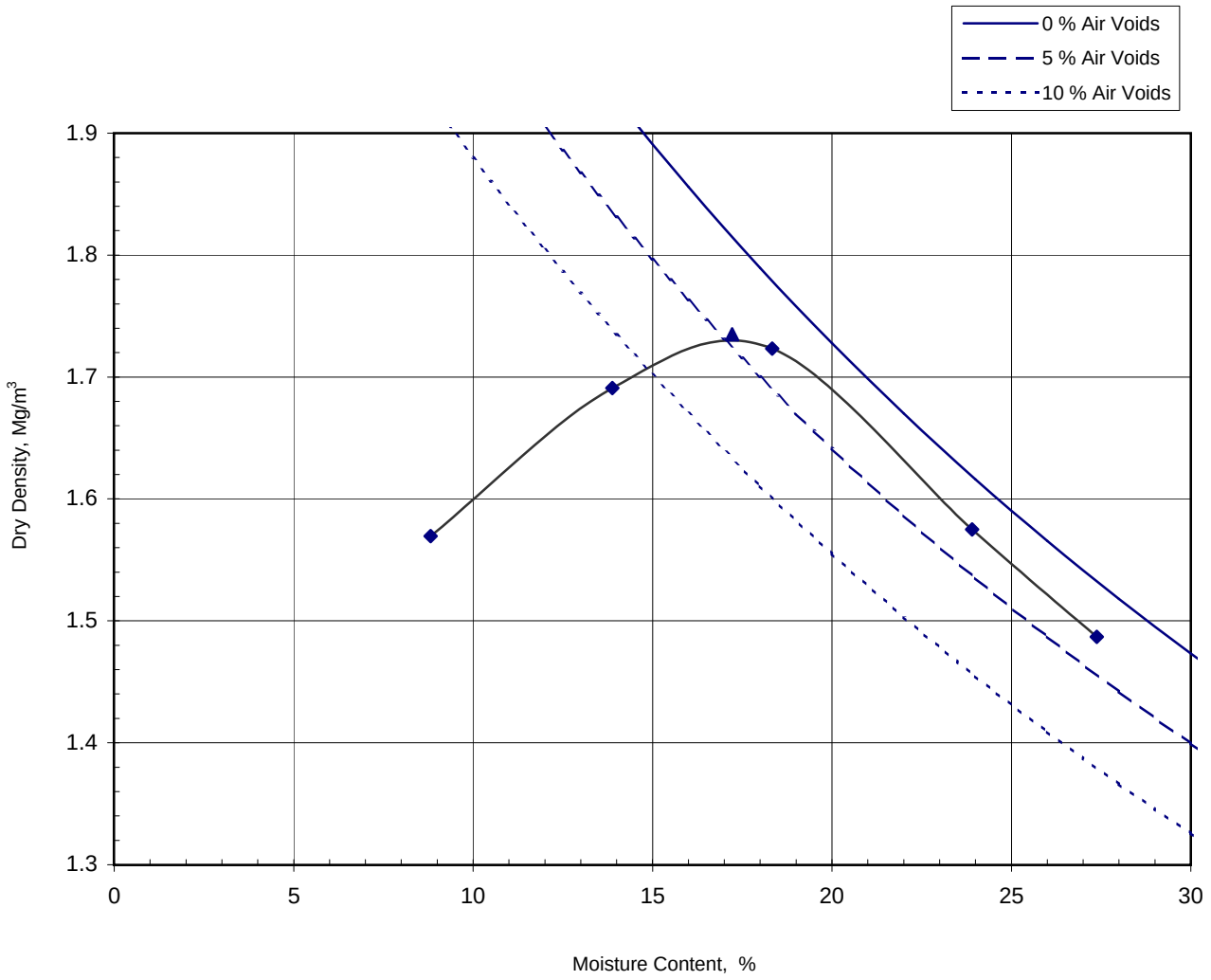
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:47

Version 019 - 05/09/2013
1410 - Comp Formation 2 00.36 B - B24526-736524.xls : Sample ID 736524

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Formation 2
		Sample Ref
		Depth (m) 0.36
	Engineer	Sample Type B



Non Engineering Description		Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse with one cobble.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	7
Mass Retained on 20.0 mm Sieve	%	1
Particle Density - Measured	Mg/m³	2.64
Natural Moisture Content	%	18
Maximum Dry Density	Mg/m³	1.73
Optimum Moisture Content	%	17.2

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 23**
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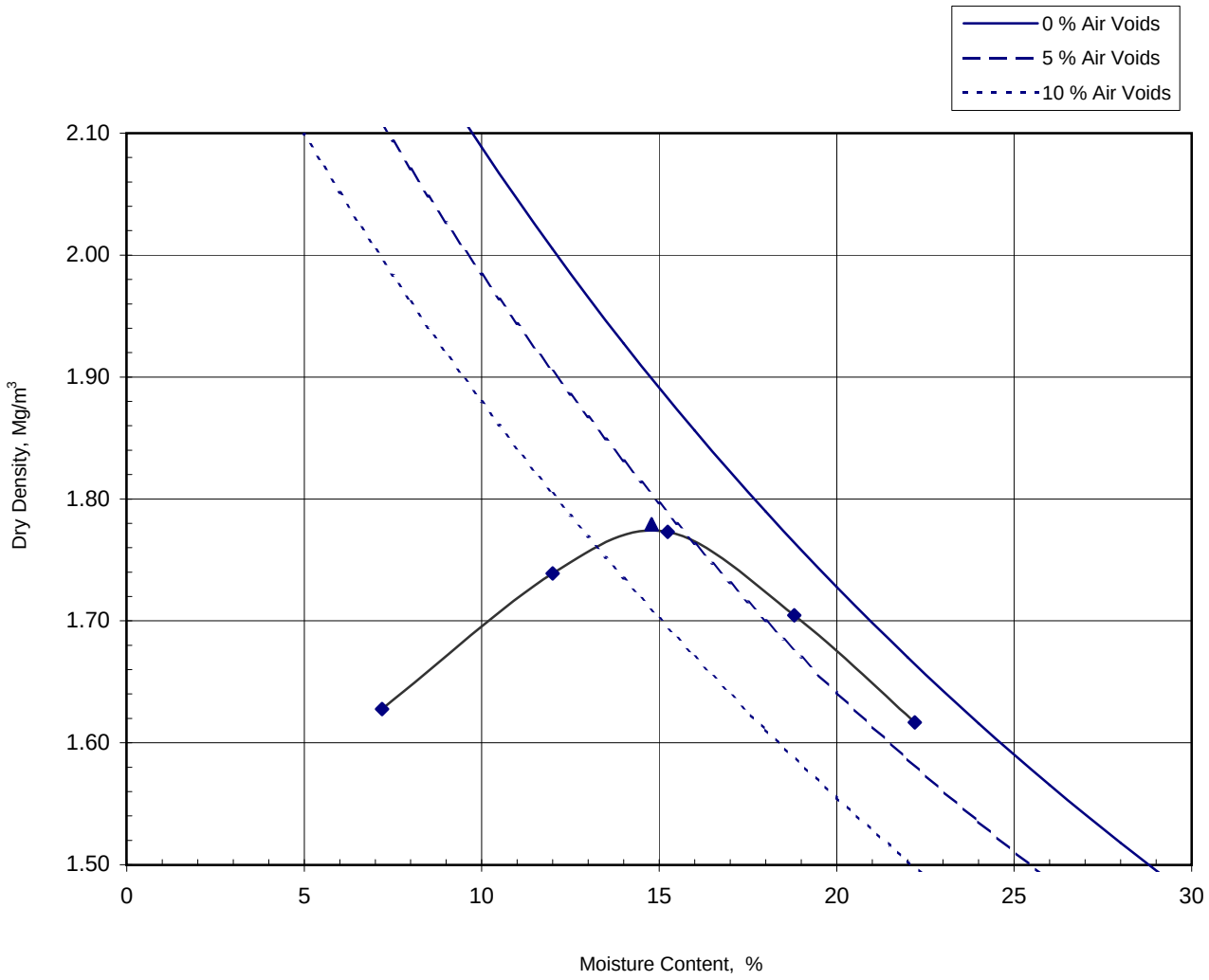
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:55

Version 019 - 05/09/2013
1410 - Comp Formation 3 00.30 B - B24526-736525.xls : Sample ID 736525

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Formation 3
		Sample Ref
	Engineer	Depth (m) 0.30
		Sample Type B



Non Engineering Description		Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	2
Mass Retained on 20.0 mm Sieve	%	3
Particle Density - Measured	Mg/m³	2.64
Natural Moisture Content	%	16
Maximum Dry Density	Mg/m³	1.78
Optimum Moisture Content	%	14.8

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 24**
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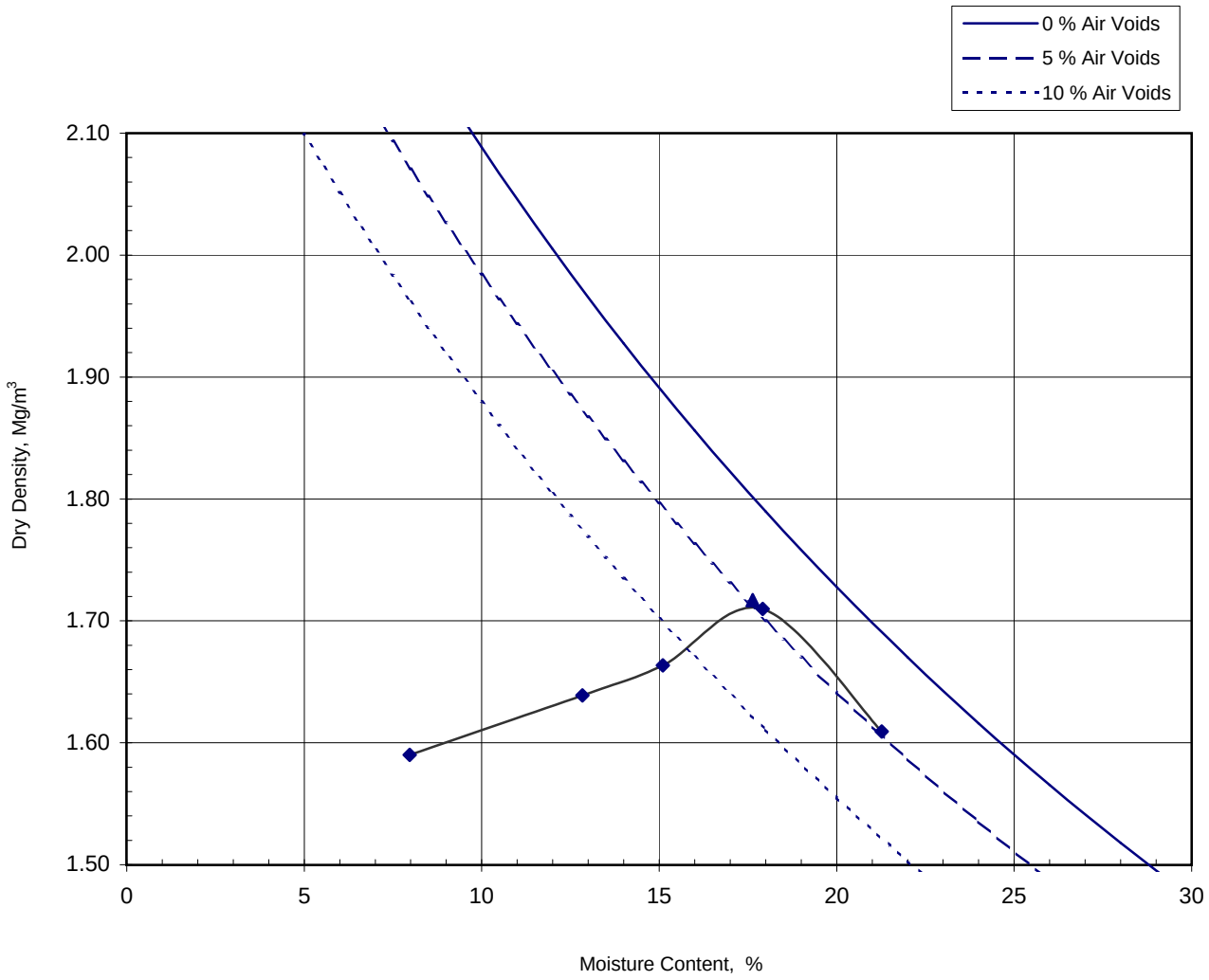
Lab Project No B24526 : 09/07/2020 11:09:58

Version 019 - 05/09/2013
1410 - Comp Formation 4 00.50 B - B24526-736526.xls : Sample ID 736526

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Formation 4
		Sample Ref
		Depth (m) 0.50
	Engineer	Sample Type B



Non Engineering Description		Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse with one cobble.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	6
Mass Retained on 20.0 mm Sieve	%	5
Particle Density - Measured	Mg/m³	2.64
Natural Moisture Content	%	17
Maximum Dry Density	Mg/m³	1.72
Optimum Moisture Content	%	17.6

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 25**
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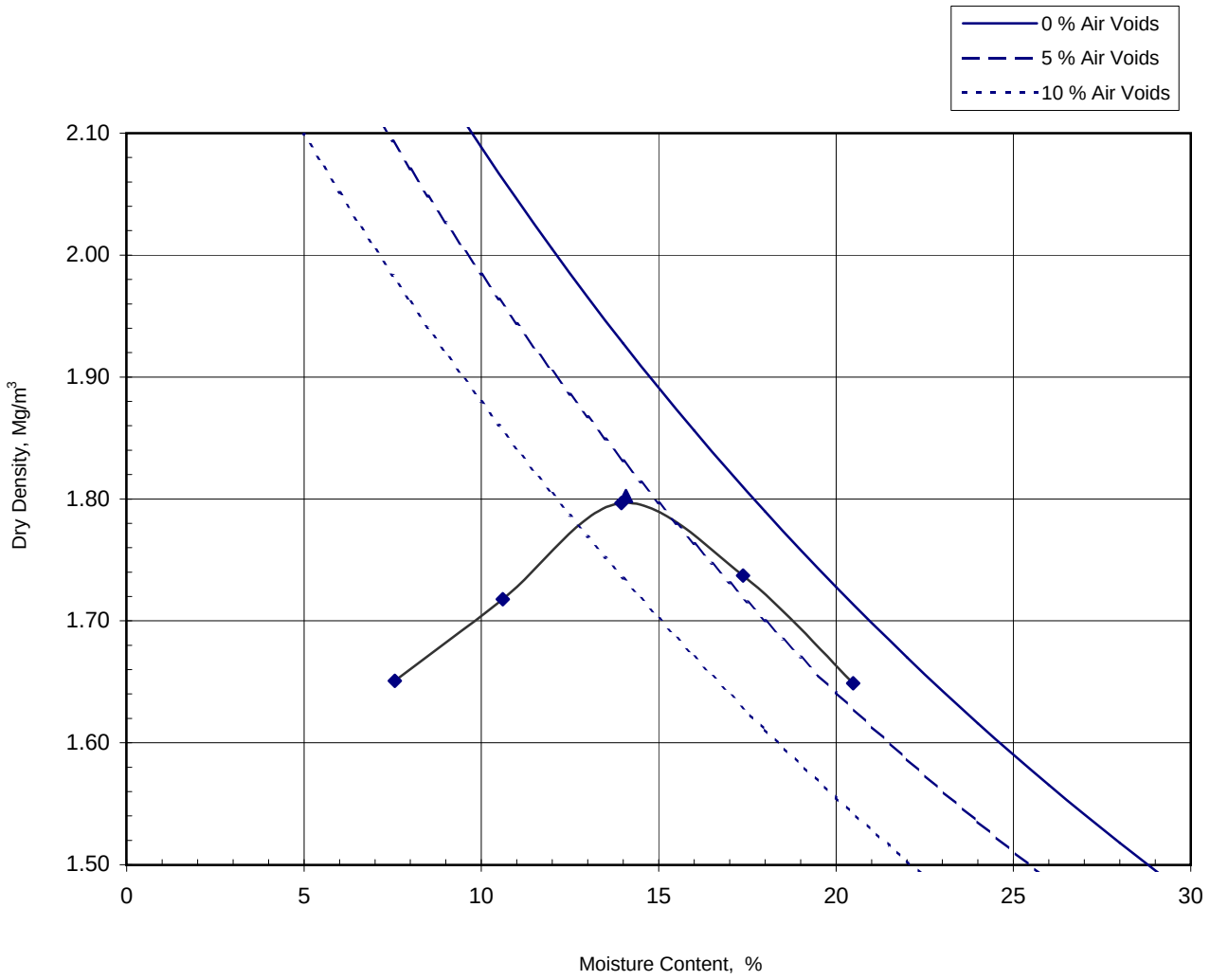
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:00

Version 019 - 05/09/2013
1410 - Comp Pond 1 01.00 B - B24526-736527.xls : Sample ID 736527

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 1
		Sample Ref
	Engineer	Depth (m) 1.00-1.50
		Sample Type B



Non Engineering Description		Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	0
Mass Retained on 20.0 mm Sieve	%	1
Particle Density - Measured	Mg/m³	2.64
Natural Moisture Content	%	17
Maximum Dry Density	Mg/m³	1.80
Optimum Moisture Content	%	14.1

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 26**
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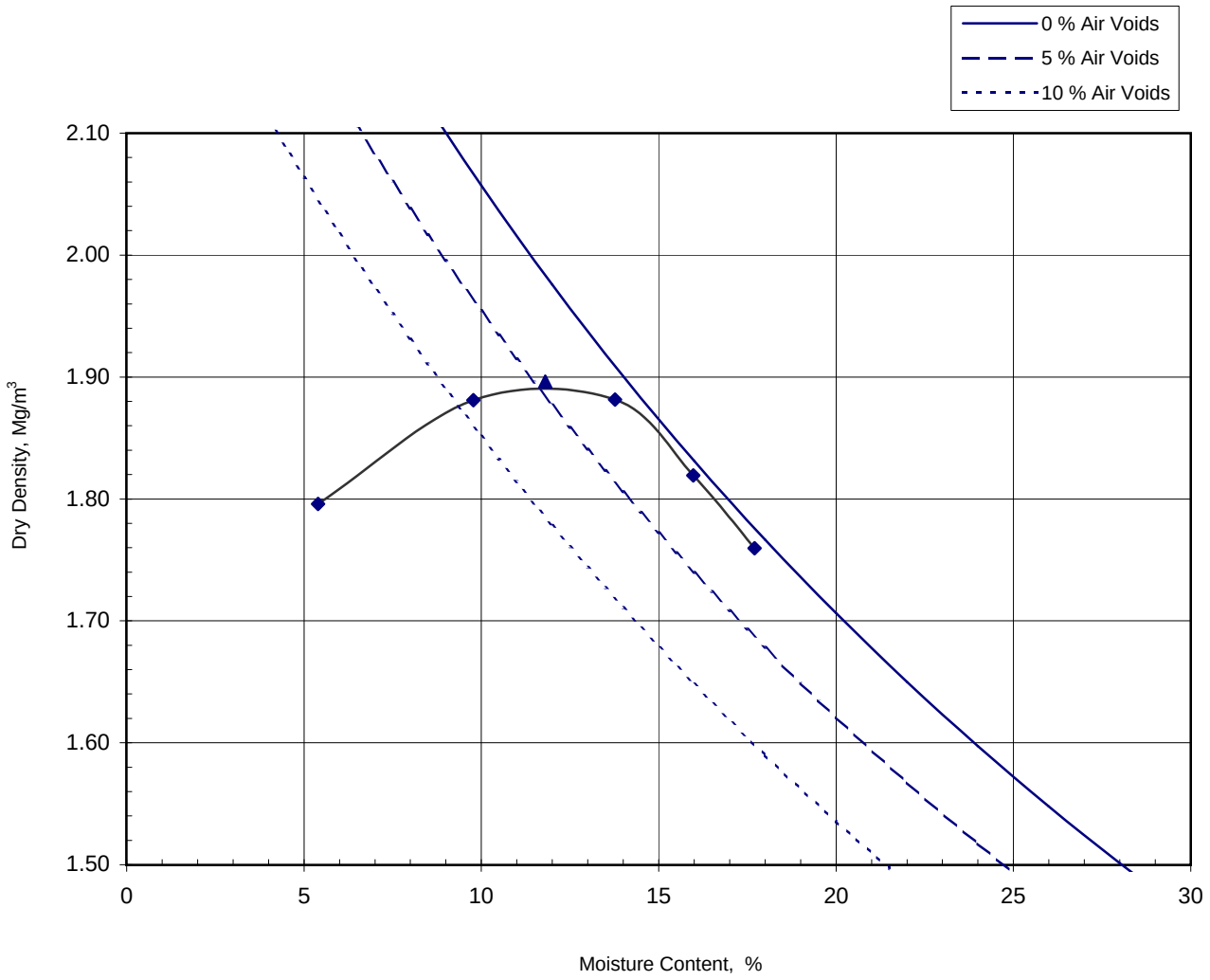
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:04

Version 019 - 05/09/2013
1410 - Comp Pond 1 02.50 B - B24526-736573.xls : Sample ID 736573

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 1
		Sample Ref
	Engineer	Depth (m) 2.50-3.00
		Sample Type B



Non Engineering Description		Grey very clayey SAND with much gravel. Gravel is fine to coarse with one cobble.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	7
Mass Retained on 20.0 mm Sieve	%	17
Particle Density - Measured	Mg/m³	2.59
Natural Moisture Content	%	14
Maximum Dry Density	Mg/m³	1.90
Optimum Moisture Content	%	11.8

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 27**
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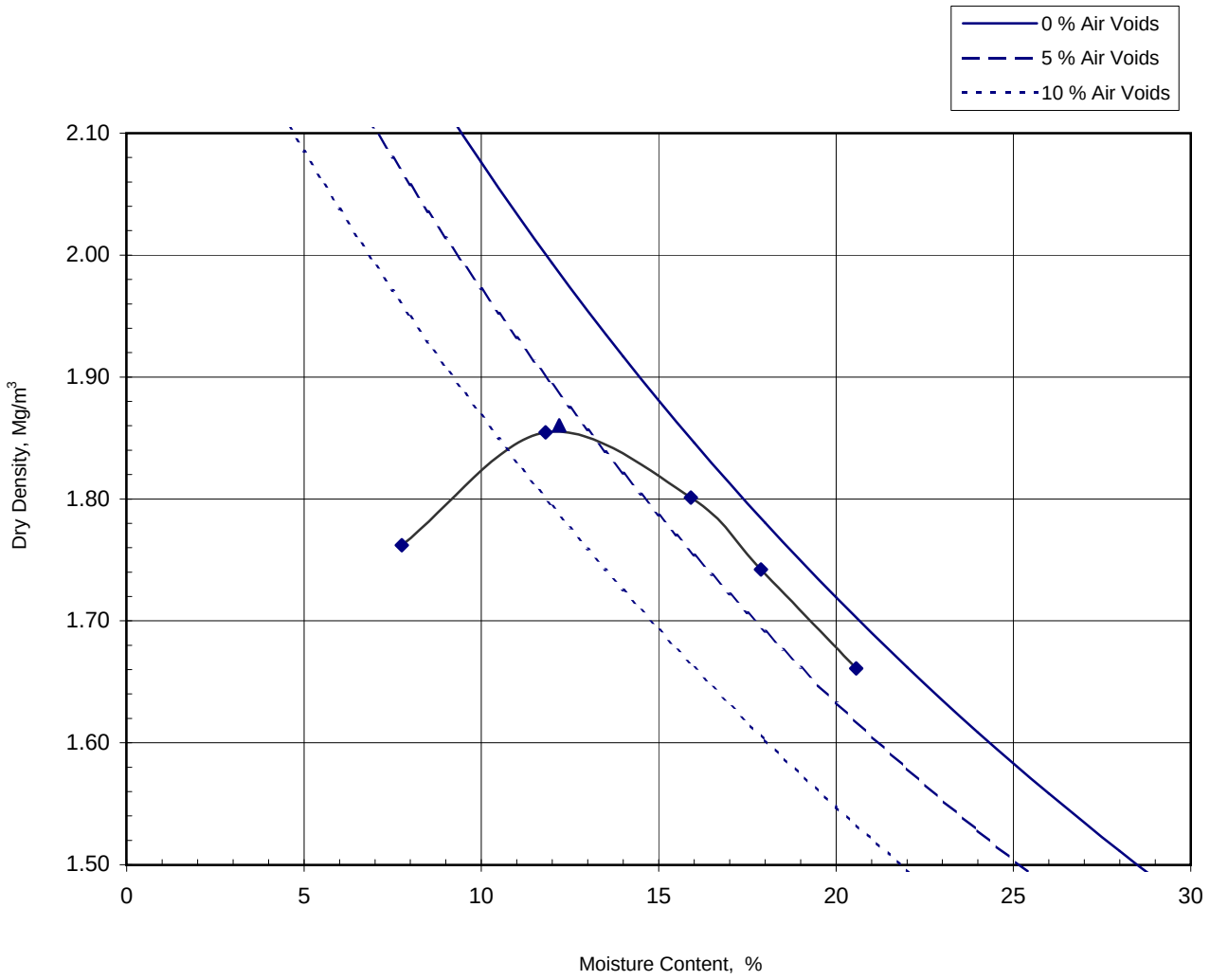
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:06

Version 019 - 05/09/2013
1410 - Comp Pond 1 03.00 B - B24526-736528.xls : Sample ID 736528

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 1
		Sample Ref
	Engineer	Depth (m) 3.00-3.50
		Sample Type B



Non Engineering Description		Grey fine to coarse GRAVEL with much very sandy clay and one cobble.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	7
Mass Retained on 20.0 mm Sieve	%	21
Particle Density - Measured	Mg/m³	2.62
Natural Moisture Content	%	13
Maximum Dry Density	Mg/m³	1.86
Optimum Moisture Content	%	12.2

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 28**
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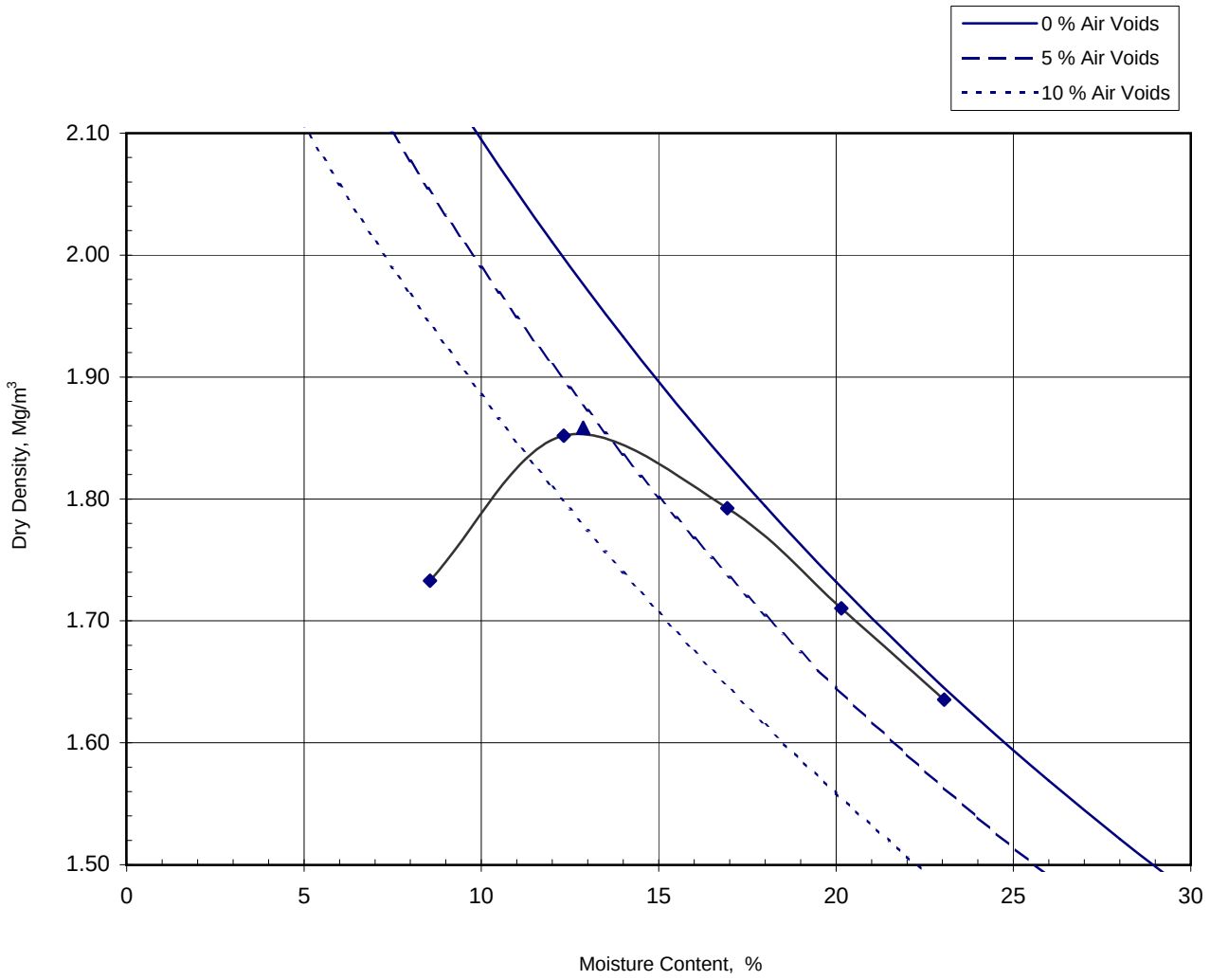
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:09

Version 019 - 05/09/2013
1410 - Comp Pond 2 00.50 B - B24526-736529.xls : Sample ID 736529

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 2
	Engineer	Sample Ref Depth (m) 0.50-1.00 Sample Type B



Non Engineering Description		Light brown very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	0
Mass Retained on 20.0 mm Sieve	%	3
Particle Density - Measured	Mg/m³	2.65
Natural Moisture Content	%	16
Maximum Dry Density	Mg/m³	1.86
Optimum Moisture Content	%	12.9

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 29**
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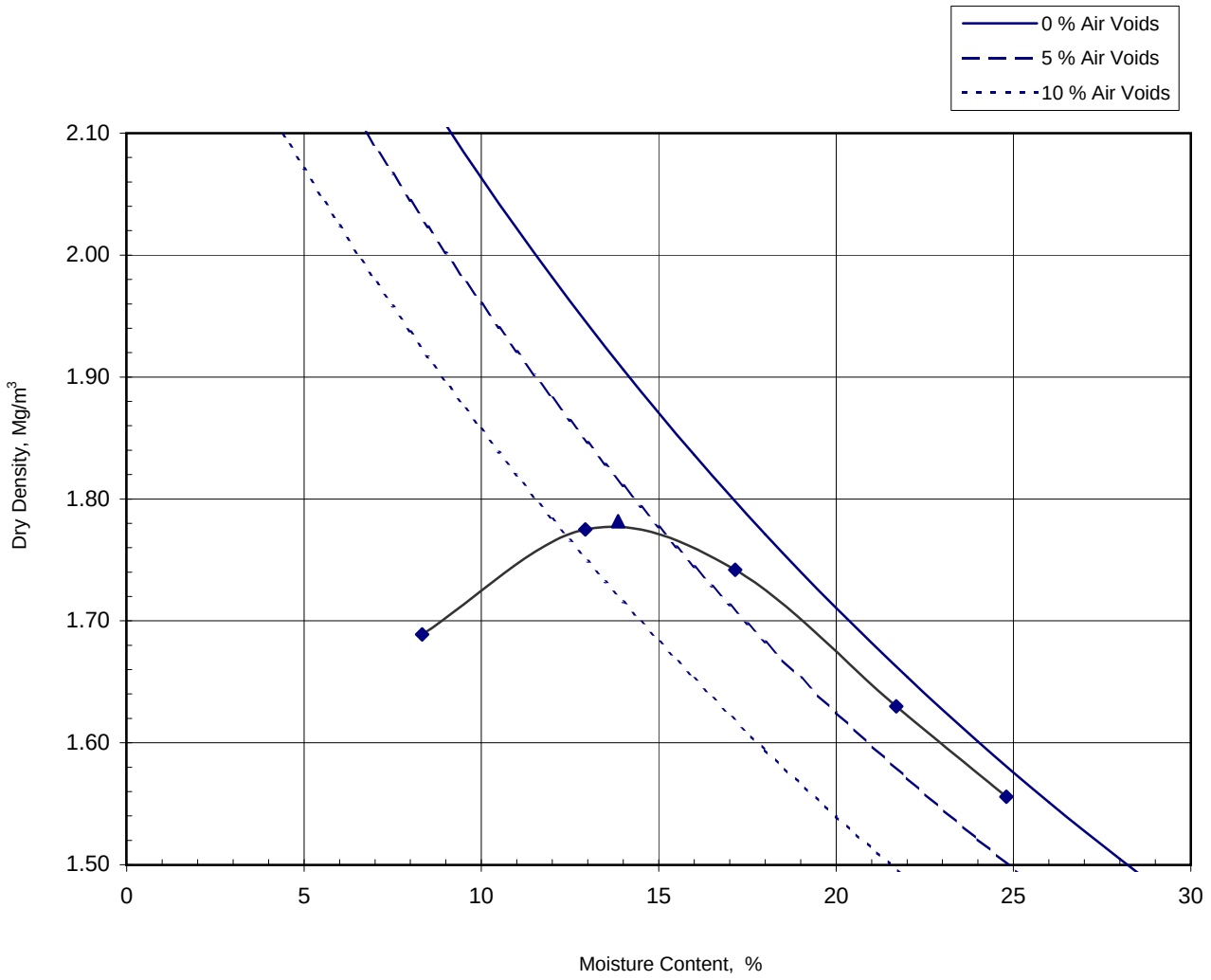
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:12

Version 019 - 05/09/2013
1410 - Comp Pond 2 01.50 B - B24526-736530.xls : Sample ID 736530

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 2
		Sample Ref
	Engineer	Depth (m) 1.50-2.00
		Sample Type B



Non Engineering Description		Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	5
Mass Retained on 20.0 mm Sieve	%	7
Particle Density - Measured	Mg/m³	2.60
Natural Moisture Content	%	15
Maximum Dry Density	Mg/m³	1.78
Optimum Moisture Content	%	13.9

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 30**
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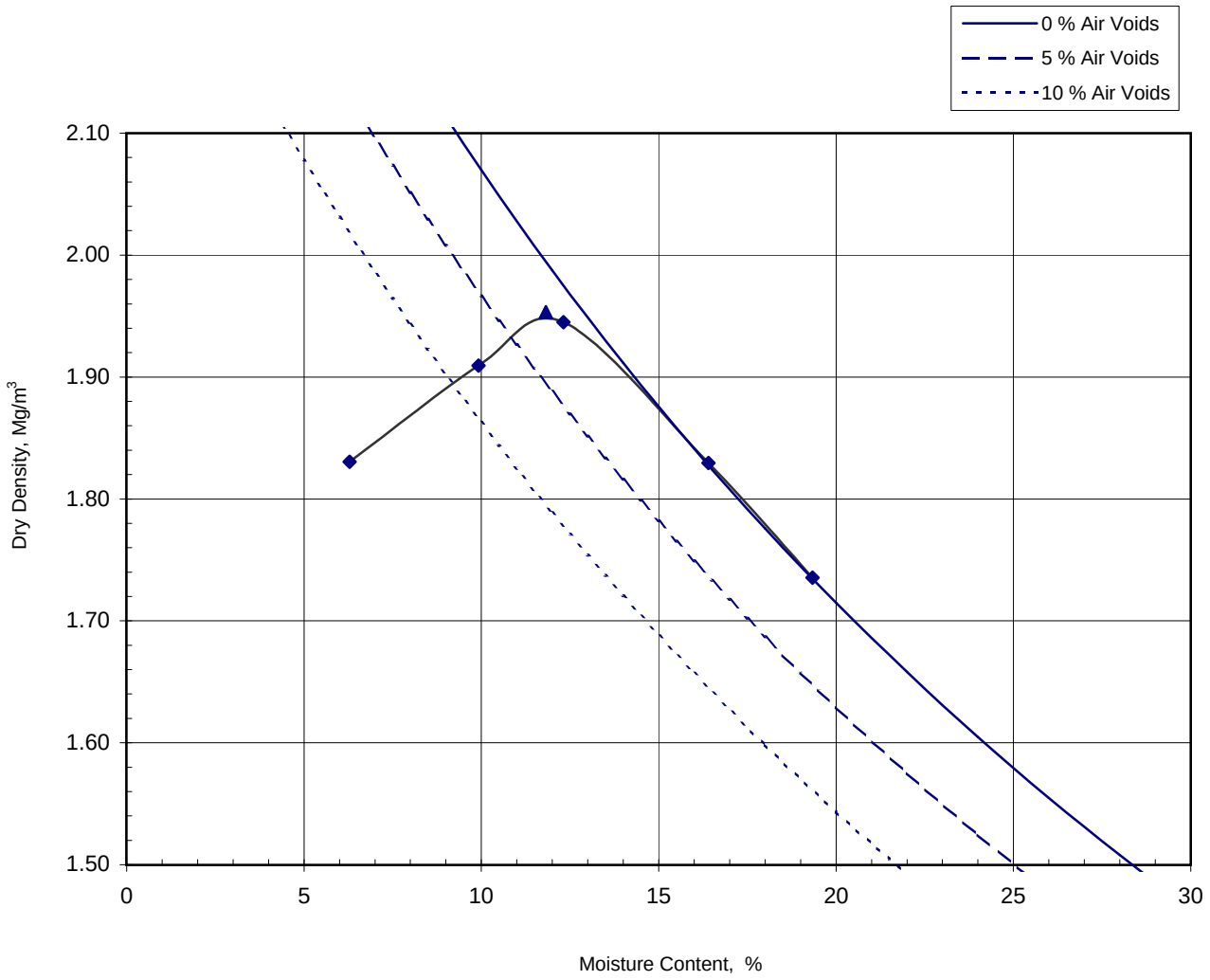
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:15

Version 019 - 05/09/2013
1410 - Comp Pond 2 02.50 B - B24526-736531.xls : Sample ID 736531

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 2
		Sample Ref
	Engineer	Depth (m) 2.50-3.00
		Sample Type B



Non Engineering Description		Grey very clayey silty SAND with much gravel. Gravel is fine to coarse with one cobble.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	8
Mass Retained on 20.0 mm Sieve	%	12
Particle Density - Measured	Mg/m³	2.61
Natural Moisture Content	%	14
Maximum Dry Density	Mg/m³	1.95
Optimum Moisture Content	%	11.8

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 31**
IG	S. Langran 09/07/2020		Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:18

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

Core Special Projects Ltd
2175 Century Way
Thorpe Park
LS15 8ZB

Analytical Test Report: J20/0016/CRE/003

Your Project Reference:	**Buckingham Business Hub Corby**	Samples Received on:	04/03/2020
Your Order Number:	CSP50/00552/17017	Testing Instruction Received:	04/03/2020
Report Issue Number:	1	Sample Tested:	04/03 to 26/03/2020
Samples Analysed:	3 soil samples	Report issued:	27/03/2020

Signed

Lee Harbottle
GCM Operations Manager
Nicholls Colton Group

Notes:

Samples will be retained for 14 days after issue of this report unless otherwise requested.

The results included within the report are representative of the samples submitted for analysis.

A certificate of sampling was not supplied.

Samples were taken by customer.

EN 933 Particle Size Distribution

Sample preparation was in accordance with BS EN 932-2 : 1999.

Testing was in accordance with BS EN 933-1 : 2012 washing and sieving.

Accreditation Key

UKAS = UKAS Accreditation, u = Unaccredited

Date of Issue 27/11/2019

Owned by Emily Blissett - Commercial Reporting Supervisor

Authorised by Lee Harbottle - GCM Operations Manager

J:\Public\Projects\2020\J20\CRE - Core\J20-0016-CRE - Rockingham Bussiness Hub, Corby\[J20-0016-CRE-003.XLSX]Aggregate

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

J20/0016/CRE/003

Project Reference - Buckingham Business Hub Corby

Analytical Test Results - Aggregate

NC Reference			80402	80403	80404
Client Sample Reference			S1	S2	S3
Client Sample Location			Stockpile	Stockpile	Stockpile
Date of Sampling			04/03/2020	04/03/2020	04/03/2020
Sample Description			Brown slightly silty crushed rock	Brown/grey crushed rock	Brown slightly silty crushed rock
Determinant		**Units**			
EN Test Sieve (mm)	**Specification**			**SHW Series 800 Table 8/5 - T1SB**	
125		(% Passing)	100	100	100
80		(% Passing)	100	100	100
63	100	(% Passing)	100	82	100
50		(% Passing)	100	77	100
40		(% Passing)	100	67	97
31.5	75-99	(% Passing)	95	54	96
25		(% Passing)	86	45	88
22.4		(% Passing)	83	42	85
20		(% Passing)	78	38	81
16	43-81	(% Passing)	74	32	71
14		(% Passing)	70	29	67
12.5		(% Passing)	66	27	64
10		(% Passing)	60	23	59
8	23-66	(% Passing)	54	20	57
6.3		(% Passing)	50	17	54
5		(% Passing)	46	15	50
4	12-53	(% Passing)	43	13	48
2.8		(% Passing)	39	11	46
2	6-42	(% Passing)	35	10	42
1	3-32	(% Passing)	29	7	33
0.5		(% Passing)	24	5	24
0.25		(% Passing)	19	3	18
0.125		(% Passing)	15	2	15
0.063	0-9	(% Passing)	11.6	1.5	13.2

Nicholls Colton Group
7 - 11 Harding Street
Leicester
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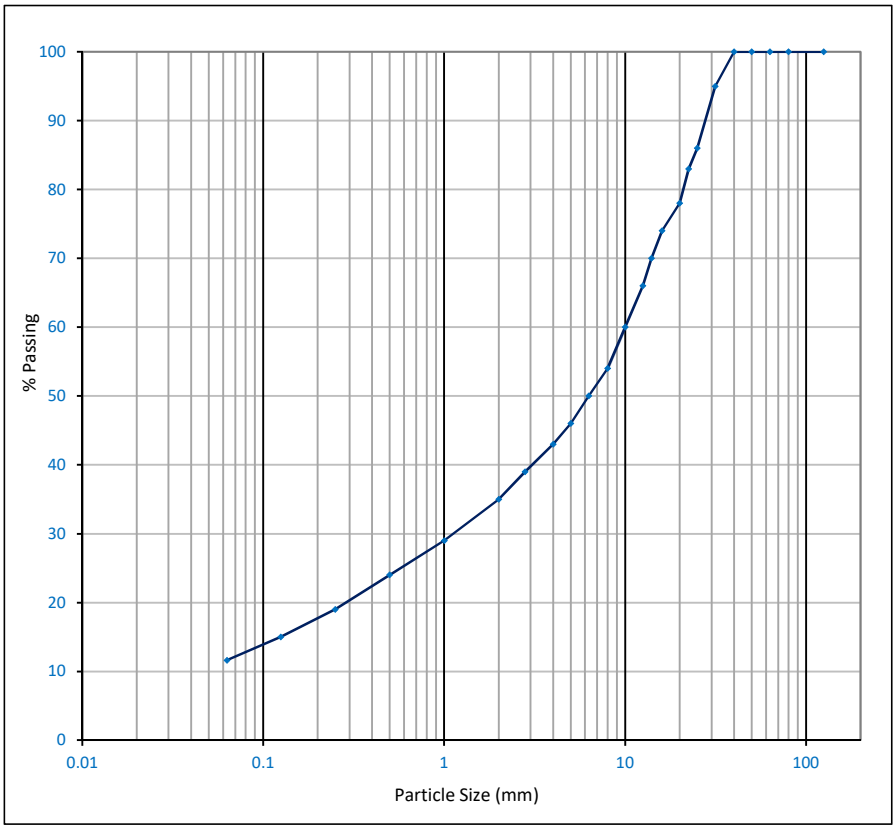
J20/0016/CRE/003

Project Reference - Buckingham Business Hub Corby

Material Analysis Results

NC Reference	**80402**

Client Sample Reference	S1
Client Sample Location	Stockpile
Date of Sampling	04/03/20
Sample Description	Brown slightly silty crushed rock



SHW Series 800 Table 8/5 - T1SB			
Sieve Size (mm)	Upper Limit (%)	Lower Limit (%)	Passing (%)
125			100
80			100
63	100	100	100
50			100
40			100
31.5	99	75	95
25			86
22.4			83
20			78
16	81	43	74
14			70
12.5			66
10			60
8	66	23	54
6.3			50
5			46
4	53	12	43
2.8			39
2	42	6	35
1	32	3	29
0.5			24
0.25			19
0.125			15
0.063	9	0	12

NOTES :

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

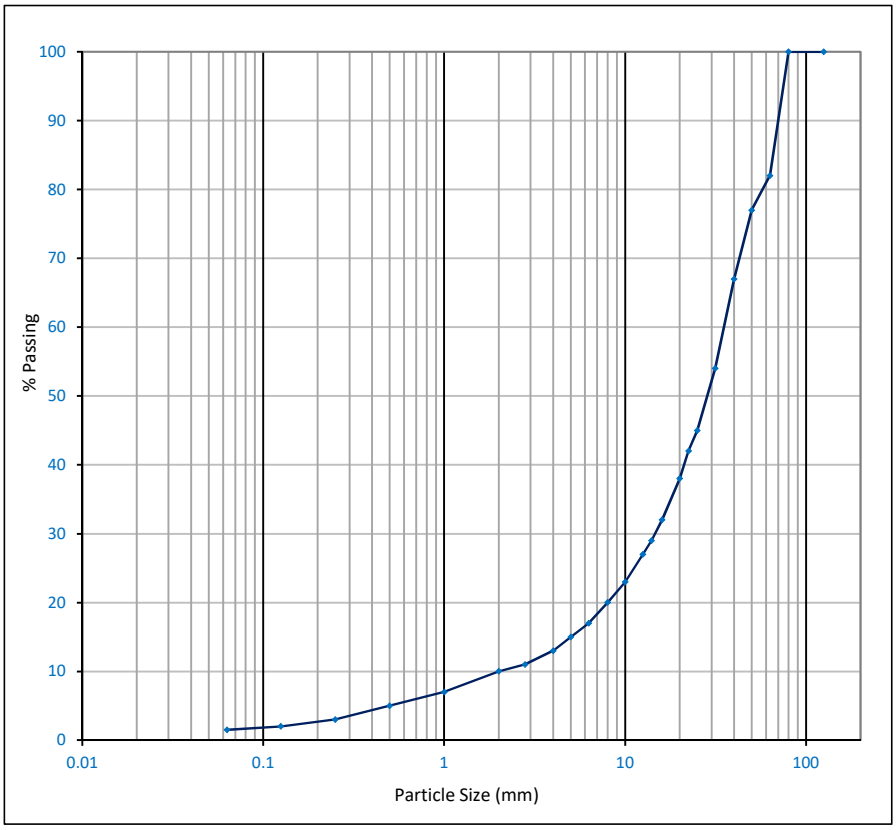
J20/0016/CRE/003

Project Reference - Buckingham Business Hub Corby

Material Analysis Results

NC Reference	**80403**

Client Sample Reference	S2
Client Sample Location	Stockpile
Date of Sampling	04/03/20
Sample Description	Brown/grey crushed rock



SHW Series 800 Table 8/5 - T1SB			
Sieve Size (mm)	Upper Limit (%)	Lower Limit (%)	Passing (%)
125			100
80			100
63	100	100	82
50			77
40			67
31.5	99	75	54
25			45
22.4			42
20			38
16	81	43	32
14			29
12.5			27
10			23
8	66	23	20
6.3			17
5			15
4	53	12	13
2.8			11
2	42	6	10
1	32	3	7
0.5			5
0.25			3
0.125			2
0.063	9	0	2

NOTES :

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

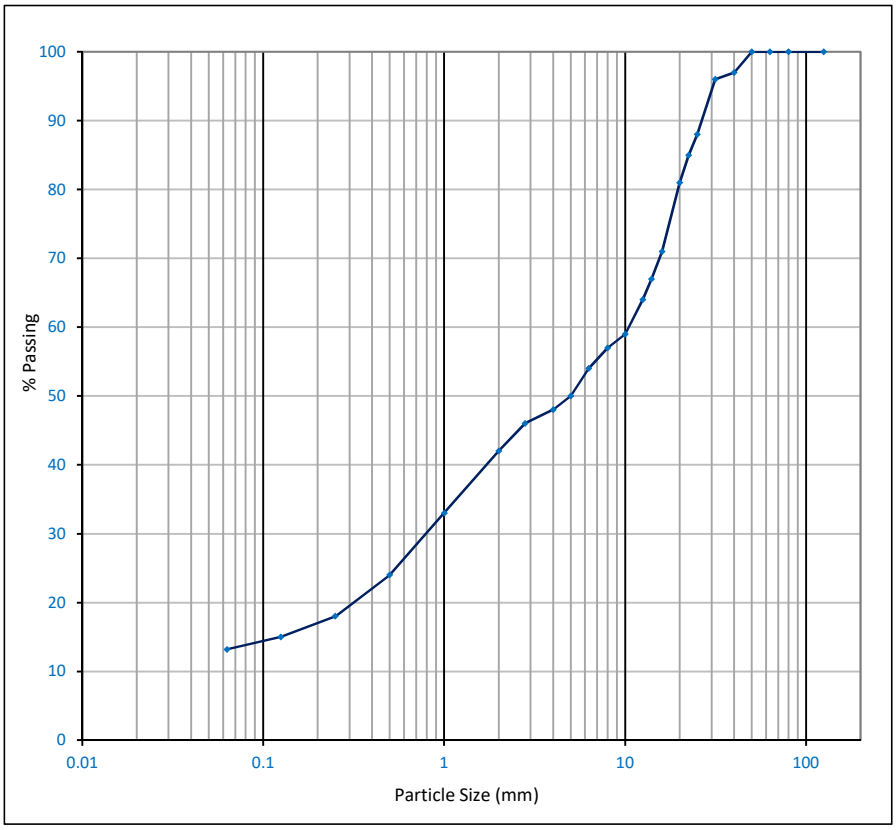
J20/0016/CRE/003

Project Reference - Buckingham Business Hub Corby

Material Analysis Results

NC Reference	**80404**

Client Sample Reference	S3
Client Sample Location	Stockpile
Date of Sampling	04/03/20
Sample Description	Brown slightly silty crushed rock



SHW Series 800 Table 8/5 - T1SB			
Sieve Size (mm)	Upper Limit (%)	Lower Limit (%)	Passing (%)
125			100
80			100
63	100	100	100
50			100
40			97
31.5	99	75	96
25			88
22.4			85
20			81
16	81	43	71
14			67
12.5			64
10			59
8	66	23	57
6.3			54
5			50
4	53	12	48
2.8			46
2	42	6	42
1	32	3	33
0.5			24
0.25			18
0.125			15
0.063	9	0	13

NOTES :

Nicholls Colton Group
7-11 Harding Street, Leicester, LE1 4DH
E-mail: info@nicholls-colton.co.uk
Website: www.nicholls-colton.co.uk
Tel: 0116 253 6333.

UKAS TESTING 0320

NICHOLLS COLTON GROUP

TEST REPORT

BS1377 IN-SITU DENSITY

Rockingham Speedway, Corby

Report no. J20/0085/IVY/002 – Amendment A	
Order reference: IVY:131.20	Date of laboratory testing: 08/07/2020
Date of site work: 08/07/2020	Date of issue: 15/07/2020

Test No.	**1 (CC1)**	**2 (CC2)**	**3 (CC3)**
Test location:	E35	E47	E54
Visual description:	Brown/grey occasionally gravelly clay	Brown/grey occasionally gravelly clay	Brown/grey occasionally gravelly clay
In-Situ Bulk Density (Mg/m^3):	**1.91**	**2.05**	**1.94**
Moisture content (%):	**23.4**	**23.9**	**17.3**
In-Situ dry density (Mg/m^3):	**1.55**	**1.65**	**1.65**
Relative Compaction (%):	85	91	91

NOTES:
1. Testing was carried out in accordance with BS 1377 : Part 9 : 1990 : clause 2.4 core cutter method
2. Relative compaction is calculated using a maximum dry density of 1.82 Mg/m^3 as determined by BS 1377 : Part : 4 1990.
3. Moisture contents were determined in accordance with BS 1377 : Part 2 : 1990.

.....
James Browne
GCM Testing Services Manager
Nicholls Colton Group

Ivy House Environmental
Scotland Farm
Ockbrook
Derby
DE72 3RX

Date of Issue 30.01.2017
Owned by Emily Blissett – Customer Services Supervisor
Authorised by James Gane – Commercial Manager
G:\LE1 Production\Controlled Documents\Report Templates\1377\RT - 1377 In-Situ Density.doc

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

Ivy House
Scotland Farm
Ockbrook
Derby
DE72 3RX

Analytical Test Report: J20/0085/IVY/001

Your Project Reference:	**Rockingham Logistic Hub Corby**	Samples Received on:	18/07/2020
Your Order Number:	IV.131.20	Testing Instruction Received:	17/07/2020
Report Issue Number:	1	Sample Tested:	18/07 to 28/07/2020
Samples Analysed:	2 soil samples	Report issued:	11/08/2020

Signed

Peter Swanston
Environmental Laboratories Manager
Nicholls Colton Group

Notes:

General

Please refer to Methodologies tab for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Stone Content was determined in accordance with NC method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

With the exception of Sulphate which is crushed over the 2mm test sieve, concentrations are reported as a percentage mass of the dry soil passing the 10mm BS test sieve. As received samples have been corrected for moisture content but not stone content.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

Samples were received in suitable containers	**Yes**
A date and time of sampling was provided	**Yes**
Sample holding times were exceeded prior to analysis of determinants	**Yes**

Where samples do not meet one or more of the above criteria they will be classed as deviating, this means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue 24.01.2017
Owned by Emily Blissett - Customer Services Supervisor
Authorised by James Gane - Commercial Manager
J:\Public\Projects\2020\J20\IVY - Ivy House\J20-0085-IVY - Rockingham Speedway, Corby\[J20-0085-IVY-004.XLSX]Methodology

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

J20/0085/IVY/001

Project Reference - Rockingham Logistic Hub Corby

Analytical Test Results - BRE Suite

NC Reference			**99758**	**99759**
Client Sample ID			E48	E53
Client Sample Location			Not provided	Not provided
Depth - Top (m)			Not provided	Not provided
Depth - Bottom (m)			Not provided	Not provided
Date of Sampling			08/07/2020	08/07/2020
Time of Sampling			13:00	13:00
Sample Matrix			Clay	Clay
Determinant	**Units**	**Accreditation**		
Water soluble sulphate	(mg/l)	u	890	1600
pH Value	pH Units	MCERTS	7.8	8.2

Nicholls Colton Group
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J20/0085/IVY/001

Project Reference - Rockingham Logistic Hub Corby

Sample Descriptions

NC Reference	Client Sample ID	Client Sample Location	Description	Passing 2mm test sieve (%)
99758	E48	Not provided	Greyish Brown Slightly Sandy Slightly Gravelly Silty Clay	48
99759	E53	Not provided	Greyish Brown Slightly Sandy Slightly Gravelly Silty Clay	47

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Leicester
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J20/0085/IVY/001

Project Reference - Rockingham Logistic Hub Corby

Analysis Methodologies

Matrix	Determinant	Sample condition for analysis	Test Method used
Soil	pH	As Received	In house method statement - MS - CL - pH in soils (using a 1:3 soil to water extraction)
Soil	Sulphate (w/s)	Oven Dried	In house method statement - MS - CL - Anions by Aquakem

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

Ivy House
Scotland Farm
Ockbrook
Derby
DE72 3RX

Analytical Test Report: J20/0085/IVY/005

Your Project Reference:	**Rockingham Logistic Hub Corby**	Samples Received on:	18/07/2020
Your Order Number:	IV.131.20	Testing Instruction Received:	17/07/2020
Report Issue Number:	1	Sample Tested:	17/07 to 11/08/2020
Samples Analysed:	2 soil samples	Report issued:	11/08/2020

Signed

Lee Harbottle
GCM Operations Manager
Nicholls Colton Group

Notes:

Samples will be retained for 14 days after issue of this report unless otherwise requested.

The results included within the report are representative of the samples submitted for analysis.

A certificate of sampling was not supplied.

Samples were supplied by customer, results apply to the samples as received.

1377 Plasticity Index

Sample preparation was in accordance with BS1377:Part 1:2016.

Testing was in accordance with BS1377:Part 2:1990

1377 Moisture Content

Sample preparation was in accordance with BS1377:Part 1:2016.

Moisture content testing was in accordance with BS1377 : Part 2 :1990

1377 Particle Density

Sample preparation was in accordance with BS 1377 : Part 1 : 2016.

Testing was in accordance with BS 1377 : Part 2 : 1990 Clause 8.2 gas jar method.

Accreditation Key

UKAS = UKAS Accreditation, u = Unaccredited

Date of Issue 27/11/2019

Owned by Emily Blissett - Commercial Reporting Supervisor
Authorised by Lee Harbottle - GCM Operations Manager
J:\Public\Projects\2020\J20\IVY - Ivy House\J20-0085-IVY - Rockingham Speedway, Corby\[J20-0085-IVY-005.XLSX]Cover Sheet

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

J20/0085/IVY/005

Project Reference - Rockingham Logistic Hub Corby

Analytical Test Results - Soil

NC Reference		**99756**	**99757**
Client Sample ID		E48	E53
Date of Sampling		08/07/2020	08/07/2020
Sample type		Disturbed	Disturbed
Sample Description		Brown slightly gravelly, silty clay	Brown slightly gravelly, silty clay
Determinant	**Units**		
Moisture Content	(%)	18	25
Moisture Content Prep	-	3.2.3.2 (medium)	3.2.3.2 (medium)
Fines passing 425µm test sieve	(%)	85	88
Liquid Limit	(%)	44	41
Plastic Limit	(%)	18	18
Plasticity Index	(%)	26	23
PI preparation	-	from its natural state	from its natural state
PI Test Method		clause 4.4 (one point)	clause 4.4 (one point)
Particle Density	(Mg/m^3)	2.69	2.70

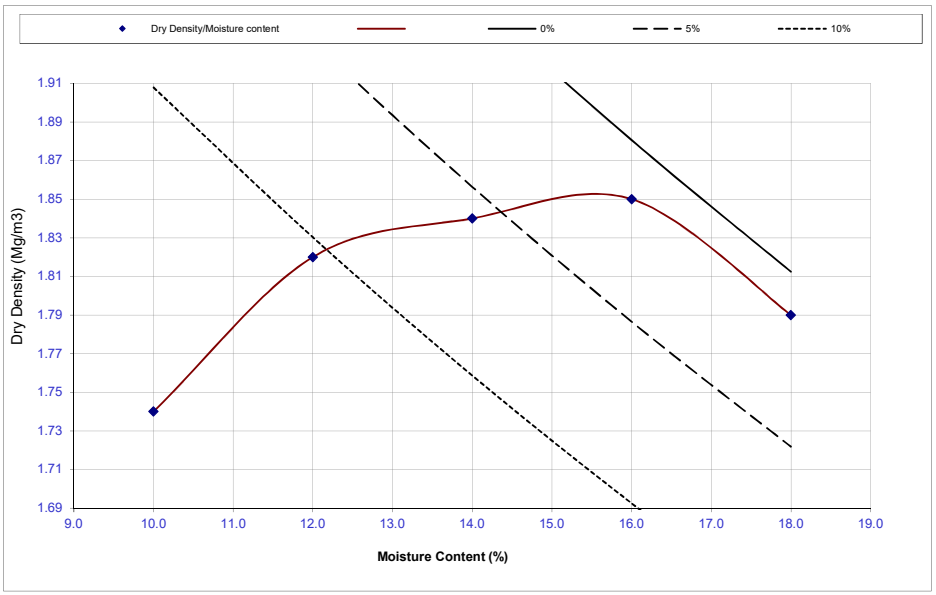
Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

J20/0085/IVY/005

Project Reference - Rockingham Logistic Hub Corby

BS 1377 Dry Density / Moisture Content Relationship - 2.5 Kg Rammer

NC Reference	**99756**
Client Sample ID	E48
Type of sample and visual description :	Brown slightly gravelly, silty clay
Material retained on 37.5mm BS test sieve (%) :	0
Material retained on 20mm BS test sieve (%) :	5
Particle Density (Measured) (Mg/m3)	2.69
Natural Moisture Content %:	18
Maximum Dry Density (Mg/m^3)	**1.85**
Optimum Moisture Content % :	**16**



NOTES :

1. Samples were prepared in accordance with BS1377:Part 4:1990 Clause 3.2.6.2 using separate batches
2. Testing was in accordance with BS1377:Part 4:1990 Clause Clause 3.3

Nicholls Colton Group
7 - 11 Harding Street
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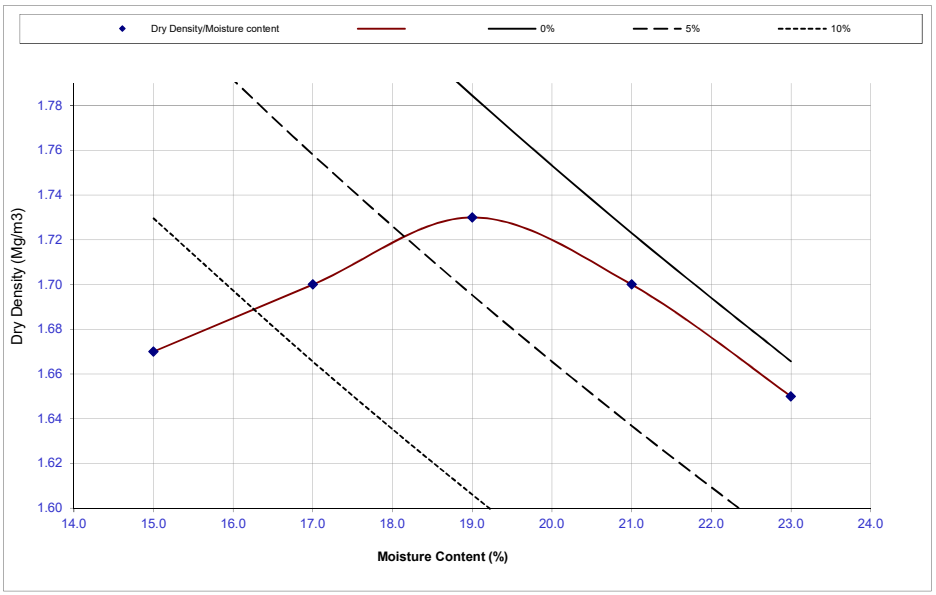
J20/0085/IVY/005

Project Reference - Rockingham Logistic Hub Corby

BS 1377 Dry Density / Moisture Content Relationship - 2.5 Kg Rammer

NC Reference	**99757**
Client Sample ID	E53
Type of sample and visual description :	Brown slightly gravelly, silty clay
Material retained on 37.5mm BS test sieve (%) :	0
Material retained on 20mm BS test sieve (%) :	4
Particle Density (Measured) (Mg/m3)	2.70
Natural Moisture Content %:	25
Maximum Dry Density (Mg/m^3)	**1.73**
Optimum Moisture Content % :	**19**



NOTES :

1. Samples were prepared in accordance with BS1377:Part 4:1990 Clause 3.2.6.2 using separate batches
2. Testing was in accordance with BS1377:Part 4:1990 Clause Clause 3.3

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

Ivy House
Scotland Farm
Ockbrook
Derby
DE72 3RX

Analytical Test Report: J20/0085/IVY/005

Your Project Reference:	**Rockingham Logistic Hub Corby**	Samples Received on:	18/07/2020
Your Order Number:	IV.131.20	Testing Instruction Received:	17/07/2020
Report Issue Number:	1	Sample Tested:	17/07 to 11/08/2020
Samples Analysed:	2 soil samples	Report issued:	11/08/2020

Signed

Lee Harbottle
GCM Operations Manager
Nicholls Colton Group

Notes:

Samples will be retained for 14 days after issue of this report unless otherwise requested.

The results included within the report are representative of the samples submitted for analysis.

A certificate of sampling was not supplied.

Samples were supplied by customer, results apply to the samples as received.

1377 Plasticity Index

Sample preparation was in accordance with BS1377:Part 1:2016.

Testing was in accordance with BS1377:Part 2:1990

1377 Moisture Content

Sample preparation was in accordance with BS1377:Part 1:2016.

Moisture content testing was in accordance with BS1377 : Part 2 :1990

1377 Particle Density

Sample preparation was in accordance with BS 1377 : Part 1 : 2016.

Testing was in accordance with BS 1377 : Part 2 : 1990 Clause 8.2 gas jar method.

Accreditation Key

UKAS = UKAS Accreditation, u = Unaccredited

Date of Issue 27/11/2019

Owned by Emily Blissett - Commercial Reporting Supervisor
Authorised by Lee Harbottle - GCM Operations Manager
J:\Public\Projects\2020\J20\IVY - Ivy House\J20-0085-IVY - Rockingham Speedway, Corby\[J20-0085-IVY-005.XLSX]Cover Sheet

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

J20/0085/IVY/005

Project Reference - Rockingham Logistic Hub Corby

Analytical Test Results - Soil

NC Reference		**99756**	**99757**
Client Sample ID		E48	E53
Date of Sampling		08/07/2020	08/07/2020
Sample type		Disturbed	Disturbed
Sample Description		Brown slightly gravelly, silty clay	Brown slightly gravelly, silty clay
Determinant	**Units**		
Moisture Content	(%)	18	25
Moisture Content Prep	-	3.2.3.2 (medium)	3.2.3.2 (medium)
Fines passing 425µm test sieve	(%)	85	88
Liquid Limit	(%)	44	41
Plastic Limit	(%)	18	18
Plasticity Index	(%)	26	23
PI preparation	-	from its natural state	from its natural state
PI Test Method		clause 4.4 (one point)	clause 4.4 (one point)
Particle Density	(Mg/m^3)	2.69	2.70

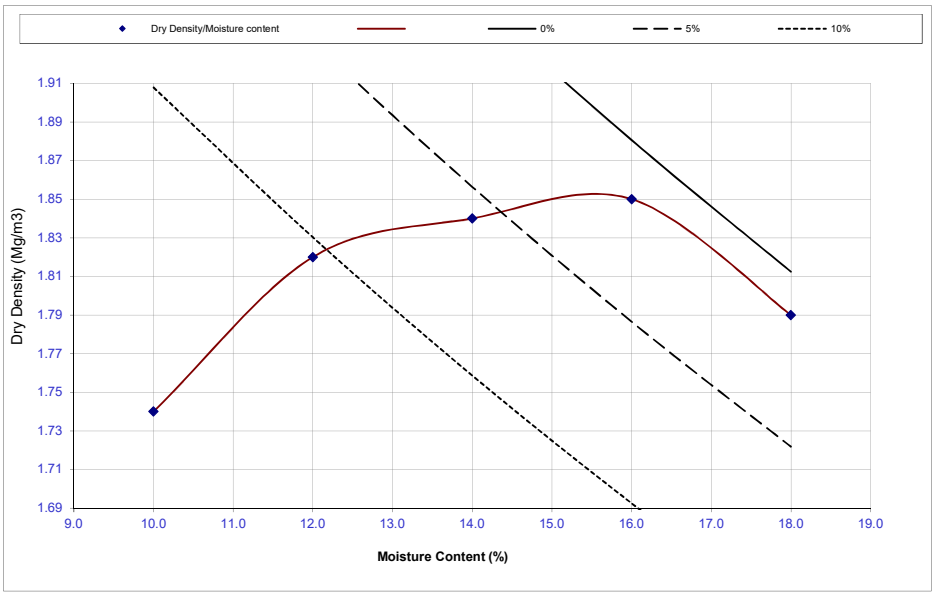
Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

J20/0085/IVY/005

Project Reference - Rockingham Logistic Hub Corby

BS 1377 Dry Density / Moisture Content Relationship - 2.5 Kg Rammer

NC Reference	**99756**
Client Sample ID	E48
Type of sample and visual description :	Brown slightly gravelly, silty clay
Material retained on 37.5mm BS test sieve (%) :	0
Material retained on 20mm BS test sieve (%) :	5
Particle Density (Measured) (Mg/m3)	2.69
Natural Moisture Content %:	18
Maximum Dry Density (Mg/m^3)	**1.85**
Optimum Moisture Content % :	**16**



NOTES :

1. Samples were prepared in accordance with BS1377:Part 4:1990 Clause 3.2.6.2 using separate batches
2. Testing was in accordance with BS1377:Part 4:1990 Clause Clause 3.3

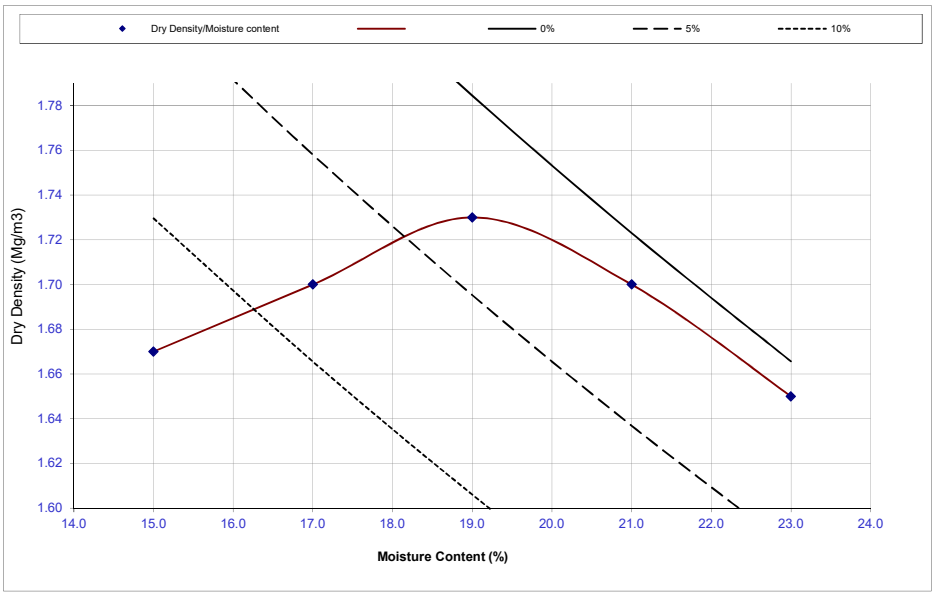
Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

J20/0085/IVY/005

Project Reference - Rockingham Logistic Hub Corby

BS 1377 Dry Density / Moisture Content Relationship - 2.5 Kg Rammer

NC Reference	**99757**
Client Sample ID	E53
Type of sample and visual description :	Brown slightly gravelly, silty clay
Material retained on 37.5mm BS test sieve (%) :	0
Material retained on 20mm BS test sieve (%) :	4
Particle Density (Measured) (Mg/m3)	2.70
Natural Moisture Content %:	25
Maximum Dry Density (Mg/m^3)	**1.73**
Optimum Moisture Content % :	**19**



NOTES :

1. Samples were prepared in accordance with BS1377:Part 4:1990 Clause 3.2.6.2 using separate batches
2. Testing was in accordance with BS1377:Part 4:1990 Clause Clause 3.3

LABORATORY TEST CERTIFICATE
MATERIALS LABORATORY

Certificate No: 20/1518 (IV.131.20.SS)

To : Scott Spencer

Client : Ivy House Environmental Ltd
Scotland Farm
Ockbrook
Derby, DE72 3RX

Date: 20/03/2020

Dear Sirs,

FIELD & LABORATORY TESTING

Introduction

We refer to samples supplied from Rockingham Raceway on the 11th May 2020.

Sampling : Client

Sample Reference : A2714 - A2721

Description: : See attached

Date Sampled : 11th May 2020

Date Tested: 13th May - 2nd June 2020

Source : See attached

Test Results;

Please see attached

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This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate
When a statement of conformity is requested for a test result against limits set out in a standard or specification (e.g. BS EN ISO, SHW) that already considers measurement uncertainty, MATtest Laboratories decision rule is to follow conformity requirements of the applicable standard or specification.
Results reported only relate to the items tested/ received.

Remarks;

Approved for Issue: _____

Position: Technical Manager

Issuing Office:

☑ **Head Office & Central**
Unit 5 Draycott Mills, Off Market Street, Draycott, Derby, DE72 3NB

☐ **North West**
Unit 15 Park Court, Sherdley Business Park, St. Helens, Merseyside, WA9 5GZ

Tel: 03333 202521 Web: www.mattestlaboratories.co.uk

Reproduction or creating a hard copy of this document may result in distortion of the accreditation symbols.

LABORATORY TEST CERTIFICATE

Certificate No 20/1518 Rev 1

To : Scott Spencer

Order No

Client : Ivy House

Dear Sirs,

DETEMINATION OF MOISTURE CONTENT - BS 1377 : PART 2 : 1990: CLAUSE 3

Introduction

We refer to a sample taken from Rockingham on the 11/05/2020

Material & Source

Sampled by:	Client
Sample Reference:	A2714
Description:	Brown Gravelly Clay
Location:	TP3 @1.5m
Date Sampled:	11/05/2020
Source:	Ex site
Date Tested:	13-14/05/2020
Sampling Certificate:	Schedule only.

Test Results;

MOISTURE CONTENT % 17

Comments;

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020
John Pullar
Technical Manager

Unit 5, Draycott Mills
Off Market Street
Draycott
Derby
DE72 3NB
Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

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LABORATORY TEST CERTIFICATE
MATERIALS LABORATORY

Certificate No: 20/1518 (IV.131.20.SS) Rev 1

To : Scott Spencer

Client : Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby, DE72 3RX

Date: 07/06/2020

Dear Sirs,

FIELD & LABORATORY TESTING

Introduction

We refer to samples taken from Rockingham on the 11 May 2020.

Tested By	:	MATtest Laboratories Ltd
Sample Reference	:	A2714-A2721
Description	:	See reports
Date Sampled	:	11th May 2020
Date Tested	:	13 May - 02 June 2020
Source	:	See Reports
Weather	:	N/A

Test Results;

Please see attached

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Remarks;

Approved for Issue: _____

Position: Technical Manager

Issuing Office:

☑ **Head Office & Central**
Unit 5 Draycott Mills, Off Market Street, Draycott, Derby, DE72 3NB

☐ **North West**
Unit 15 Park Court, Sherdley Business Park, St. Helens, Merseyside, WA9 5GZ

Tel: 03333 202521 Web: www.mattestlaboratories.co.uk

7806

MAT test Laboratories Limited
Materials Testing & Consultancy

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2714

Client:
Ivy House Environmental Ltd
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

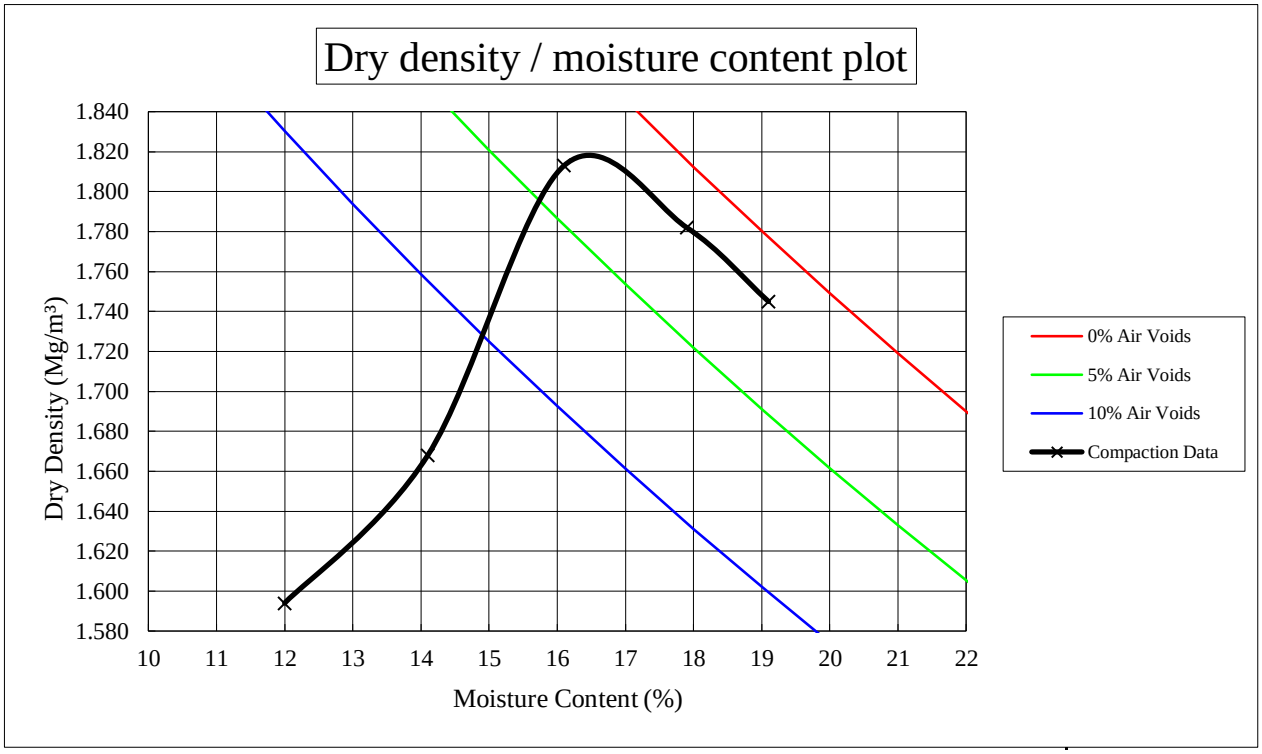
DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP BY COMPACTION BS 1377 : Part 4

We refer to a sample taken from Rockingham on the 11th May 2020.

Material & Source

Sampled by:	Client	Sampling Certificate:	Schedule only
Description:	Brown gravelly Clay	Date Sampled:	11/05/2020
Date Tested:	19 - 26/05/2020	Source:	Ex Site
Location:	TP3 @1.5m	Sample Ref:	A2714

Test Results:



Optimum Moisture Content : 16%	Maximum Dry Density: 1.82 Mg/m³
Test Method: Clause 3.3 (2.5Kg Rammer)	
Particle Density: 2.69 Mg/m³ (measured)	
Proportion of sample > 37.5mm : 0%	Proportion of sample > 20mm: 4%
Grading Zone: 2	

Approved for Issue: _____ Date: 07/06/2020

J. Pullar Technical Manager

MLR 007 - BS 1377 OMC /MDD

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2714

Client: **Ivy House Environmental Limited**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Particle Density - BS 1377-2:1990 Clause 8.2 (Gas Jar Method)

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	Client
Sample Reference	A2714
Location	TP3 @1.5m
Date Sampled	11/05/2020
Source	Ex site
Date Tested	13-15 May 2020
Sampling Certificate	Schedule only

Test Results:

Particle Density - 2.69 Mg/m³

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020

John Pullar
Technical Manager

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DE72 3NB
Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2714

Client: Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Moisture Content - BS 1377-2:1990 Clause 3
Determination of Plastic Limit - BS 1377-2:1990 Clause 5.3
Determination of Liquid Limit - BS 1377-2:1990 Clause 4.4
Determination of Plasticity Index - BS 1377-2:1990 Clause 5.4

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	: Client
Sample Reference	: A2714
Location	: TP3 @1.5m
Date Sampled	: 11th May 2020
Source	: Ex site
Date Tested	: 13 - 18 May 2020
Sampling Certificate	: Schedule only

Test Results:	A2714
Moisture Content :	**17%**
Liquid Limit :	**45**
Plastic Limit :	**17**
Plasticity Index :	**28**
% retained on 425 micron	**23**
Description / Designation	**Brown gravelly Clay**

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Remarks;

Approved for Issue Date 07/06/2020

John Pullar
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LABORATORY TEST CERTIFICATE

Certificate No 20/1518

To : Scott Spencer

Order No

Client : Ivy House

Dear Sirs,

DETEMINATION OF MOISTURE CONTENT - BS 1377 : PART 2 : 1990: CLAUSE 3

Introduction

We refer to a sample taken from Rockingham on the 11/05/2020

Material & Source

Sampled by:	Client
Sample Reference:	A2715
Description:	Brown Gravelly Clay
Location:	TP3 @2.0-3.0m
Date Sampled:	11/05/2020
Source:	Ex site
Date Tested:	13-14/05/2020
Sampling Certificate:	Schedule only.

Test Results;

MOISTURE CONTENT % 20

Comments;

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

Approved for Issue Date 05/06/2020
John Pullar
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MAT test Laboratories Limited
Materials Testing & Consultancy

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2715

Client:
Ivy House Environmental Ltd
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

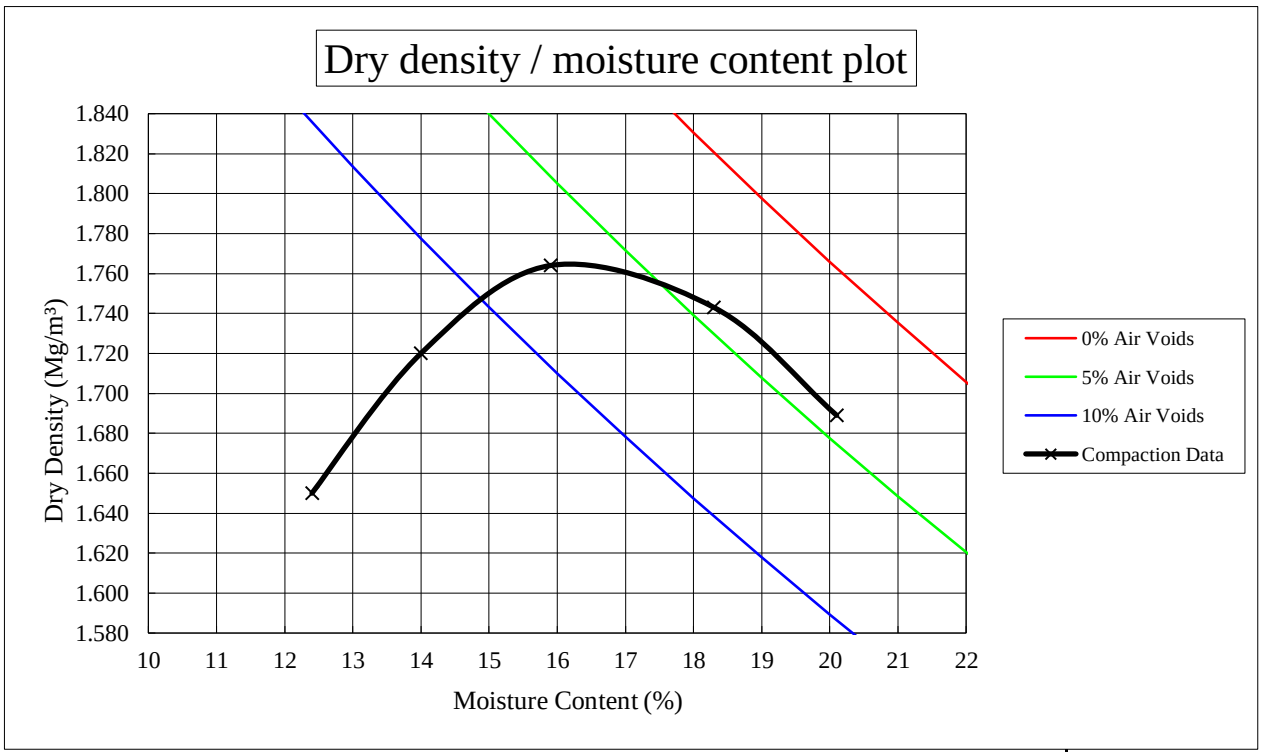
DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP BY COMPACTION BS 1377 : Part 4

We refer to a sample taken from Rockingham on the 11th May 2020.

Material & Source

Sampled by:	Client	Sampling Certificate:	Schedule only
Description:	Brown gravelly Clay	Date Sampled:	11/05/2020
Date Tested:	18 - 27/05/2020	Source:	Ex Site
Location:	TP3 @2.0-3.0m	Sample Ref:	A2715

Test Results:



Optimum Moisture Content : 16%	Maximum Dry Density: 1.76 Mg/m³
Test Method: Clause 3.3 (2.5Kg Rammer)	
Particle Density: 2.73 Mg/m³ (measured)	
Proportion of sample > 37.5mm : 0%	Proportion of sample > 20mm: 5%
Grading Zone: 2	

Approved for Issue: _____ Date: 07/06/2020

J. Pullar Technical Manager

MLR 007 - BS 1377 OMC /MDD

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2715

Client: **Ivy House Environmental Limited**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Particle Density - BS 1377-2:1990 Clause 8.2 (Gas Jar Method)

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	Client
Sample Reference	A2715
Location	TP3 @2.0-3.0m
Date Sampled	11/05/2020
Source	Ex site
Date Tested	14-15 May 2020
Sampling Certificate	Schedule only

Test Results:

Particle Density - 2.73 Mg/m³

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Remarks;

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LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2715

Client: Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Moisture Content - BS 1377-2:1990 Clause 3
Determination of Plastic Limit - BS 1377-2:1990 Clause 5.3
Determination of Liquid Limit - BS 1377-2:1990 Clause 4.4
Determination of Plasticity Index - BS 1377-2:1990 Clause 5.4

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	: Client
Sample Reference	: A2715
Location	: TP3 @2.0-3.0m
Date Sampled	: 11th May 2020
Source	: Ex site
Date Tested	: 13 - 18 May 2020
Sampling Certificate	: Schedule only

Test Results:	A2715
Moisture Content :	**20%**
Liquid Limit :	**38**
Plastic Limit :	**16**
Plasticity Index :	**22**
% retained on 425 micron	**23**
Description / Designation	**Brown gravelly Clay**

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Remarks;

Approved for Issue Date 07/06/2020

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LABORATORY TEST CERTIFICATE

Certificate No 20/1518

To : Scott Spencer

Order No

Client : Ivy House

Dear Sirs,

DETEMINATION OF MOISTURE CONTENT - BS 1377 : PART 2 : 1990: CLAUSE 3

Introduction

We refer to a sample taken from Rockingham on the 11/05/2020

Material & Source

Sampled by:	Client
Sample Reference:	A2716
Description:	Brown Gravelly Clay
Location:	TP4 @1.5-2.0m
Date Sampled:	11/05/2020
Source:	Ex site
Date Tested:	13-14/05/2020
Sampling Certificate:	Schedule only.

Test Results;

MOISTURE CONTENT % 24

Comments;

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All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

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MAT test Laboratories Limited
Materials Testing & Consultancy

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2716

Client: **Ivy House Environmental Ltd**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

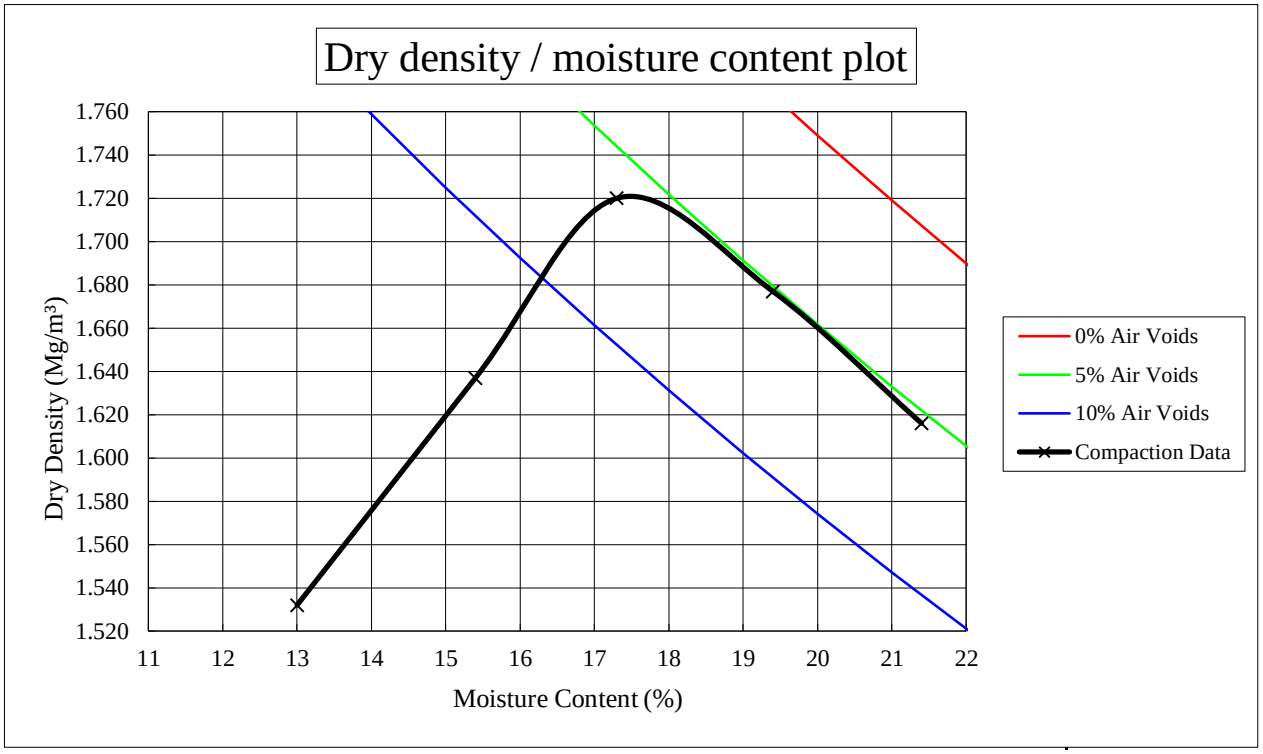
DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP BY COMPACTION BS 1377 : Part 4

We refer to a sample taken from Rockingham on the 11th May 2020.

Material & Source

Sampled by:	Client	Sampling Certificate:	Schedule only
Description:	Brown gravelly Clay	Date Sampled:	11/05/2020
Date Tested:	27/05-02/06/2020	Source:	Ex Site
Location:	TP4 @1.5-2.0m	Sample Ref:	A2716

Test Results:



Optimum Moisture Content : 17%	Maximum Dry Density: 1.72 Mg/m³
Test Method: Clause 3.3 (2.5Kg Rammer)	
Particle Density: 2.69 Mg/m³ (measured)	
Proportion of sample > 37.5mm : 0%	Proportion of sample > 20mm: 5%
Grading Zone: 2	

Approved for Issue: _____ Date: 07/06/2020

J. Pullar Technical Manager

MLR 007 - BS 1377 OMC /MDD

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2716

Client: **Ivy House Environmental Limited**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Particle Density - BS 1377-2:1990 Clause 8.2 (Gas Jar Method)

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	Client
Sample Reference	A2716
Location	TP4 @1.5-2.0m
Date Sampled	11/05/2020
Source	Ex site
Date Tested	15-18 May 2020
Sampling Certificate	Schedule only

Test Results:

Particle Density - 2.69 Mg/m³

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Remarks;

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LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2716

Client: Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Moisture Content - BS 1377-2:1990 Clause 3
Determination of Plastic Limit - BS 1377-2:1990 Clause 5.3
Determination of Liquid Limit - BS 1377-2:1990 Clause 4.4
Determination of Plasticity Index - BS 1377-2:1990 Clause 5.4

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	: Client
Sample Reference	: A2716
Location	: TP4 @1.5-2.0m
Date Sampled	: 11th May 2020
Source	: Ex site
Date Tested	: 13 - 27 May 2020
Sampling Certificate	: Schedule only

Test Results:	A2716
Moisture Content :	**24%**
Liquid Limit :	**35**
Plastic Limit :	**17**
Plasticity Index :	**18**
% retained on 425 micron	**26**
Description / Designation	**Brown gravelly Clay**

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Remarks;

Approved for Issue Date 07/06/2020

John Pullar
Technical Manager

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LABORATORY TEST CERTIFICATE

Certificate No 20/1518

To : Scott Spencer

Order No

Client : Ivy House

Dear Sirs,

DETEMINATION OF MOISTURE CONTENT - BS 1377 : PART 2 : 1990: CLAUSE 3

Introduction

We refer to a sample taken from Rockingham on the 11/05/2020

Material & Source

Sampled by:	Client
Sample Reference:	A2717
Description:	Brown Gravelly Clay
Location:	TP5 @2.0-3.0m
Date Sampled:	11/05/2020
Source:	Ex site
Date Tested:	15-18/05/2020
Sampling Certificate:	Schedule only.

Test Results;

MOISTURE CONTENT % 21

Comments;

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020
John Pullar
Technical Manager

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Materials Testing & Consultancy

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2717

Client:
Ivy House Environmental Ltd
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

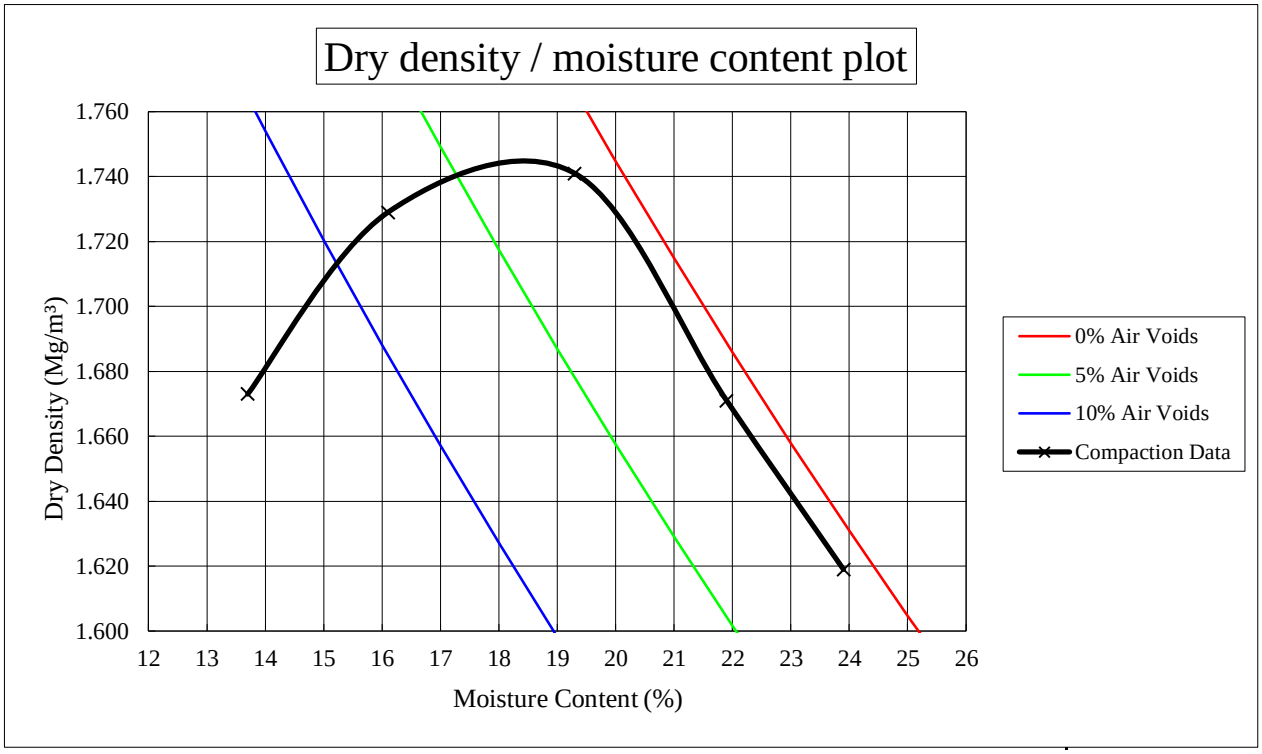
DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP BY COMPACTION BS 1377 : Part 4

We refer to a sample taken from Rockingham on the 11th May 2020.

Material & Source

Sampled by:	Client	Sampling Certificate:	Schedule only
Description:	Brown gravelly Clay	Date Sampled:	11/05/2020
Date Tested:	27/05-03/06/2020	Source:	Ex Site
Location:	TP5 @2.0-3.0m	Sample Ref:	A2717

Test Results:



Optimum Moisture Content : 18%	Maximum Dry Density: 1.74 Mg/m³
Test Method: Clause 3.3 (2.5Kg Rammer)	
Particle Density: 2.68 Mg/m³ (measured)	
Proportion of sample > 37.5mm : 0%	Proportion of sample > 20mm: 3%
Grading Zone: 2	

Approved for Issue: JPullar _____ Date: 07/06/2020

J. Pullar Technical Manager

MLR 007 - BS 1377 OMC /MDD

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2717

Client: **Ivy House Environmental Limited**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Particle Density - BS 1377-2:1990 Clause 8.2 (Gas Jar Method)

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	Client
Sample Reference	A2717
Location	TP5 @2.0-3.0m
Date Sampled	11/05/2020
Source	Ex site
Date Tested	18-19 May 2020
Sampling Certificate	Schedule only

Test Results:

Particle Density - 2.68 Mg/m³

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Remarks;

Approved for Issue Date 05/06/2020

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Technical Manager

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LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2717

Client: Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Moisture Content - BS 1377-2:1990 Clause 3
Determination of Plastic Limit - BS 1377-2:1990 Clause 5.3
Determination of Liquid Limit - BS 1377-2:1990 Clause 4.4
Determination of Plasticity Index - BS 1377-2:1990 Clause 5.4

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	: Client
Sample Reference	: A2717
Location	: TP5 @2.0-3.0m
Date Sampled	: 11th May 2020
Source	: Ex site
Date Tested	: 15 - 27 May 2020
Sampling Certificate	: Schedule only

Test Results:	A2717
Moisture Content :	**21%**
Liquid Limit :	**36**
Plastic Limit :	**19**
Plasticity Index :	**17**
% retained on 425 micron	**24**
Description / Designation	**Brown gravelly Clay**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
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All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 07/06/2020

John Pullar
Technical Manager

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Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

LABORATORY TEST CERTIFICATE

Certificate No 20/1518

To : Scott Spencer

Order No

Client : Ivy House

Dear Sirs,

DETEMINATION OF MOISTURE CONTENT - BS 1377 : PART 2 : 1990: CLAUSE 3

Introduction

We refer to a sample taken from Rockingham on the 11/05/2020

Material & Source

Sampled by:	Client
Sample Reference:	A2719
Description:	Brown Gravelly Clay
Location:	TP8 @0.5-1.5m
Date Sampled:	11/05/2020
Source:	Ex site
Date Tested:	15-18/05/2020
Sampling Certificate:	Schedule only.

Test Results;

MOISTURE CONTENT % 21

Comments;

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MAT test Laboratories Limited
Materials Testing & Consultancy

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2719

Client:
Ivy House Environmental Ltd
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

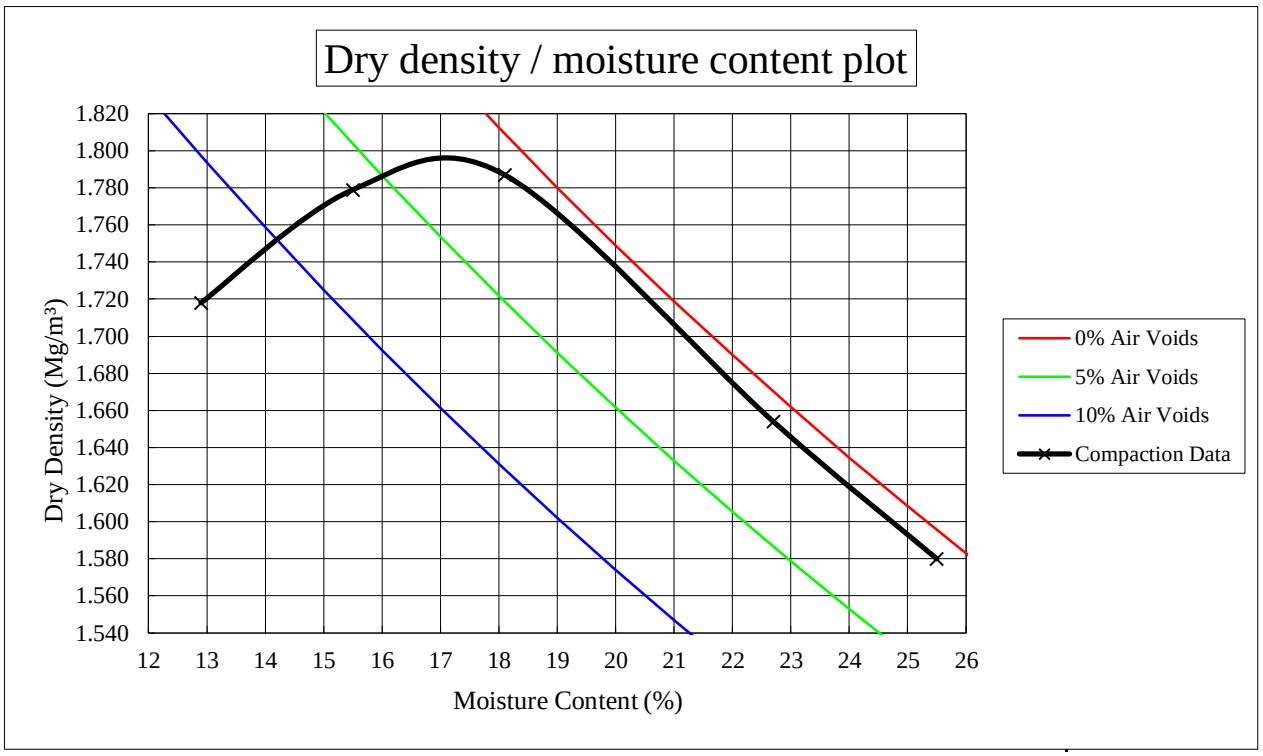
DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP BY COMPACTION BS 1377 : Part 4

We refer to a sample taken from Rockingham on the 11th May 2020.

Material & Source

Sampled by:	Client	Sampling Certificate:	Schedule only
Description:	Brown gravelly Clay	Date Sampled:	11/05/2020
Date Tested:	27/05-05/06/2020	Source:	Ex Site
Location:	TP8 @0.5-1.5m	Sample Ref:	A2719

Test Results:



Optimum Moisture Content : 17%	Maximum Dry Density: 1.80 Mg/m³
Test Method: Clause 3.3 (2.5Kg Rammer)	
Particle Density: 2.69 Mg/m³ (measured)	
Proportion of sample > 37.5mm : 0%	Proportion of sample > 20mm: 5%
Grading Zone: 2	

Approved for Issue: _____ Date: 07/06/2020

J. Pullar Technical Manager

MLR 007 - BS 1377 OMC /MDD

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2719

Client: **Ivy House Environmental Limited**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Particle Density - BS 1377-2:1990 Clause 8.2 (Gas Jar Method)

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	Client
Sample Reference	A2719
Location	TP8 @0.5-1.5m
Date Sampled	11/05/2020
Source	Ex site
Date Tested	19-21 May 2020
Sampling Certificate	Schedule only

Test Results:

Particle Density - 2.69 Mg/m³

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

Approved for Issue Date 05/06/2020

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Technical Manager

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Draycott
Derby
DE72 3NB
Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2719

Client: Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Moisture Content - BS 1377-2:1990 Clause 3
Determination of Plastic Limit - BS 1377-2:1990 Clause 5.3
Determination of Liquid Limit - BS 1377-2:1990 Clause 4.4
Determination of Plasticity Index - BS 1377-2:1990 Clause 5.4

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	: Client
Sample Reference	: A2719
Location	: TP8 @0.5-1.5m
Date Sampled	: 11th May 2020
Source	: Ex site
Date Tested	: 15 - 28 May 2020
Sampling Certificate	: Schedule only

Test Results:	A2719
Moisture Content :	**21%**
Liquid Limit :	**34**
Plastic Limit :	**17**
Plasticity Index :	**17**
% retained on 425 micron	**32**
Description / Designation	**Brown gravelly Clay**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 07/06/2020

John Pullar
Technical Manager

Unit 5, Draycott Mills
Off Market Street
Draycott
Derby
DE72 3NB
Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

2531

ANALYTICAL TEST REPORT

Contract no: 86094

Contract name: Rockingham

Client reference: -

Clients name: MATtest Laboratories

Clients address: Unit 5, Draycott Mills
Off Market Street
Draycott, Derby
DE72 3NB

Samples received: 14 May 2020

Analysis started: 14 May 2020

Analysis completed: 20 May 2020

Report issued: 20 May 2020

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by:
Dave Bowerbank
Customer Support Hero

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.
Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
86094-1	A2717	2.00-3.00	Clay with Gravel	-	-	15.9
86094-2	A2718	1.50	Clay with Gravel	-	-	16.5
86094-3	A2720	3.00	Clay with Gravel	-	-	16.6
86094-4	A2721	1.50	Clay with Gravel	-	-	18.3

Chemtech Environmental Limited

SOILS

Lab number			86094-1	86094-2	86094-3	86094-4
Sample id			A2717	A2718	A2720	A2721
Location			TP5	TP7	TP8	TP9
Depth (m)			2.00-3.00	1.50	3.00	1.50
Date sampled			11/05/2020	11/05/2020	11/05/2020	11/05/2020
Test	**Method**	**Units**				
pH	CE004 M	units	8.4	8.4	8.2	9.0
Sulphate (total)	CE062 M	mg/kg SO_4	5118	6306	3136	5018

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry	M	100	mg/kg SO_4

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
86094-1	A2717	2.00-3.00	N	
86094-2	A2718	1.50	N	
86094-3	A2720	3.00	N	
86094-4	A2721	1.50	N	

LABORATORY TEST CERTIFICATE
MATERIALS LABORATORY

Certificate No: 20/1518 (IV.131.20.SS)

To : Scott Spencer

Client : Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby, DE72 3RX

Date: 05/06/2020

Dear Sirs,

FIELD & LABORATORY TESTING

Introduction

We refer to samples taken from Rockingham on the 11 May 2020.

Tested By	:	MATtest Laboratories Ltd
Sample Reference	:	A2714-A2721
Description	:	See reports
Date Sampled	:	11th May 2020
Date Tested	:	13 May - 02 June 2020
Source	:	See Reports
Weather	:	N/A

Test Results;

Please see attached

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Remarks;

Approved for Issue: _____

Position: Technical Manager

7533

Issuing Office:

☑ **Head Office & Central**
Unit 5 Draycott Mills, Off Market Street, Draycott, Derby, DE72 3NB

☐ **North West**
Unit 15 Park Court, Sherdley Business Park, St. Helens, Merseyside, WA9 5GZ

Tel: 03333 202521 Web: www.mattestlaboratories.co.uk

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LABORATORY TEST CERTIFICATE

MAT test Labor Limited
Materials Testing & Cons

Certificate No 20/1518

To : Scott Spencer

Order No

Client : Ivy House

Dear Sirs,

DETEMINATION OF MOISTURE CONTENT - BS 1377 : PART 2 : 1990: CLAUSE 3

Introduction

We refer to a sample taken from Rockingham on the 11/05/2020

Material & Source

Sampled by:	Client
Sample Reference:	A2714
Description:	Brown Gravelly Clay
Location:	TP3 @1.5m
Date Sampled:	11/05/2020
Source:	Ex site
Date Tested:	13-14/05/2020
Sampling Certificate:	Schedule only.

Test Results;

MOISTURE CONTENT % 17

Comments;

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020
John Pullar
Technical Manager

Unit 5, Draycott Mills
Off Market Street
Draycott
Derby
DE72 3NB
Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

UKAS TESTING
7806

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Form Ref: MLR 005 BS 1377 Moisture Content

LABORATORY TEST CERTIFICATE

MAT test Laboratories Limited
Materials Testing & Consultancy

Certificate No: 20/1518 A2714

Client: Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Moisture Content - BS 1377-2:1990 Clause 3
Determination of Plastic Limit - BS 1377-2:1990 Clause 5.3
Determination of Liquid Limit - BS 1377-2:1990 Clause 4.4
Determination of Plasticity Index - BS 1377-2:1990 Clause 5.4

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	: Client
Sample Reference	: A2714
Location	: TP3 @1.5m
Date Sampled	: 11th May 2020
Source	: Ex site
Date Tested	: 13 - 18 May 2020
Sampling Certificate	: Schedule only

Test Results:	A2714
Moisture Content :	**17%**
Liquid Limit :	**45**
Plastic Limit :	**17**
Plasticity Index :	**28**
% retained on 425 micron	**23**
Description / Designation	**Brown gravelly Clay**

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

Approved for Issue Date 05/06/2020

John Pullar
Technical Manager

Unit 5, Draycott Mills
Off Market Street
Draycott
Derby
DE72 3NB
Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2714

Client: **Ivy House Environmental Ltd**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

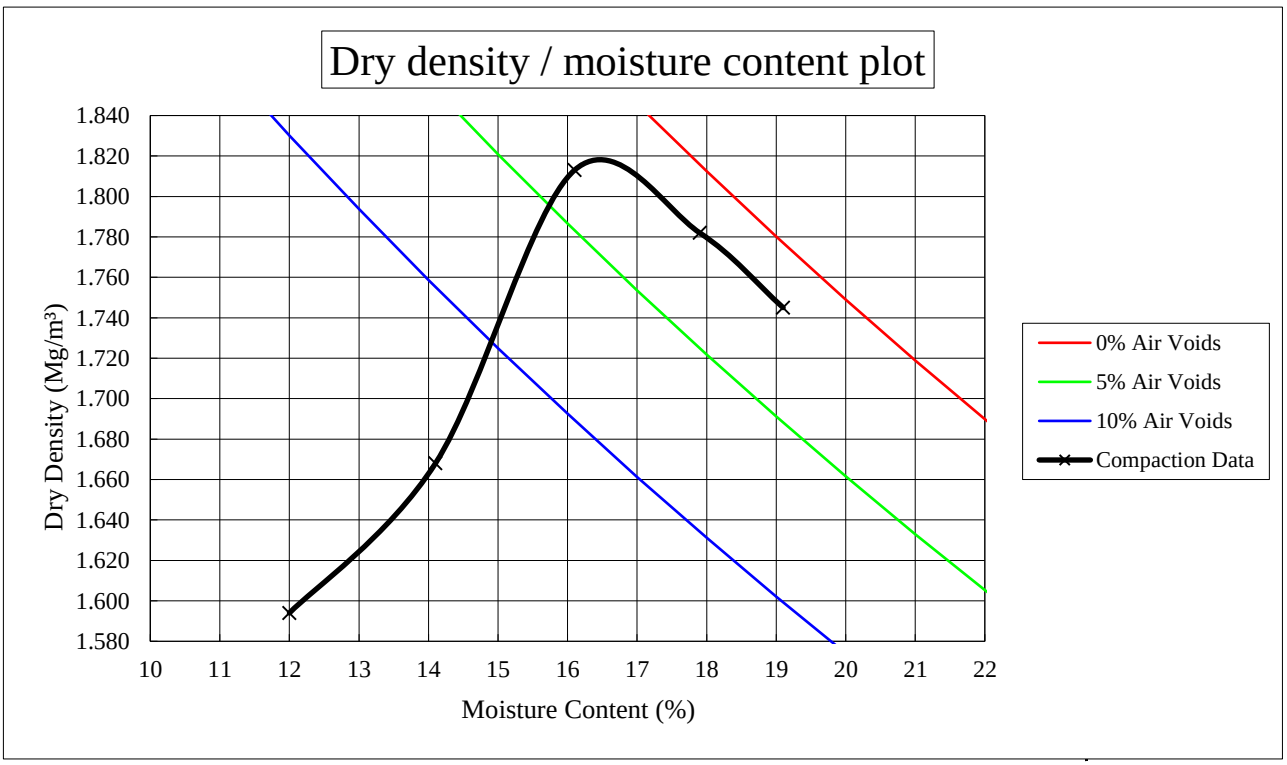
DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP BY COMPACTION BS 1377 : Part 4

We refer to a sample taken from Rockingham on the 11th May 2020.

Material & Source

Sampled by:	Client	Sampling Certificate:	Schedule only
Description:	Brown gravelly Clay	Date Sampled:	11/05/2020
Date Tested:	19 - 26/05/2020	Source:	Ex Site
Location:	TP3 @1.5m	Sample Ref:	A2714

Test Results:



Optimum Moisture Content : 16%	Maximum Dry Density: 1.82 Mg/m³
Test Method: Clause 3.3 (2.5Kg Rammer)	
Particle Density: 2.69 Mg/m³ (measured)	
Proportion of sample > 37.5mm : 0%	Proportion of sample > 20mm: 4%
Grading Zone: 2	

Approved for Issue: _____ Date: 05/06/2020

J. Pullar Technical Manager

MLR 007 - BS 1377 OMC /MDD

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2714

Client: **Ivy House Environmental Limited**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Particle Density - BS 1377-2:1990 Clause 8.2 (Gas Jar Method)

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	Client
Sample Reference	A2714
Location	TP3 @1.5m
Date Sampled	11/05/2020
Source	Ex site
Date Tested	13-15 May 2020
Sampling Certificate	Schedule only

Test Results:

Particle Density - 2.69 Mg/m³

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020

John Pullar
Technical Manager

Unit 5, Draycott Mills
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Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

LABORATORY TEST CERTIFICATE

MAT test Labor Limited
Materials Testing & Cons

Certificate No 20/1518

To : Scott Spencer

Order No

Client : Ivy House

Dear Sirs,

DETEMINATION OF MOISTURE CONTENT - BS 1377 : PART 2 : 1990: CLAUSE 3

Introduction

We refer to a sample taken from Rockingham on the 11/05/2020

Material & Source

Sampled by:	Client
Sample Reference:	A2715
Description:	Brown Gravelly Clay
Location:	TP3 @2.0-3.0m
Date Sampled:	11/05/2020
Source:	Ex site
Date Tested:	13-14/05/2020
Sampling Certificate:	Schedule only.

Test Results;

MOISTURE CONTENT % 20

Comments;

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Remarks;

Approved for Issue Date 05/06/2020
John Pullar
Technical Manager

Unit 5, Draycott Mills
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LABORATORY TEST CERTIFICATE

MAT test Laboratories Limited
Materials Testing & Consultancy

Certificate No: 20/1518 A2715

Client: Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Moisture Content - BS 1377-2:1990 Clause 3
Determination of Plastic Limit - BS 1377-2:1990 Clause 5.3
Determination of Liquid Limit - BS 1377-2:1990 Clause 4.4
Determination of Plasticity Index - BS 1377-2:1990 Clause 5.4

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	: Client
Sample Reference	: A2715
Location	: TP3 @2.0-3.0m
Date Sampled	: 11th May 2020
Source	: Ex site
Date Tested	: 13 - 18 May 2020
Sampling Certificate	: Schedule only

Test Results:	A2715
Moisture Content :	**20%**
Liquid Limit :	**38**
Plastic Limit :	**16**
Plasticity Index :	**22**
% retained on 425 micron	**23**
Description / Designation	**Brown gravelly Clay**

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This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020

John Pullar
Technical Manager

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Off Market Street
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Derby
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e-mail: info@mattestlabs.co.uk

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2715

Client: **Ivy House Environmental Ltd**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

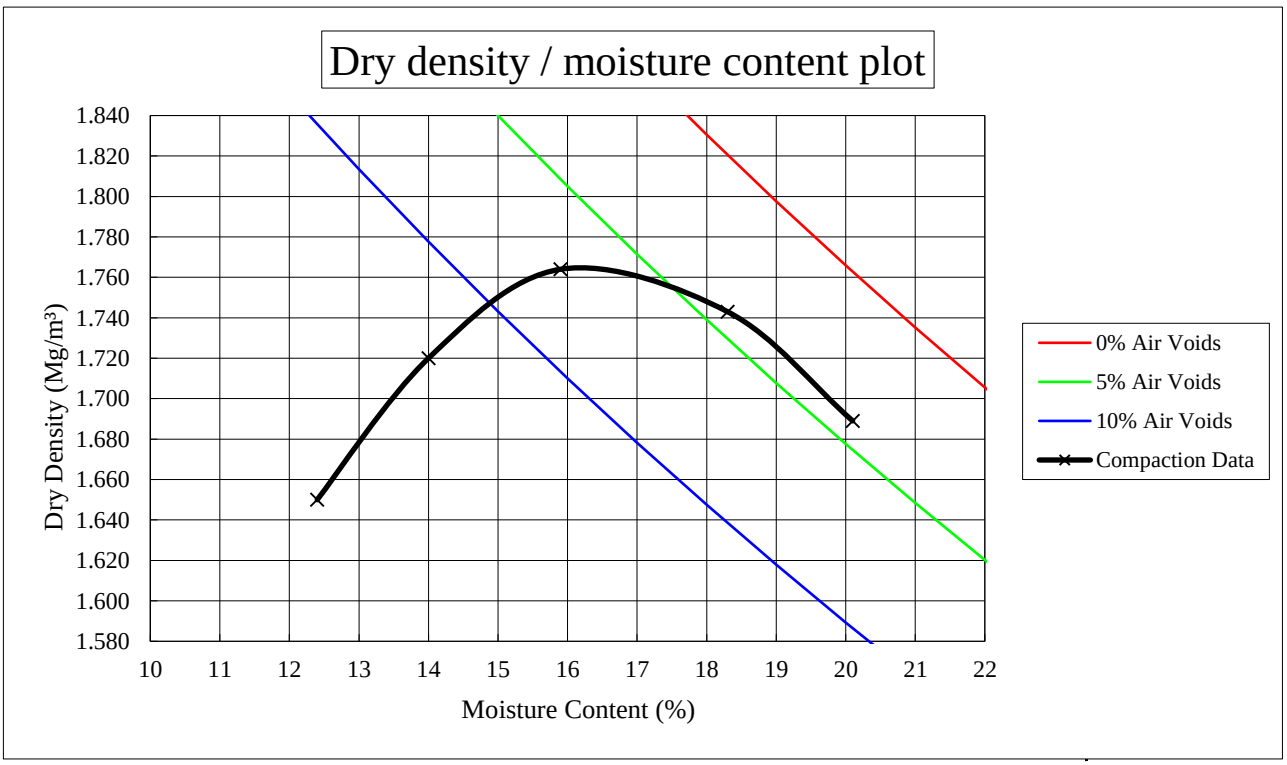
DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP BY COMPACTION BS 1377 : Part 4

We refer to a sample taken from Rockingham on the 11th May 2020.

Material & Source

Sampled by:	Client	Sampling Certificate:	Schedule only
Description:	Brown gravelly Clay	Date Sampled:	11/05/2020
Date Tested:	18 - 27/05/2020	Source:	Ex Site
Location:	TP3 @2.0-3.0m	Sample Ref:	A2715

Test Results:



Optimum Moisture Content : 16%	Maximum Dry Density: 1.76 Mg/m³
Test Method: Clause 3.3 (2.5Kg Rammer)	
Particle Density: 2.73 Mg/m³ (measured)	
Proportion of sample > 37.5mm : 0%	Proportion of sample > 20mm: 5%
Grading Zone: 2	

Approved for Issue: _____ Date: 05/06/2020

J. Pullar Technical Manager

MLR 007 - BS 1377 OMC /MDD

LABORATORY TEST CERTIFICATE

MAT test Laboratories Limited
Materials Testing & Consultancy

Certificate No: 20/1518 A2715

Client: **Ivy House Environmental Limited**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Particle Density - BS 1377-2:1990 Clause 8.2 (Gas Jar Method)

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	Client
Sample Reference	A2715
Location	TP3 @2.0-3.0m
Date Sampled	11/05/2020
Source	Ex site
Date Tested	14-15 May 2020
Sampling Certificate	Schedule only

Test Results:

Particle Density - 2.73 Mg/m³

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020

John Pullar
Technical Manager

Unit 5, Draycott Mills
Off Market Street
Draycott
Derby
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e-mail: info@mattestlabs.co.uk

LABORATORY TEST CERTIFICATE

MATtest Labor Limited
Materials Testing & Cons

Certificate No 20/1518

To : Scott Spencer

Order No

Client : Ivy House

Dear Sirs,

DETEMINATION OF MOISTURE CONTENT - BS 1377 : PART 2 : 1990: CLAUSE 3

Introduction

We refer to a sample taken from Rockingham on the 11/05/2020

Material & Source

Sampled by:	Client
Sample Reference:	A2716
Description:	Brown Gravelly Clay
Location:	TP4 @1.5-2.0m
Date Sampled:	11/05/2020
Source:	Ex site
Date Tested:	13-14/05/2020
Sampling Certificate:	Schedule only.

Test Results;

MOISTURE CONTENT % 24

Comments;

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020
John Pullar
Technical Manager

Unit 5, Draycott Mills
Off Market Street
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LABORATORY TEST CERTIFICATE

MAT test Laboratories Limited
Materials Testing & Consultancy

Certificate No: 20/1518 A2716

Client: Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Moisture Content - BS 1377-2:1990 Clause 3
Determination of Plastic Limit - BS 1377-2:1990 Clause 5.3
Determination of Liquid Limit - BS 1377-2:1990 Clause 4.4
Determination of Plasticity Index - BS 1377-2:1990 Clause 5.4

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	: Client
Sample Reference	: A2716
Location	: TP4 @1.5-2.0m
Date Sampled	: 11th May 2020
Source	: Ex site
Date Tested	: 13 - 27 May 2020
Sampling Certificate	: Schedule only

Test Results:	A2716
Moisture Content :	**24%**
Liquid Limit :	**35**
Plastic Limit :	**17**
Plasticity Index :	**18**
% retained on 425 micron	**26**
Description / Designation	**Brown gravelly Clay**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020

John Pullar
Technical Manager

Unit 5, Draycott Mills
Off Market Street
Draycott
Derby
DE72 3NB
Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2716

Client: **Ivy House Environmental Ltd**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

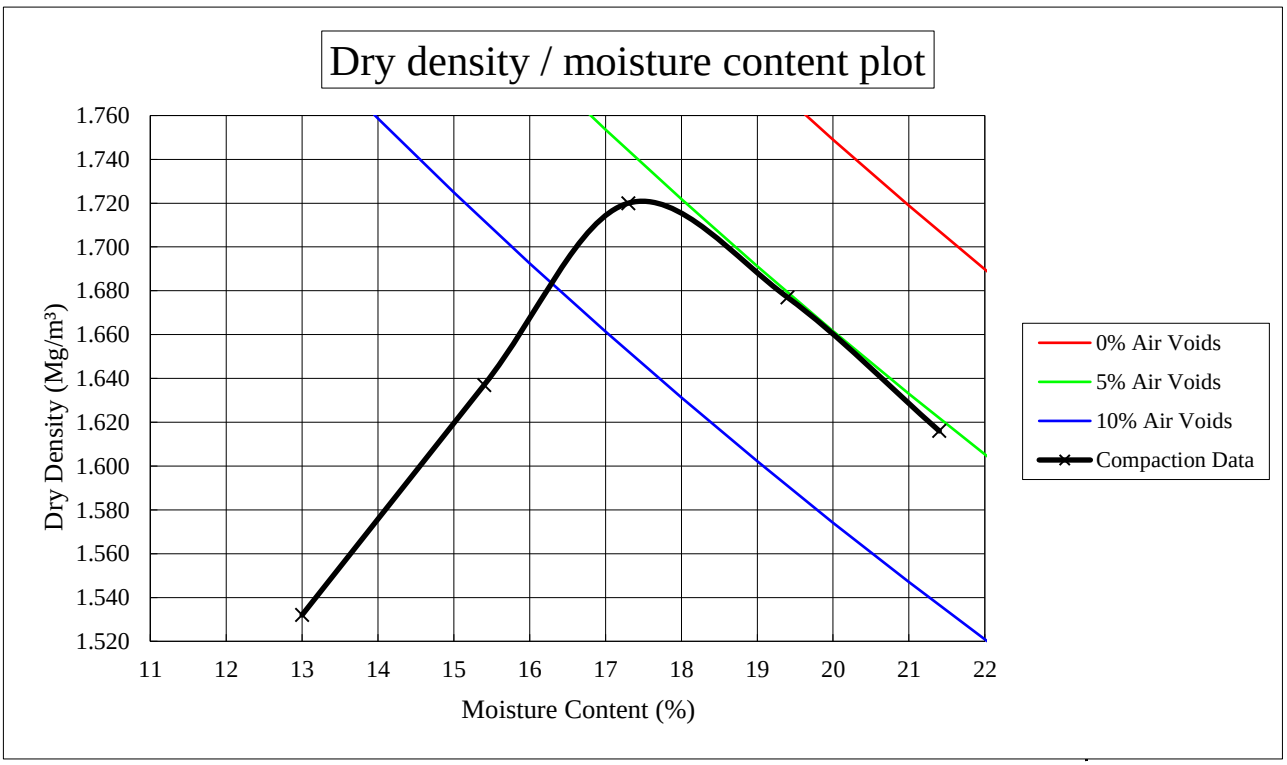
DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP BY COMPACTION BS 1377 : Part 4

We refer to a sample taken from Rockingham on the 11th May 2020.

Material & Source

Sampled by:	Client	Sampling Certificate:	Schedule only
Description:	Brown gravelly Clay	Date Sampled:	11/05/2020
Date Tested:	27/05-02/06/2020	Source:	Ex Site
Location:	TP4 @1.5-2.0m	Sample Ref:	A2716

Test Results:



Optimum Moisture Content : 17**%**	Maximum Dry Density: 1.72 Mg/m³
Test Method: Clause 3.3 (2.5Kg Rammer)	
Particle Density: 2.69 Mg/m³ (measured)	
Proportion of sample > 37.5mm : 0%	Proportion of sample > 20mm: 5%
Grading Zone: 2	

Approved for Issue: _____ Date: 05/06/2020

J. Pullar Technical Manager

LABORATORY TEST CERTIFICATE

MAT test Laboratories Limited
Materials Testing & Consultancy

Certificate No: 20/1518 A2716

Client: **Ivy House Environmental Limited**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Particle Density - BS 1377-2:1990 Clause 8.2 (Gas Jar Method)

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	Client
Sample Reference	A2716
Location	TP4 @1.5-2.0m
Date Sampled	11/05/2020
Source	Ex site
Date Tested	15-18 May 2020
Sampling Certificate	Schedule only

Test Results:

Particle Density - 2.69 Mg/m³

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020

JPullar

John Pullar
Technical Manager

Unit 5, Draycott Mills
Off Market Street
Draycott
Derby
DE72 3NB
Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

LABORATORY TEST CERTIFICATE

MAT test Labor Limited
Materials Testing & Cons

Certificate No 20/1518

To : Scott Spencer

Order No

Client : Ivy House

Dear Sirs,

DETEMINATION OF MOISTURE CONTENT - BS 1377 : PART 2 : 1990: CLAUSE 3

Introduction

We refer to a sample taken from Rockingham on the 11/05/2020

Material & Source

Sampled by:	Client
Sample Reference:	A2717
Description:	Brown Gravelly Clay
Location:	TP5 @2.0-3.0m
Date Sampled:	11/05/2020
Source:	Ex site
Date Tested:	15-18/05/2020
Sampling Certificate:	Schedule only.

Test Results;

MOISTURE CONTENT % 21

Comments;

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020
John Pullar
Technical Manager

Unit 5, Draycott Mills
Off Market Street
Draycott
Derby
DE72 3NB
Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

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Form Ref: MLR 005 BS 1377 Moisture Content

LABORATORY TEST CERTIFICATE

MAT test Laboratories Limited
Materials Testing & Consultancy

Certificate No: 20/1518 A2717

Client: Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Moisture Content - BS 1377-2:1990 Clause 3
Determination of Plastic Limit - BS 1377-2:1990 Clause 5.3
Determination of Liquid Limit - BS 1377-2:1990 Clause 4.4
Determination of Plasticity Index - BS 1377-2:1990 Clause 5.4

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	: Client
Sample Reference	: A2717
Location	: TP5 @2.0-3.0m
Date Sampled	: 11th May 2020
Source	: Ex site
Date Tested	: 15 - 27 May 2020
Sampling Certificate	: Schedule only

Test Results:	A2717
Moisture Content :	**21%**
Liquid Limit :	**36**
Plastic Limit :	**19**
Plasticity Index :	**17**
% retained on 425 micron	**24**
Description / Designation	**Brown gravelly Clay**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020

John Pullar
Technical Manager

Unit 5, Draycott Mills
Off Market Street
Draycott
Derby
DE72 3NB
Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2717

Client: **Ivy House Environmental Ltd**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

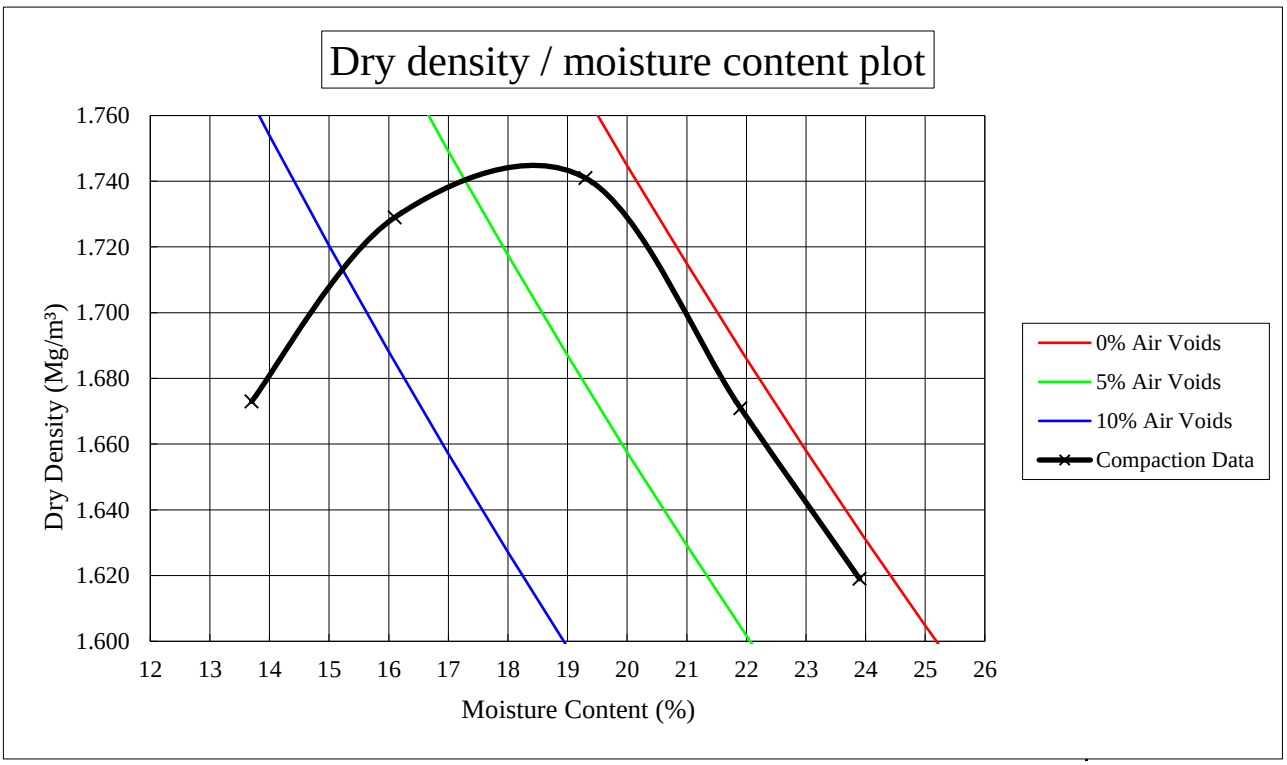
DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP BY COMPACTION BS 1377 : Part 4

We refer to a sample taken from Rockingham on the 11th May 2020.

Material & Source

Sampled by:	Client	Sampling Certificate:	Schedule only
Description:	Brown gravelly Clay	Date Sampled:	11/05/2020
Date Tested:	27/05-03/06/2020	Source:	Ex Site
Location:	TP5 @2.0-3.0m	Sample Ref:	A2717

Test Results:



Optimum Moisture Content : 18%	Maximum Dry Density: 1.74 Mg/m³
Test Method: Clause 3.3 (2.5Kg Rammer)	
Particle Density: 2.68 Mg/m³ (measured)	
Proportion of sample > 37.5mm : 0%	Proportion of sample > 20mm: 3%
Grading Zone: 2	

Approved for Issue: _____ Date: 05/06/2020

J. Pullar Technical Manager

MLR 007 - BS 1377 OMC /MDD

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2717

Client: **Ivy House Environmental Limited**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Particle Density - BS 1377-2:1990 Clause 8.2 (Gas Jar Method)

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	Client
Sample Reference	A2717
Location	TP5 @2.0-3.0m
Date Sampled	11/05/2020
Source	Ex site
Date Tested	18-19 May 2020
Sampling Certificate	Schedule only

Test Results:

Particle Density - 2.68 Mg/m³

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020

John Pullar
Technical Manager

Unit 5, Draycott Mills
Off Market Street
Draycott
Derby
DE72 3NB
Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

LABORATORY TEST CERTIFICATE

MATtest Labor Limited
Materials Testing & Cons

Certificate No 20/1518

To : Scott Spencer

Order No

Client : Ivy House

Dear Sirs,

DETEMINATION OF MOISTURE CONTENT - BS 1377 : PART 2 : 1990: CLAUSE 3

Introduction

We refer to a sample taken from Rockingham on the 11/05/2020

Material & Source

Sampled by:	Client
Sample Reference:	A2719
Description:	Brown Gravelly Clay
Location:	TP8 @0.5-1.5m
Date Sampled:	11/05/2020
Source:	Ex site
Date Tested:	15-18/05/2020
Sampling Certificate:	Schedule only.

Test Results;

MOISTURE CONTENT % 21

Comments;

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020
John Pullar
Technical Manager

Unit 5, Draycott Mills
Off Market Street
Draycott
Derby
DE72 3NB
Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

UKAS TESTING
7806

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Form Ref: MLR 005 BS 1377 Moisture Content

LABORATORY TEST CERTIFICATE

MAT test Laboratories Limited
Materials Testing & Consultancy

Certificate No: 20/1518 A2719

Client: Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Moisture Content - BS 1377-2:1990 Clause 3
Determination of Plastic Limit - BS 1377-2:1990 Clause 5.3
Determination of Liquid Limit - BS 1377-2:1990 Clause 4.4
Determination of Plasticity Index - BS 1377-2:1990 Clause 5.4

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	: Client
Sample Reference	: A2719
Location	: TP8 @0.5-1.5m
Date Sampled	: 11th May 2020
Source	: Ex site
Date Tested	: 15 - 28 May 2020
Sampling Certificate	: Schedule only

Test Results:	A2719
Moisture Content :	**21%**
Liquid Limit :	**34**
Plastic Limit :	**17**
Plasticity Index :	**17**
% retained on 425 micron	**32**
Description / Designation	**Brown gravelly Clay**

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All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020

John Pullar
Technical Manager

Unit 5, Draycott Mills
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Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

LABORATORY TEST CERTIFICATE

Certificate No: 20/1518 A2719

Client: **Ivy House Environmental Ltd**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

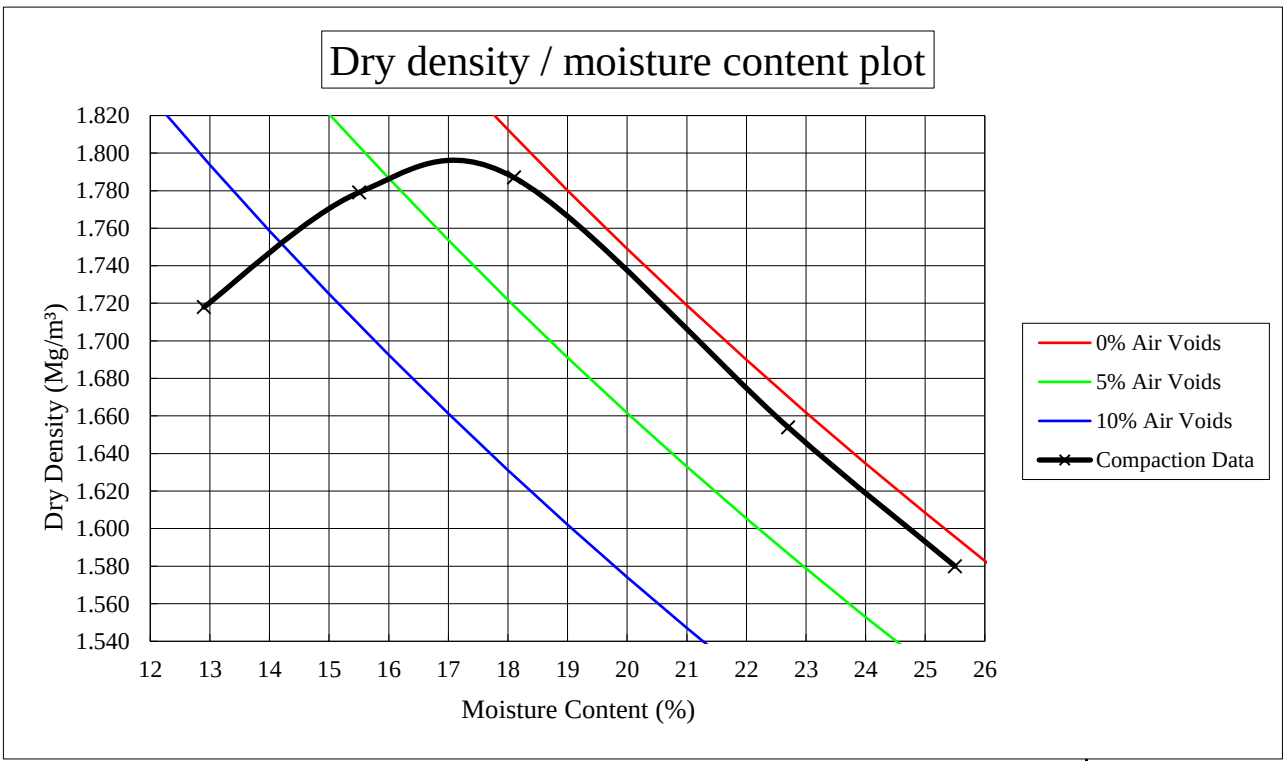
DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP BY COMPACTION BS 1377 : Part 4

We refer to a sample taken from Rockingham on the 11th May 2020.

Material & Source

Sampled by:	Client	Sampling Certificate:	Schedule only
Description:	Brown gravelly Clay	Date Sampled:	11/05/2020
Date Tested:	27/05-05/06/2020	Source:	Ex Site
Location:	TP8 @0.5-1.5m	Sample Ref:	A2719

Test Results:



Optimum Moisture Content : 17**%**	Maximum Dry Density: 1.80 Mg/m³
Test Method: Clause 3.3 (2.5Kg Rammer)	
Particle Density: 2.69 Mg/m³ (measured)	
Proportion of sample > 37.5mm : 0%	Proportion of sample > 20mm: 5%
Grading Zone: 2	

Approved for Issue: _____ Date: 05/06/2020

J. Pullar Technical Manager

MLR 007 - BS 1377 OMC /MDD

LABORATORY TEST CERTIFICATE

MAT test Laboratories Limited
Materials Testing & Consultancy

Certificate No: 20/1518 A2719

Client: **Ivy House Environmental Limited**
Scotland Farm
Ockbrook
Derby
DE72 3RX

Dear Sirs,

Determination of Particle Density - BS 1377-2:1990 Clause 8.2 (Gas Jar Method)

Introduction

We refer to a sample taken from Rockingham on 11/05/2020.

Material & Source

Sampled by	Client
Sample Reference	A2719
Location	TP8 @0.5-1.5m
Date Sampled	11/05/2020
Source	Ex site
Date Tested	19-21 May 2020
Sampling Certificate	Schedule only

Test Results:

Particle Density - 2.69 Mg/m³

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 14 days after issue of this test certificate

Remarks;

Approved for Issue Date 05/06/2020

JPullar

John Pullar
Technical Manager

Unit 5, Draycott Mills
Off Market Street
Draycott
Derby
DE72 3NB
Tel: 01332 873168
Fax: 01332 875335
e-mail: info@mattestlabs.co.uk

2531

ANALYTICAL TEST REPORT

Contract no: 86094

Contract name: Rockingham

Client reference: -

Clients name: MATtest Laboratories

Clients address: Unit 5, Draycott Mills
Off Market Street
Draycott, Derby
DE72 3NB

Samples received: 14 May 2020

Analysis started: 14 May 2020

Analysis completed: 20 May 2020

Report issued: 20 May 2020

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by:
Dave Bowerbank
Customer Support Hero

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.
Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
86094-1	A2717	2.00-3.00	Clay with Gravel	-	-	15.9
86094-2	A2718	1.50	Clay with Gravel	-	-	16.5
86094-3	A2720	3.00	Clay with Gravel	-	-	16.6
86094-4	A2721	1.50	Clay with Gravel	-	-	18.3

Chemtech Environmental Limited

SOILS

Lab number			86094-1	86094-2	86094-3	86094-4
Sample id			A2717	A2718	A2720	A2721
Location			TP5	TP7	TP8	TP9
Depth (m)			2.00-3.00	1.50	3.00	1.50
Date sampled			11/05/2020	11/05/2020	11/05/2020	11/05/2020
Test	**Method**	**Units**				
pH	CE004 M	units	8.4	8.4	8.2	9.0
Sulphate (total)	CE062 M	mg/kg SO_4	5118	6306	3136	5018

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry	M	100	mg/kg SO_4

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
86094-1	A2717	2.00-3.00	N	
86094-2	A2718	1.50	N	
86094-3	A2720	3.00	N	
86094-4	A2721	1.50	N	

Nicholls Colton Group
7-11 Harding Street, Leicester, LE1 4DH
E-mail: info@nicholls-colton.co.uk
Website: www.nicholls-colton.co.uk
Tel: 0116 253 6333.

0320

TEST REPORT

BS1377 IN-SITU DENSITY

Rockingham Speedway, Corby

Report no. J20/0085/IVY/002	
Order reference: IVY:131.20	Date of laboratory testing: 08/07/2020
Date of site work: 08/07/2020	Date of issue: 15/07/2020

Test No.	**1 (CC1)**	**2 (CC2)**	**3 (CC3)**
Test location:	Embankment CH35	Embankment CH40	Embankment CH47
Visual description:	Brown/grey occasionally gravelly clay	Brown/grey occasionally gravelly clay	Brown/grey occasionally gravelly clay
In-Situ Bulk Density (Mg/m^3):	**1.91**	**2.05**	**1.94**
Moisture content (%):	**23.4**	**23.9**	**17.3**
In-Situ dry density (Mg/m^3):	**1.55**	**1.65**	**1.65**
Relative Compaction (%):	85	91	91

NOTES:
1. Testing was carried out in accordance with BS 1377 : Part 9 : 1990 : clause 2.4 core cutter method
2. Relative compaction is calculated using a maximum dry density of 1.82 Mg/m^3 as determined by BS 1377 : Part : 4 1990.
3. Moisture contents were determined in accordance with BS 1377 : Part 2 : 1990.

.....
James Browne
GCM Testing Services Manager
Nicholls Colton Group

Ivy House Environmental
Scotland Farm
Ockbrook
Derby
DE72 3RX

Date of Issue 30.01.2017
Owned by Emily Blissett – Customer Services Supervisor
Authorised by James Gane – Commercial Manager
G:\LE1 Production\Controlled Documents\Report Templates\1377\RT - 1377 In-Situ Density.doc

APPENDIX C

LABORATORY TEST CERTIFICATE
MATERIALS LABORATORY

Certificate No: 4461/20-1

To : Scott Spencer

Client : Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby, DE72 3RX

Date: 06/07/2020

Dear Sirs,

FIELD & LABORATORY TESTING

Introduction

We refer to site testing undertaken at Rockingham Raceway.

Tested By : G. Hamilton

Sample Reference : N/A

Description : See attached certificates

Date Sampled : N/A

Date Tested : 29/06/2020

Source : N/A

Weather : Dry, sunny

Test Results;

Please see attached

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Remarks;

Approved for Issue: _____
John Pullar

Position: Technical Manager

Issuing Office:

☑ **Head Office & Central**
Unit 5 Draycott Mills, Off Market Street, Draycott, Derby, DE72 3NB

☐ **North West**
Unit 15 Park Court, Sherdley Business Park, St. Helens, Merseyside, WA9 5GZ

Tel: 03333 202521 Web: www.mattestlaboratories.co.uk

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PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : Test Position 1
Material : Formation
Position : E36
Date Tested : 29/06/2020
Weather : Dry, sunny

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
5.7	5.66	35.58	0.15	0.35	0.36	0.29
8.8	8.76	55.06	0.34	0.67	0.74	0.58
13.7	13.66	85.86	0.69	1.13	1.24	1.02
15.7	15.70	98.68	0.87	1.36	1.56	1.26
19.7	19.68	123.70	1.18	1.72	1.92	1.61

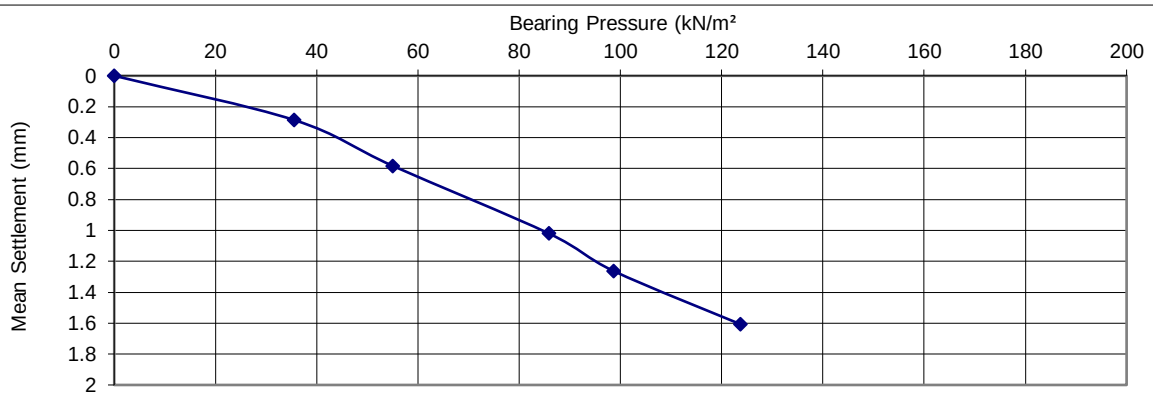

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 98.0 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 48840 $kN/m^2/m$
EQUIVALENT CBR VALUE **8.1** %

Approved for Issue Date 07/07/2020

John Pullar
Technical Manager

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : Test Position 2
Material : Formation
Position : E60
Date Tested : 29/06/2020
Weather : Dry, sunny

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
5.9	5.90	37.08	0.34	0.28	0.25	0.29
10.2	10.16	63.86	0.66	0.57	0.50	0.58
11.8	11.81	74.23	0.91	0.70	0.71	0.77
14.5	14.48	91.01	1.21	1.01	0.95	1.06
17.7	17.72	111.38	1.57	1.40	1.25	1.41

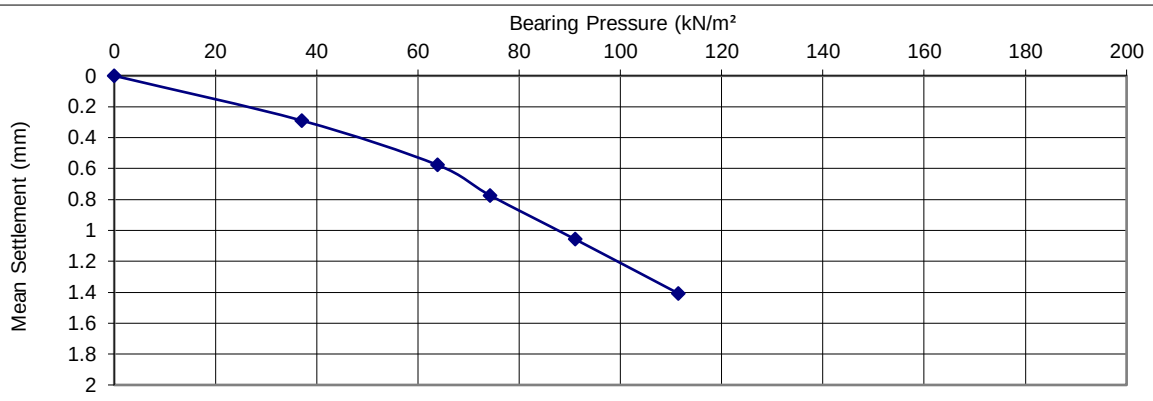

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at	1.25 mm	102.5 kN/m^2
Plate Correction Factor		0.6231
Modulus of Subgrade Reaction K762		51076 $kN/m^2/m$
EQUIVALENT CBR VALUE		**8.8** %

Approved for Issue Date 07/07/2020

John Pullar
Technical Manager

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : Test Position 3
Material : Formation
Position : E48
Date Tested : 29/06/2020
Weather : Dry, sunny

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
6.0	6.00	37.71	0.13	0.22	0.33	0.23
10.3	10.27	64.55	0.46	0.57	0.77	0.60
12.5	12.50	78.57	0.65	0.77	0.99	0.80
15.9	15.90	99.94	0.92	1.06	1.32	1.10
19.0	19.00	119.42	1.28	1.44	1.93	1.55

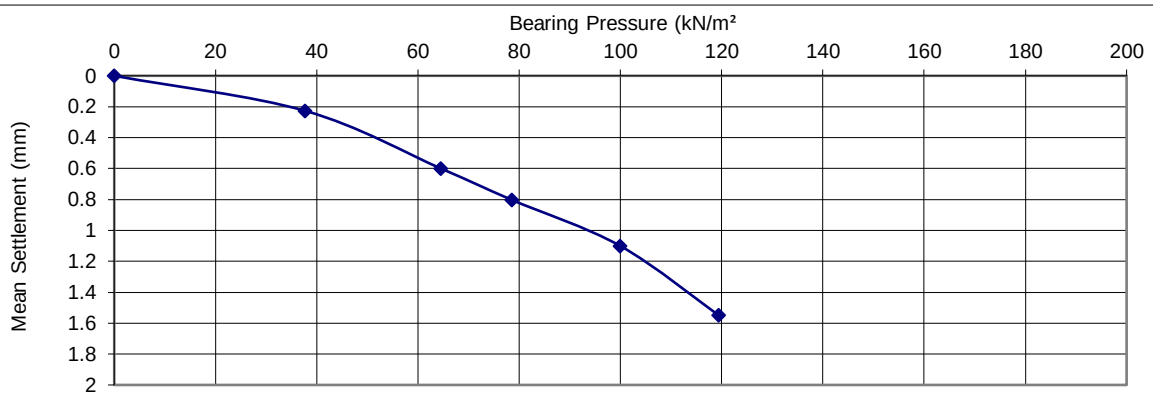

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 110.7 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 55203 $kN/m^2/m$
EQUIVALENT CBR VALUE **10.1** %

Approved for Issue Date 07/07/2020

John Pullar
Technical Manager

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : Test Position 4
Material : Formation
Position : E54
Date Tested : 29/06/2020
Weather : Dry, sunny

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
7.4	7.41	46.57	0.56	0.31	0.16	0.34
11.3	11.32	71.15	0.80	0.53	0.28	0.54
13.8	13.75	86.42	1.14	0.71	0.43	0.76
19.5	19.47	122.38	1.54	0.98	0.63	1.05
24.7	24.72	155.37	1.88	1.26	0.84	1.33

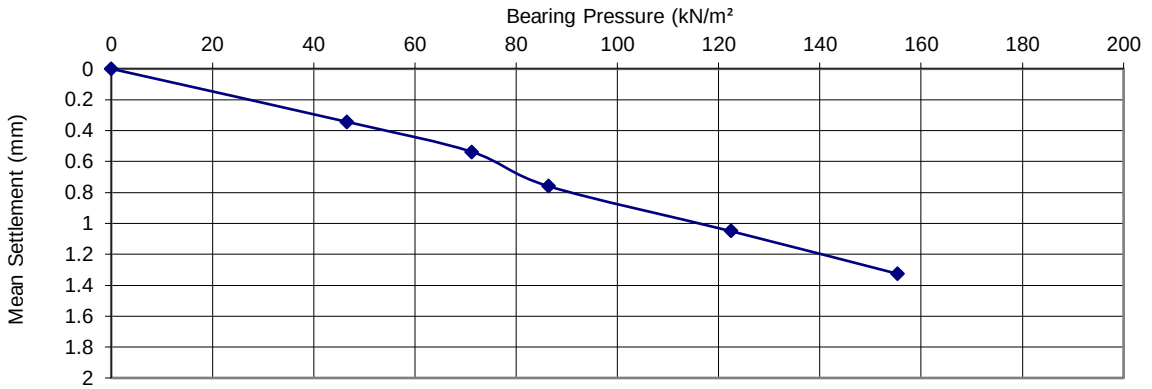

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 147.2 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 73362 $kN/m^2/m$
EQUIVALENT CBR VALUE **16.5** %

Approved for Issue Date 07/07/2020

John Pullar
Technical Manager

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : Test Position 5
Material : Formation
Position : E42
Date Tested : 29/06/2020
Weather : Dry, sunny

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
11.7	11.70	73.54	0.27	0.23	0.29	0.26
21.6	21.60	135.76	0.53	0.54	0.56	0.54
33.1	33.11	208.11	0.81	0.81	0.84	0.82
44.3	44.27	278.25	1.05	1.02	1.09	1.05
56.8	56.75	356.69	1.31	1.26	1.27	1.28

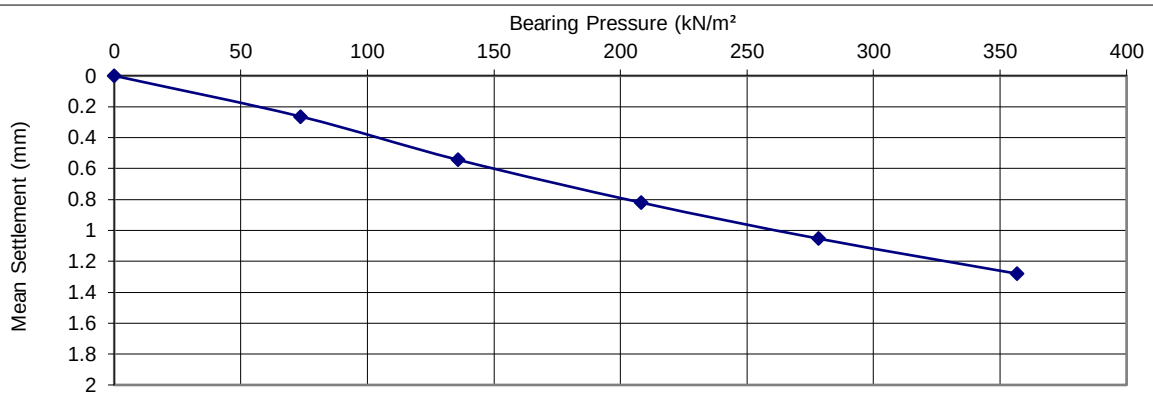

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 337.4 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 168174 $kN/m^2/m$
EQUIVALENT CBR VALUE **69.4** %

Approved for Issue Date 07/07/2020

John Pullar
Technical Manager

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : Test Position 6
Material : Formation
Position : E67
Date Tested : 29/06/2020
Weather : Dry, sunny

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
4.8	4.82	30.30	0.24	0.19	0.16	0.20
7.4	7.41	46.57	0.66	0.52	0.42	0.53
10.3	10.34	64.99	1.14	0.85	0.69	0.89
11.5	11.54	72.53	1.42	1.03	0.79	1.08
14.5	14.50	91.14	2.05	1.47	1.11	1.54

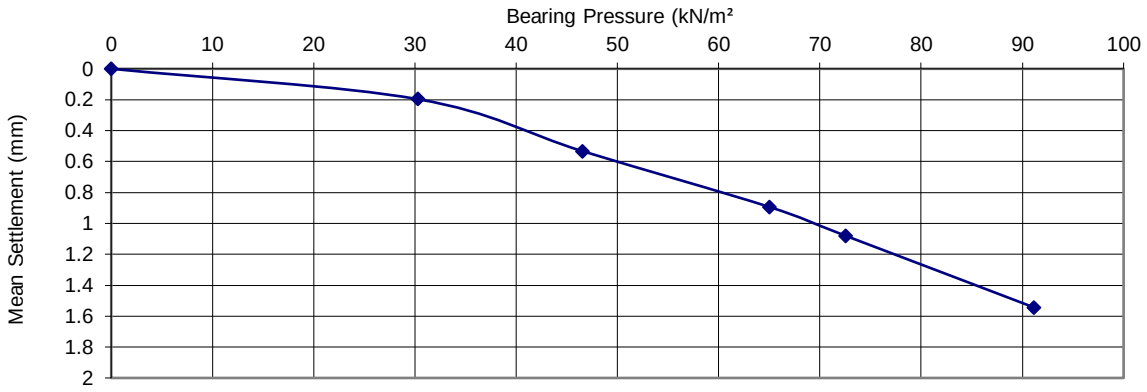

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 79.4 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 39580 $kN/m^2/m$
EQUIVALENT CBR VALUE **5.7** %

Approved for Issue Date 07/07/2020

John Pullar
Technical Manager

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : Test Position 7
Material : Formation
Position : E59
Date Tested : 29/06/2020
Weather : Dry, sunny

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
4.6	4.60	28.91	0.07	0.25	0.33	0.22
10.7	10.65	66.94	0.31	0.56	0.65	0.51
16.0	15.95	100.25	0.56	0.82	0.95	0.78
22.8	22.82	143.43	0.82	1.18	1.32	1.11
26.2	26.17	164.49	1.05	1.38	1.48	1.30

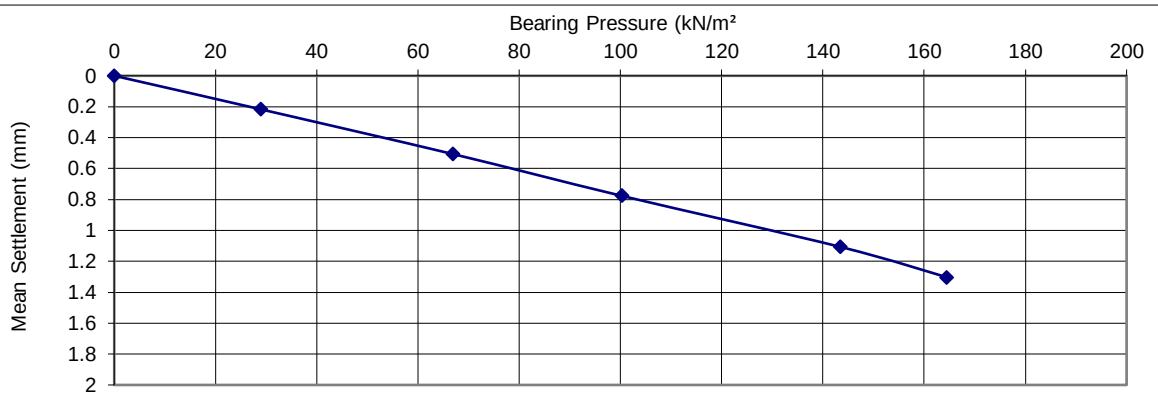

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 162.2 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 80847 $kN/m^2/m$
EQUIVALENT CBR VALUE **19.5** %

Approved for Issue Date 07/07/2020

John Pullar
Technical Manager

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : Test Position 8
Material : Formation
Position : E58
Date Tested : 29/06/2020
Weather : Dry, sunny

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
7.9	7.88	49.53	0.28	0.20	0.31	0.26
11.2	11.20	70.40	0.54	0.49	0.59	0.54
14.2	14.20	89.25	0.81	0.75	0.85	0.80
17.4	17.35	109.05	1.05	1.08	1.14	1.09
21.6	21.61	135.83	1.32	1.37	1.49	1.39

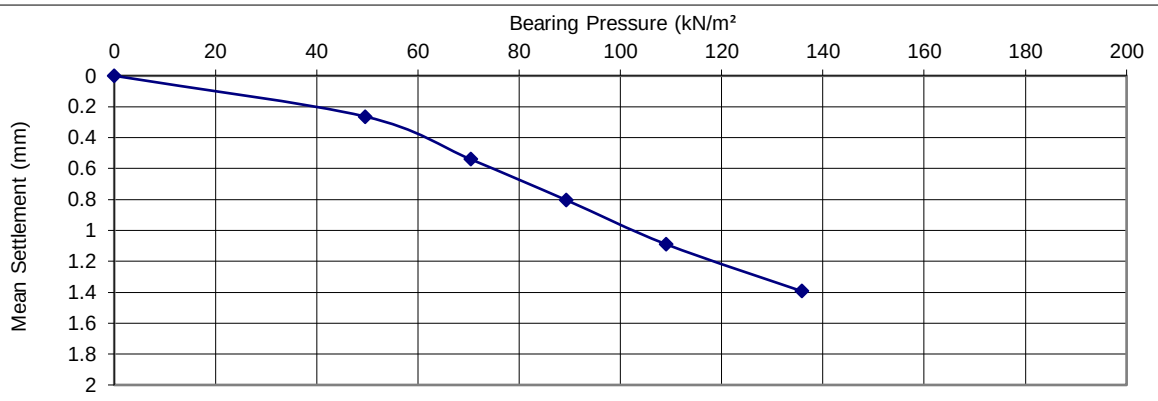

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 120.1 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 59868 $kN/m^2/m$
EQUIVALENT CBR VALUE **11.6** %

Approved for Issue Date 07/07/2020

John Pullar
Technical Manager

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : Test Position 9
Material : Formation
Position : E70
Date Tested : 29/06/2020
Weather : Dry, sunny

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
21.2	21.18	133.12	0.45	0.35	0.30	0.37
29.6	29.55	185.73	0.60	0.51	0.42	0.51
42.6	42.60	267.76	0.96	0.72	0.59	0.76
67.4	67.43	423.82	1.53	1.08	0.85	1.15
78.4	78.40	492.77	1.75	1.25	0.95	1.32

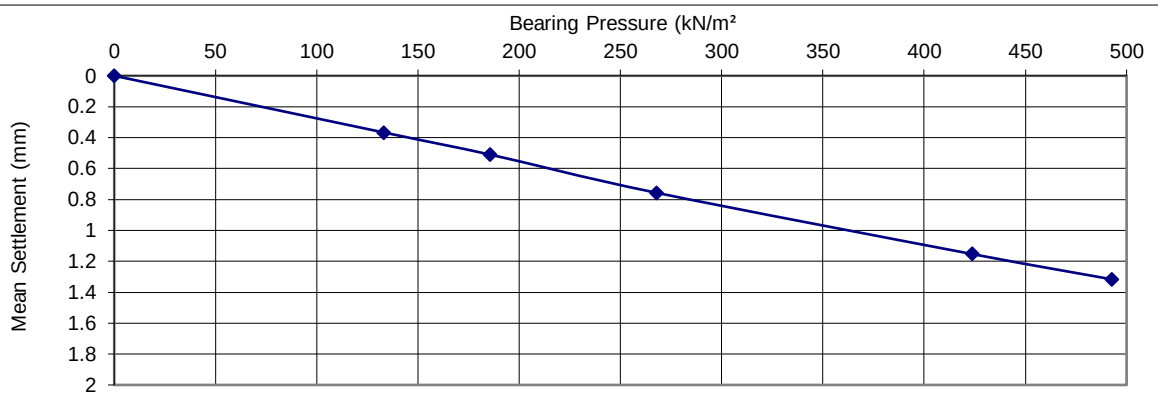

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 461.9 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 230225 $kN/m^2/m$
EQUIVALENT CBR VALUE **119.7** %

Approved for Issue Date 07/07/2020

John Pullar
Technical Manager

TEST CERTIFICATE

LABORATORY TEST CERTIFICATE
MATERIALS LABORATORY

Certificate No: 4461/20-3

To : Scott Spencer

Client : Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby, DE72 3RX

Date: 27/07/2020

Dear Sirs,

FIELD & LABORATORY TESTING

Introduction

We refer to site testing undertaken at Rockingham Raceway.

Tested By	:	G. Hamilton
Sample Reference	:	N/A
Description	:	See attached certificates
Date Sampled	:	N/A
Date Tested	:	18/07/2020
Source	:	N/A
Weather	:	Overcast

Test Results;

Please see attached

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When a statement of conformity is requested for a test result against limits set out in a standard or specification (e.g. BS EN ISO, SHW) that already considers measurement uncertainty, MATtest Midlands decision rule is to follow conformity requirements of the applicable standard or specification.
Results reported only relate to the items tested/ received.

Remarks;

Approved for Issue:

John Pullar

Position: Technical Manager

Issuing Office:

☑ **Head Office & Central**
Unit 5 Draycott Mills, Off Market Street, Draycott, Derby, DE72 3NB

☐ **North West**
Unit 15 Park Court, Sherdley Business Park, St. Helens, Merseyside, WA9 5GZ

Tel: 03333 202521 Web: www.mattestlaboratories.co.uk

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PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : E62
Material : Fill/ Formation
Position : E62
Date Tested : 18/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
6.4	6.38	40.10	0.51	0.28	0.19	0.33
8.9	8.90	55.94	0.77	0.50	0.45	0.57
10.6	10.61	66.69	0.95	0.68	0.59	0.74
14.5	14.45	90.82	1.33	1.05	0.88	1.09
18.3	18.31	115.08	1.58	1.41	1.11	1.37

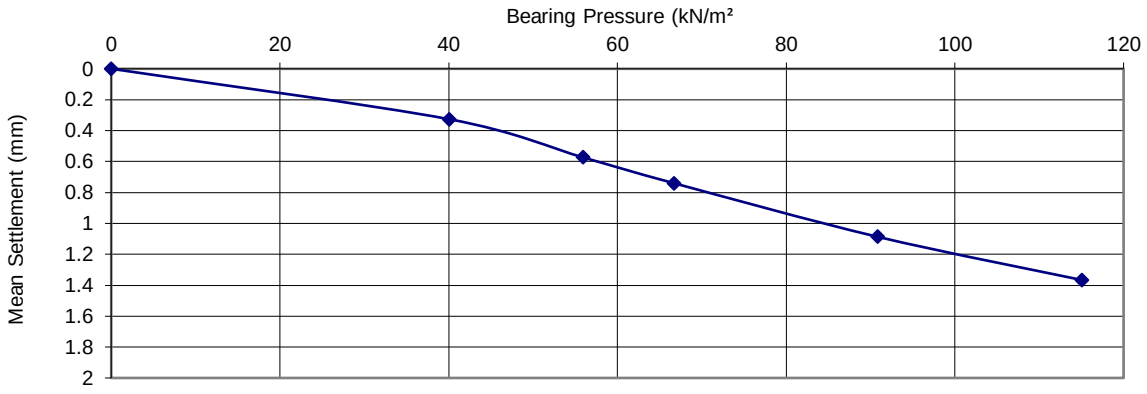

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 105.0 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 52328 $kN/m^2/m$
EQUIVALENT CBR VALUE **9.2** %

Approved for Issue Date 27/07/2020

J. Pullar
Technical Manager

TEST CERTIFICATE

Cert No:

Form Ref MTM-REP 023

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : E55
Material : Formation
Position : E55
Date Tested : 18/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
8.9	8.85	55.63	0.41	0.31	0.13	0.28
12.6	12.58	79.07	0.66	0.56	0.23	0.48
17.9	17.91	112.57	1.05	0.87	0.49	0.80
24.3	24.28	152.61	1.49	1.25	0.80	1.18
28.1	28.11	176.68	1.77	1.50	0.98	1.42

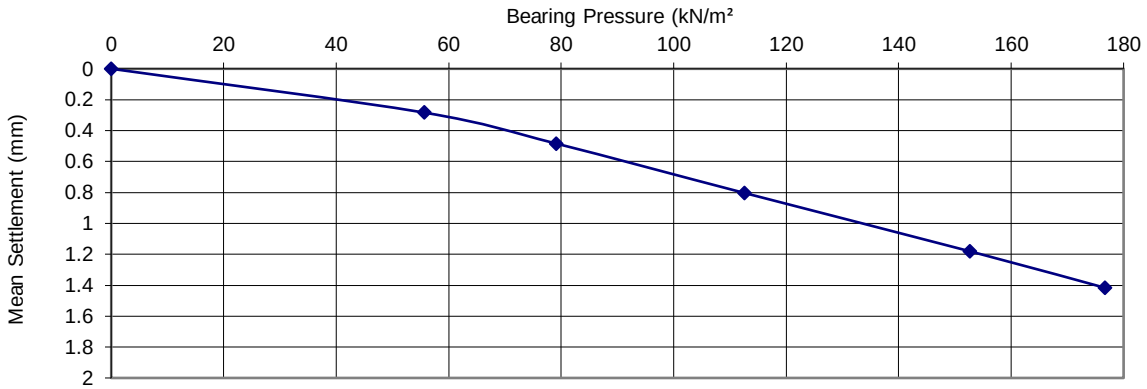

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 159.7 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 79622 $kN/m^2/m$
EQUIVALENT CBR VALUE **19.0** %

Approved for Issue Date 27/07/2020

J. Pullar
Technical Manager

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : E60
Material : Fill
Position : E60
Date Tested : 18/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
6.0	5.96	37.46	0.27	0.48	0.12	0.29
8.3	8.31	52.23	0.74	0.94	0.37	0.68
10.0	9.98	62.73	1.03	1.28	0.57	0.96
11.8	11.83	74.36	1.41	1.65	0.81	1.29
15.0	15.00	94.28	2.04	2.11	1.22	1.79

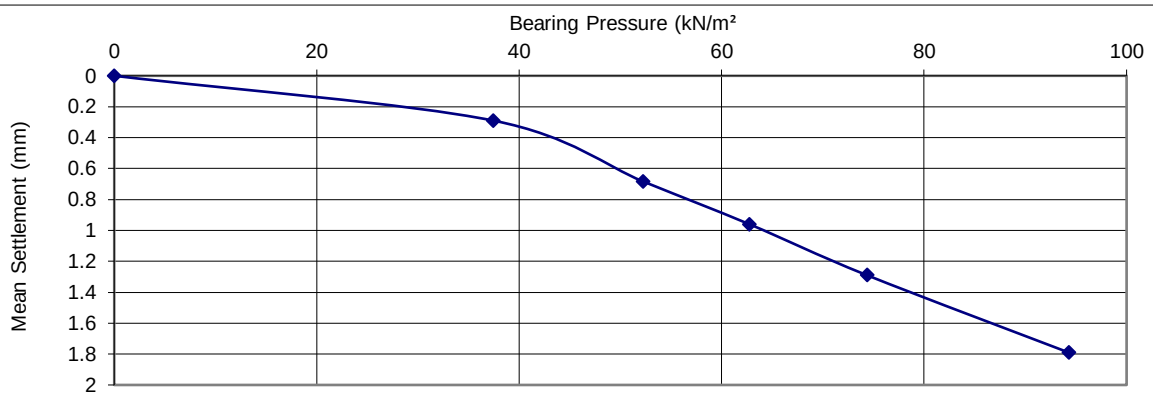

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 72.9 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 36362 $kN/m^2/m$
EQUIVALENT CBR VALUE **4.9** %

Approved for Issue Date 27/07/2020

J. Pullar
Technical Manager

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : E70
Material : Crushed rock
Position : E70
Date Tested : 18/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
7.5	7.51	47.20	0.32	0.24	0.22	0.26
11.0	11.00	69.14	0.61	0.66	0.48	0.58
14.2	14.15	88.94	0.86	0.90	0.82	0.86
18.7	18.68	117.41	1.17	1.30	0.84	1.10
29.3	29.30	184.16	1.39	1.61	0.99	1.33

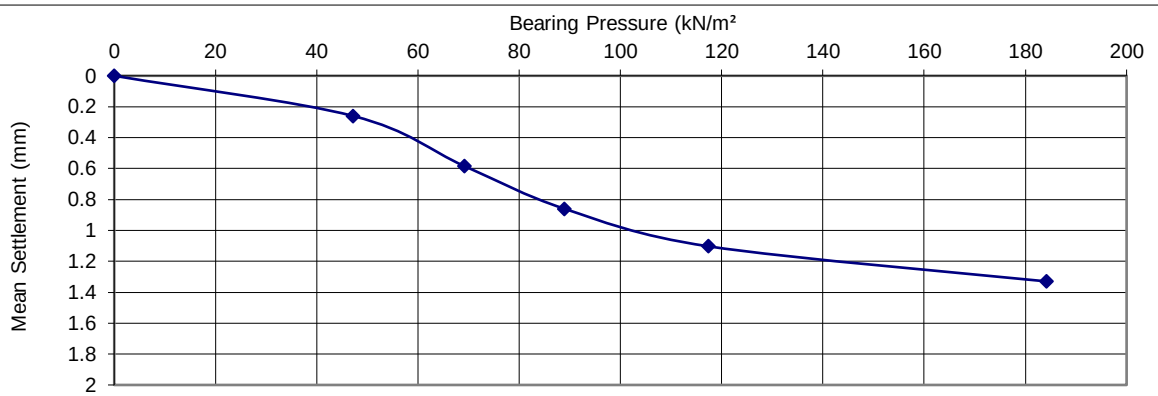

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 134.6 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 67081 $kN/m^2/m$
EQUIVALENT CBR VALUE **14.1** %

Approved for Issue Date 28/07/2020

J. Pullar
Technical Manager

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : E61
Material : Fill Layer 1
Position : E61
Date Tested : 18/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
5.8	5.81	36.52	0.24	0.40	0.25	0.30
8.4	8.41	52.86	0.44	0.70	0.52	0.55
10.2	10.19	64.05	0.60	0.92	0.75	0.76
14.2	14.21	89.31	0.84	1.34	1.17	1.12
17.3	17.32	108.86	1.07	1.76	1.43	1.42

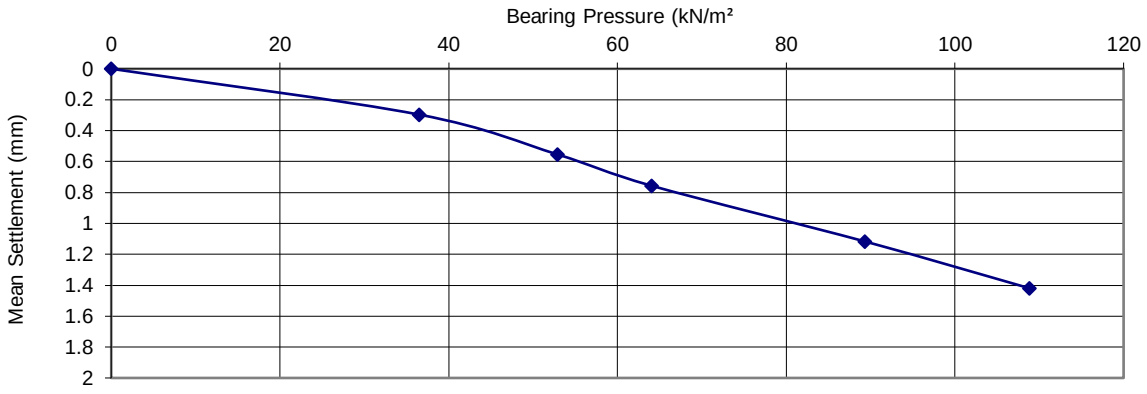

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 97.9 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 48805 $kN/m^2/m$
EQUIVALENT CBR VALUE **8.1** %

Approved for Issue Date 27/07/2020

J. Pullar
Technical Manager

TEST CERTIFICATE

Cert No:

Form Ref MTM-REP 023

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : E32
Material : Fill
Position : E32
Date Tested : 18/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
5.4	5.40	33.94	0.21	0.37	0.34	0.31
7.6	7.60	47.77	0.35	0.52	0.70	0.52
8.9	8.92	56.07	0.56	0.81	0.96	0.78
10.3	10.32	64.86	0.77	1.13	1.29	1.06
12.4	12.44	78.19	1.09	1.48	1.63	1.40

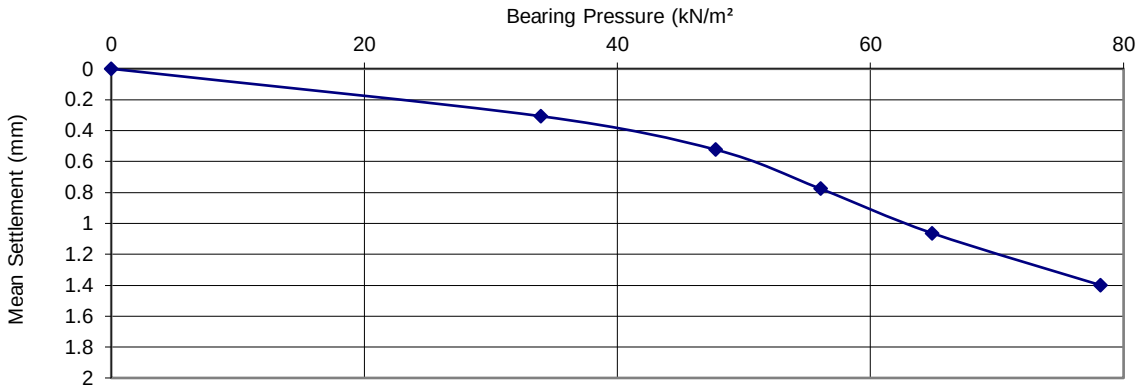

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 72.3 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 36017 $kN/m^2/m$
EQUIVALENT CBR VALUE **4.8** %

Approved for Issue Date 27/07/2020

J. Pullar
Technical Manager

TEST CERTIFICATE

Cert No:

Form Ref MTM-REP 023

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : E38
Material : Fill
Position : E38
Date Tested : 18/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
5.7	5.72	35.95	0.27	0.38	0.25	0.30
7.8	7.84	49.28	0.43	0.64	0.43	0.50
9.3	9.31	58.52	0.86	1.08	0.73	0.89
10.2	10.20	64.11	1.06	1.31	0.89	1.09
12.5	12.47	78.38	1.21	1.70	1.19	1.37

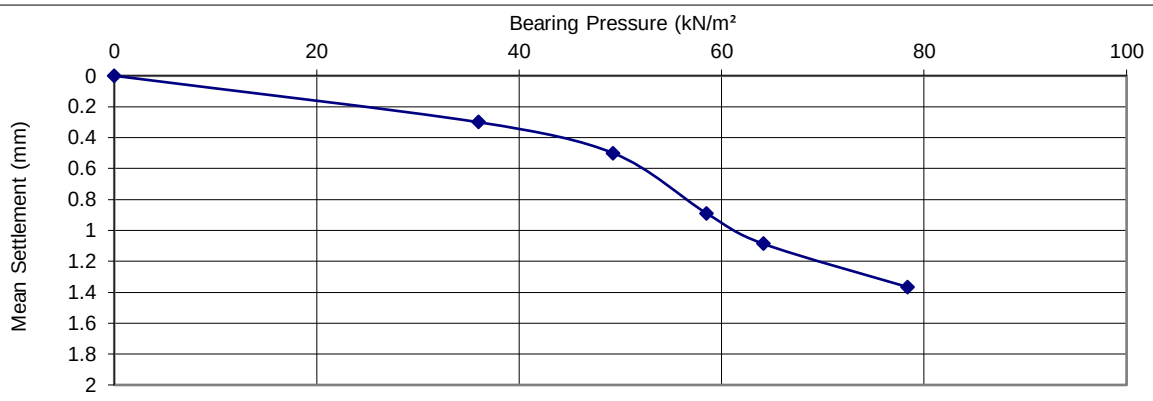

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 72.4 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 36107 $kN/m^2/m$
EQUIVALENT CBR VALUE **4.8** %

Approved for Issue Date 28/07/2020

J. Pullar
Technical Manager

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : B1
Material : Crushed rock
Position : B1
Date Tested : 18/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
8.2	8.20	51.54	0.19	0.35	0.15	0.23
14.1	14.12	88.75	0.50	0.67	0.55	0.57
18.4	18.40	115.65	0.78	0.81	0.86	0.82
22.6	22.61	142.11	0.98	1.12	1.16	1.09
26.5	26.53	166.75	1.40	1.51	1.41	1.44

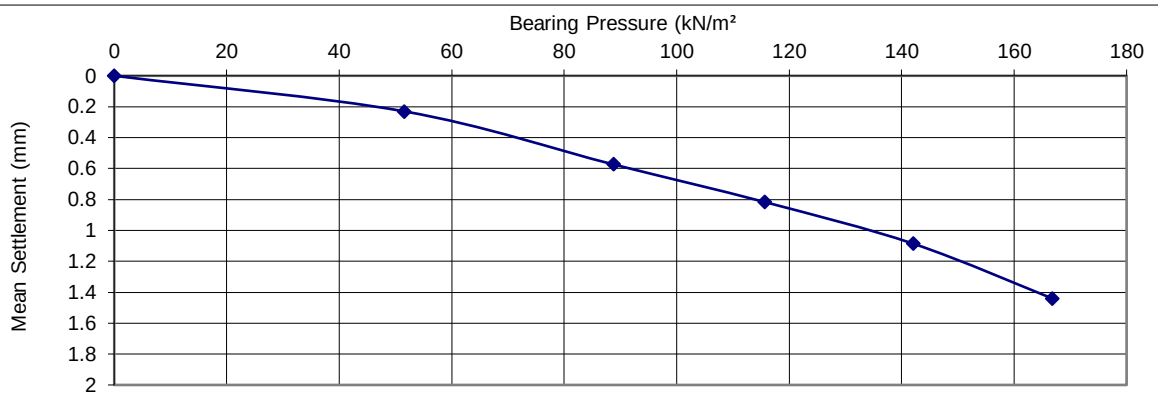

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 158.1 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 78819 $kN/m^2/m$
EQUIVALENT CBR VALUE **18.7** %

Approved for Issue Date 28/07/2020

J. Pullar
Technical Manager

TEST CERTIFICATE

Cert No:

Form Ref MTM-REP 023

DETERMINATION OF COMPACTION USING A NUCLEAR DENSITY GAUGE

Rockingham Raceway

BS 1377 Part 9 1990 clause 2.5

CONTRACT DETAILS:		Job Ref:	4461/20-3
Source of Material:	Site	Date Tested:	18/07/2020
Location Tested:	See below	Model:	Troxler
Description of Material Tested:	Fill	Serial No.:	72797

TEST RESULTS:

Test Ref	Location	Layer	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Maximum Dry Density (Mg/m3)	% Compaction
3	E60	2	2.5	2.229	2.175		
4	E70	2	5.0	2.226	2.120		
5	E61	1	8.5	2.234	2.059		
6	E32	1	10.4	2.207	1.999		
7	E38	1	14.8	2.184	1.902		
8	B10	2	3.0	2.300	2.233		

Comments:

TEST CERTIFICATE

LABORATORY TEST CERTIFICATE
MATERIALS LABORATORY

Certificate No: 4461/20-4

To : Scott Spencer

Client : Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby, DE72 3RX

Date: 31/07/2020

Dear Sirs,

FIELD & LABORATORY TESTING

Introduction

We refer to site testing undertaken at Rockingham Raceway.

Tested By	:	G. Hamilton
Sample Reference	:	N/A
Description	:	See attached certificates
Date Sampled	:	N/A
Date Tested	:	25/07/2020
Source	:	N/A
Weather	:	Overcast

Test Results;

Please see attached

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Results reported only relate to the items tested/ received.

Remarks;

Approved for Issue: W J Larner

B. Larner

Position: Technical Director

Issuing Office:

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Unit 5 Draycott Mills, Off Market Street, Draycott, Derby, DE72 3NB

☐ **North West**
Unit 15 Park Court, Sherdley Business Park, St. Helens, Merseyside, WA9 5GZ

Tel: 03333 202521 Web: www.mattestlaboratories.co.uk

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PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : B9
Material : G7B
Position : B9
Date Tested : 25/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
7.7	7.72	48.52	0.30	0.21	0.42	0.31
10.9	10.94	68.76	0.50	0.50	0.69	0.56
13.3	13.28	83.47	0.69	0.74	0.89	0.77
16.7	16.65	104.65	0.98	1.06	1.13	1.06
20.7	20.68	129.98	1.20	1.43	1.40	1.34

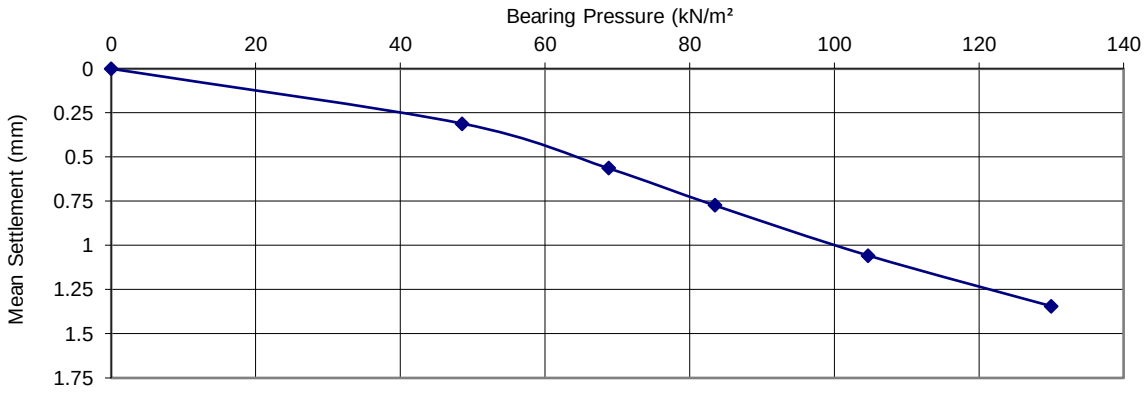

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 121.7 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 60682 $kN/m^2/m$
EQUIVALENT CBR VALUE **11.9** %

Approved for Issue Date 31/07/2020

W J Larner

B. Larner
Technical Director

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : B10
Material : G7B
Position : B10
Date Tested : 25/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
9.2	9.23	58.01	0.29	0.25	0.34	0.29
13.3	13.34	83.85	0.47	0.50	0.89	0.62
19.1	19.10	120.05	0.64	0.78	0.91	0.78
25.5	25.50	160.28	0.84	1.01	1.26	1.04
36.7	36.70	230.67	1.14	1.42	1.60	1.39

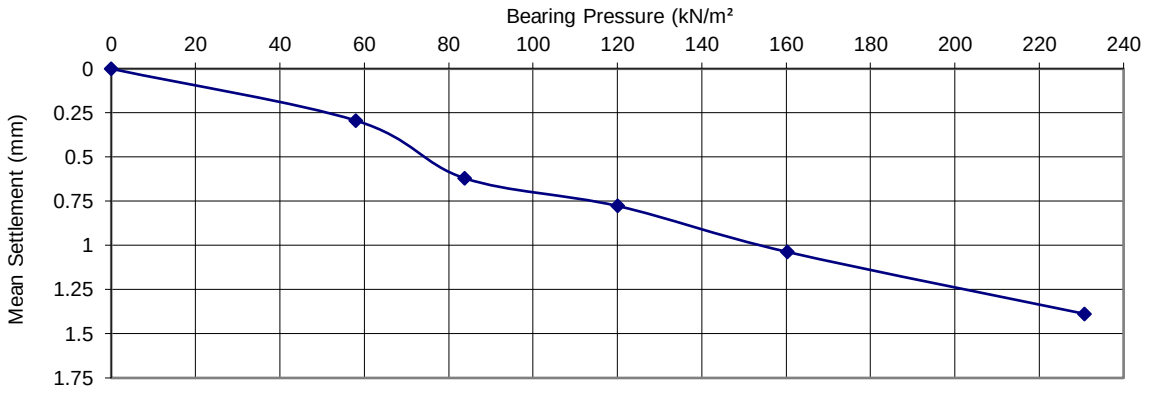

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 203.2 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 101283 $kN/m^2/m$
EQUIVALENT CBR VALUE **28.8** %

Approved for Issue Date 31/07/2020

W J Larner

B. Larner
Technical Director

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : E43
Material : Fill
Position : E43
Date Tested : 25/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
4.0	4.00	25.14	0.18	0.31	0.26	0.25
7.5	7.47	46.95	0.47	0.89	0.55	0.64
9.7	9.65	60.65	0.71	1.21	0.79	0.90
11.7	11.72	73.66	0.91	1.48	1.05	1.15
15.0	15.02	94.41	1.20	1.79	1.46	1.48

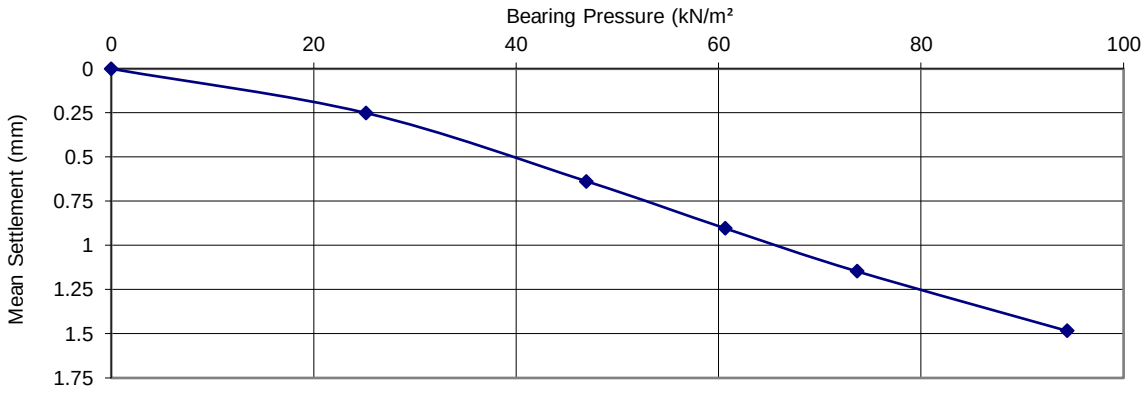

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 80.0 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 39894 $kN/m^2/m$
EQUIVALENT CBR VALUE **5.7** %

Approved for Issue Date 31/07/2020

B. Larner
Technical Director

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : E49
Material : Fill
Position : E49
Date Tested : 25/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
5.0	5.03	31.62	0.17	0.36	0.09	0.21
8.1	8.12	51.04	0.41	0.62	0.51	0.51
10.0	10.00	62.85	0.72	0.79	0.69	0.73
12.2	12.20	76.68	0.98	1.07	1.01	1.02
16.2	16.16	101.57	1.26	1.35	1.32	1.31

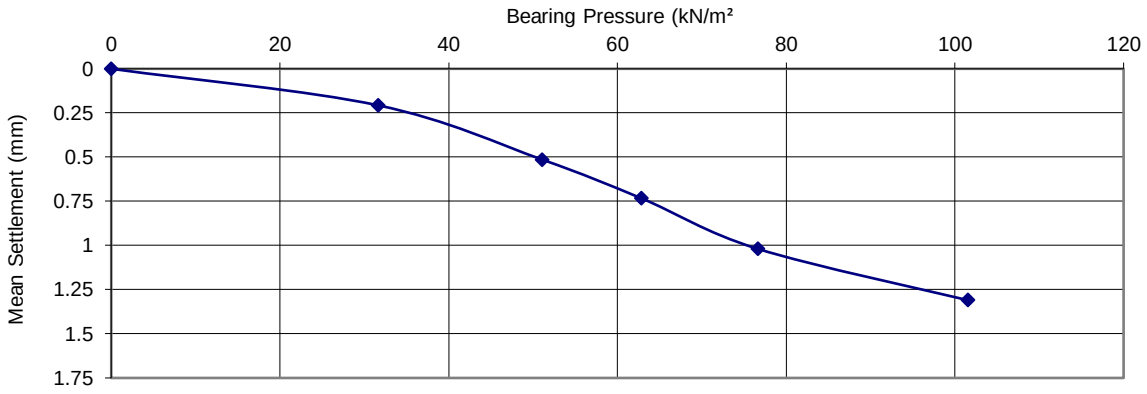

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 96.4 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 48064 $kN/m^2/m$
EQUIVALENT CBR VALUE **7.9** %

Approved for Issue Date 31/07/2020

W J Larner

B. Larner
Technical Director

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : Car Park
Material : Made Ground
Position : E50 L1 Site 1
Date Tested : 25/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
4.8	4.80	30.17	0.14	0.20	0.45	0.26
10.0	10.02	62.98	0.42	0.49	0.62	0.51
12.6	12.57	79.01	0.58	0.65	0.83	0.69
16.5	16.51	103.77	0.82	1.06	1.24	1.04
20.9	20.91	131.43	1.14	1.19	1.46	1.26

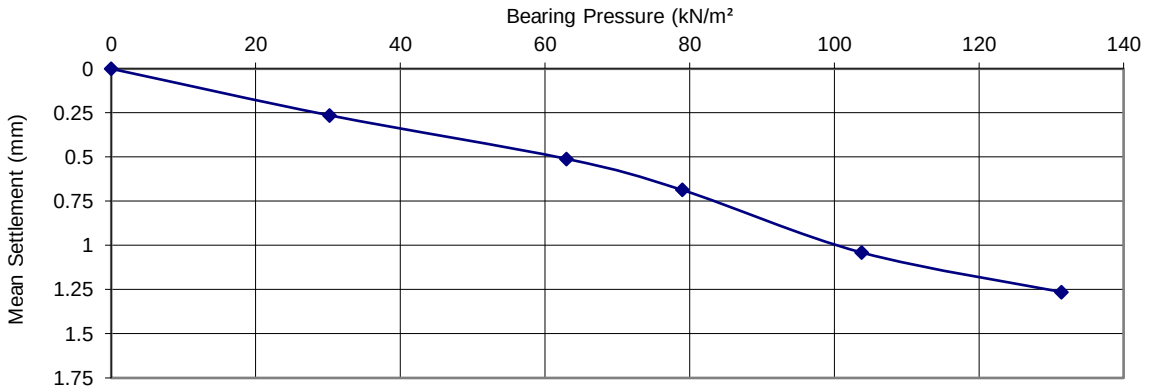

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 129.8 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 64691 $kN/m^2/m$
EQUIVALENT CBR VALUE **13.3** %

Approved for Issue Date 31/07/2020

B. Larner
Technical Director

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : Car Park
Material : G7B
Position : E47
Date Tested : 25/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
5.7	5.66	35.58	0.21	0.32	0.17	0.23
9.5	9.47	59.52	0.51	0.78	0.57	0.62
10.7	10.65	66.94	0.77	0.98	0.80	0.85
12.5	12.45	78.25	0.98	1.24	1.08	1.10
15.8	15.76	99.06	1.25	1.58	1.42	1.42

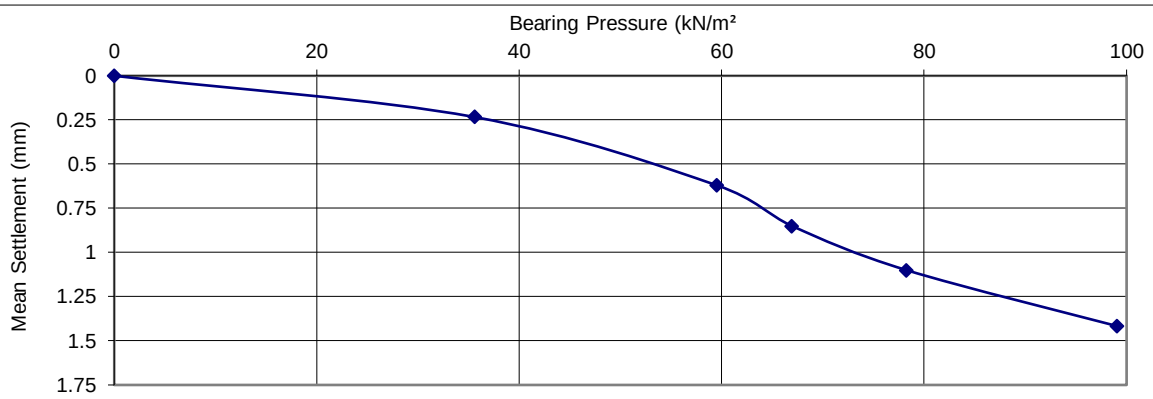

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 88.1 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 43920 $kN/m^2/m$
EQUIVALENT CBR VALUE **6.8** %

Approved for Issue Date 31/07/2020

W J Larner

B. Larner
Technical Director

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : Car Park
Material : G7B
Position : E48
Date Tested : 25/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
6.6	6.64	41.73	0.32	0.28	0.38	0.33
8.8	8.83	55.50	0.44	0.52	0.19	0.38
11.6	11.61	72.97	0.63	0.81	0.99	0.81
15.1	15.08	94.78	0.89	1.16	1.24	1.10
19.6	19.61	123.26	1.18	1.58	1.61	1.46

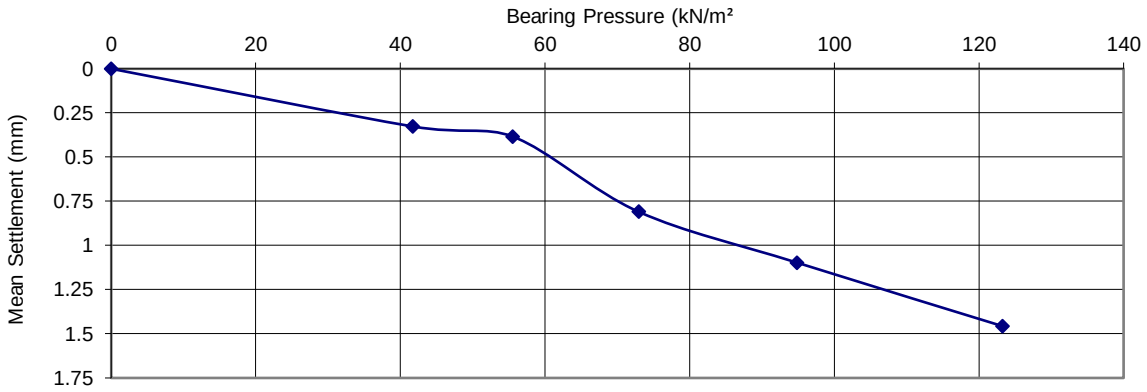

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 106.9 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 53293 $kN/m^2/m$
EQUIVALENT CBR VALUE **9.5** %

Approved for Issue Date 31/07/2020

B. Larner
Technical Director

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : Car Park
Material : G7B
Position : E41
Date Tested : 25/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
6.6	6.61	41.55	0.22	0.35	0.25	0.27
9.8	9.80	61.60	0.48	0.51	0.63	0.54
12.2	12.15	76.37	0.76	0.85	0.91	0.84
14.7	14.71	92.46	1.06	1.11	1.15	1.11
18.1	18.10	113.76	1.45	1.51	1.60	1.52

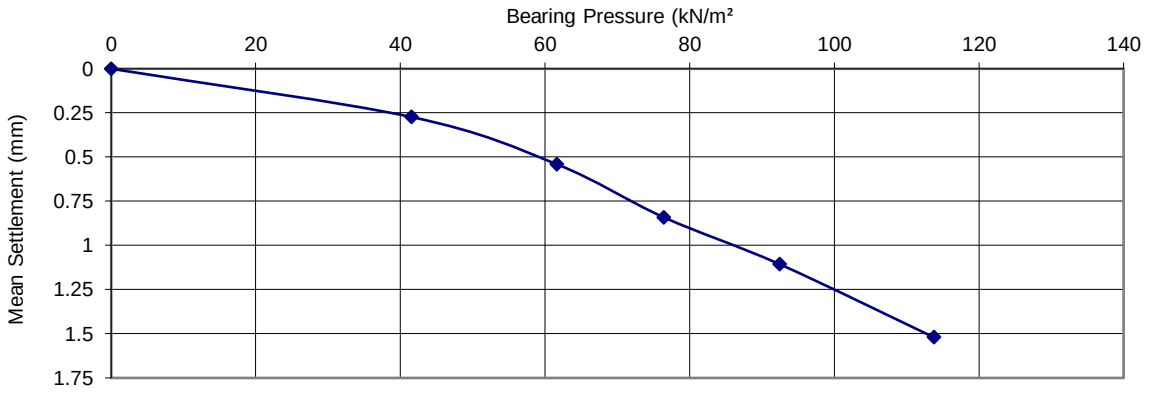

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 99.8 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 49771 $kN/m^2/m$
EQUIVALENT CBR VALUE **8.4** %

Approved for Issue Date 31/07/2020

W J Larner

B. Larner
Technical Director

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : Car Park
Material : G7B
Position : E42
Date Tested : 25/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
5.9	5.91	37.15	0.26	0.27	0.24	0.26
9.5	9.51	59.77	0.63	0.62	0.56	0.60
11.1	11.05	69.45	0.88	0.89	0.76	0.84
13.3	13.27	83.41	1.26	1.14	1.01	1.14
16.8	16.75	105.28	1.73	1.62	1.44	1.60

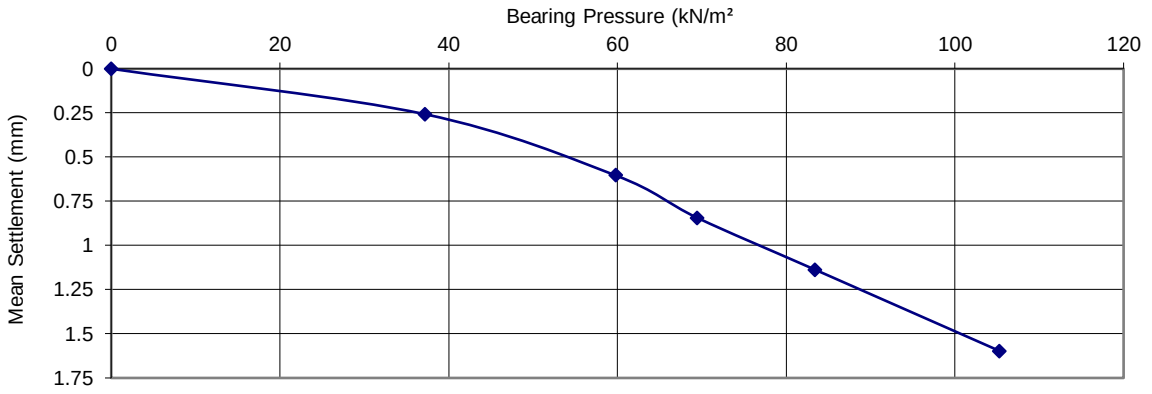

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 88.8 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 44263 $kN/m^2/m$
EQUIVALENT CBR VALUE **6.9** %

Approved for Issue Date 31/07/2020

B. Larner
Technical Director

TEST CERTIFICATE

PLATE LOAD TEST WITH CBR CALCULATION

Rockingham Raceway

TEST RESULTS

Location : Car Park
Material : G7B
Position : E35
Date Tested : 25/07/2020
Weather : Overcast

Plate Load Test (BS 1377 : Part 9)

Plate Diameter 450 mm **Plate Area** 0.1591 m^2

Load Cell Reading (kN)	Load (kN)	Mean Bearing Pressure (kN/m2)	Settlement (mm) Gauge 1	Settlement (mm) Gauge 2	Settlement (mm) Gauge 3	Mean Settlement (mm)
0	0	0.00	0	0	0	0
6.0	6.02	37.84	0.20	0.27	0.26	0.24
9.7	9.68	60.84	0.41	0.59	0.66	0.55
13.3	13.30	83.60	0.68	0.86	0.91	0.82
17.3	17.33	108.93	0.98	1.28	1.37	1.21
20.7	20.71	130.17	1.11	1.49	1.57	1.39

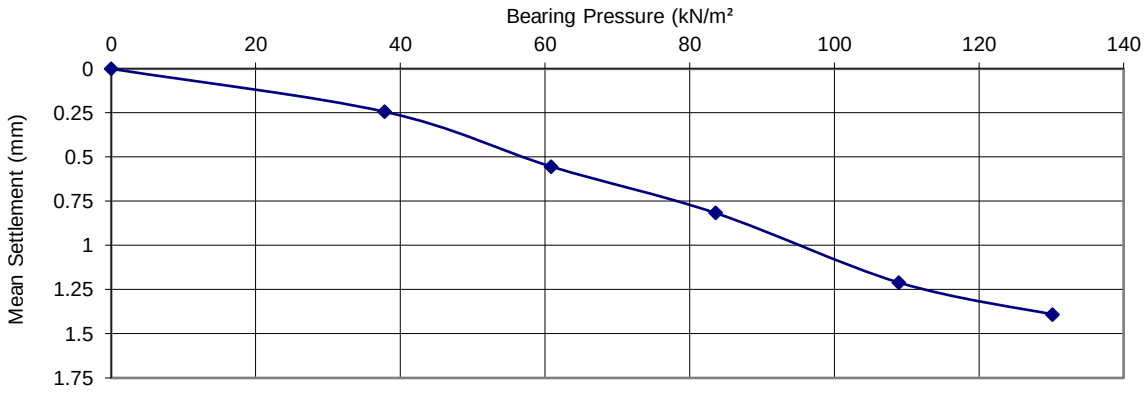

Plate Load Settlement Graph

Design Guidance For Road Pavement Foundations, interim Advice Note 73/06

Bearing Pressure at 1.25 mm 113.6 kN/m^2
Plate Correction Factor 0.6231
Modulus of Subgrade Reaction K762 56650 $kN/m^2/m$
EQUIVALENT CBR VALUE **10.5** %

Approved for Issue Date 31/07/2020

B. Larner
Technical Director

TEST CERTIFICATE

Cert No:

Form Ref MTM-REP 023

LABORATORY TEST CERTIFICATE
MATERIALS LABORATORY

Certificate No: 4461/20-5

To : Scott Spencer

Client : Ivy House Environmental Limited
Scotland Farm
Ockbrook
Derby, DE72 3RX

Date: 31/07/2020

Dear Sirs,

FIELD & LABORATORY TESTING

Introduction

We refer to site testing undertaken at Rockingham Raceway.

Tested By	:	G. Hamilton
Sample Reference	:	N/A
Description	:	See attached certificates
Date Sampled	:	N/A
Date Tested	:	24/07/2020
Source	:	N/A
Weather	:	Overcast

Test Results;

Please see attached

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All remaining samples for this project will be disposed of 28 days after issue of this test certificate
When a statement of conformity is requested for a test result against limits set out in a standard or specification (e.g. BS EN ISO, SHW) that already considers measurement uncertainty, MATtest Midlands decision rule is to follow conformity requirements of the applicable standard or specification.
Results reported only relate to the items tested/ received.

Remarks;

Approved for Issue: J. Pullar

Position: Technical Manager

Issuing Office:

☑ **Head Office & Central**
Unit 5 Draycott Mills, Off Market Street, Draycott, Derby, DE72 3NB

☐ **North West**
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Tel: 03333 202521 Web: www.mattestlaboratories.co.uk

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DETERMINATION OF COMPACTION USING A NUCLEAR DENSITY GAUGE

Rockingham Raceway

BS 1377 Part 9 1990 clause 2.5

CONTRACT DETAILS:		Job Ref:	4461/20-5
Source of Material:	Site	Date Tested:	24/07/2020
Location Tested:	See below	Model:	Troxler
Description of Material Tested:	Fill	Serial No.:	72797

TEST RESULTS:

Test Ref	Location	Layer	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Maximum Dry Density (Mg/m3)	% Compaction
1	B9	Top	3.0	2.219	2.154		
2	B10	Top	3.0	2.296	2.229		
3	E50	1	4.8	2.144	2.046		

Comments:

TEST CERTIFICATE

Kiwa CMT

Kiwa CMT Testing
Unit 5 Prime Park Way
Prime Enterprise Park
Derby
DE1 3QB

T +44 (0)1332 383333
F +44 (0)1332 602607
E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Ltd
Scotland Farm
Far Lane
Ockbrook, Derby
Derbyshire
DE72 3RX

Date: 07/12/2020

Lab Ref: 071220-01

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just befor Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 07/12/2020 in order to carry out 1 Plate bearings for equivalent CBR% tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

Results:

The individual result sheets may be viewed on pages 2 to 2 of this report.

Kiwa CMT Testing

Checked and Authorised by: J. Eckford
Senior Geotechnical Technician

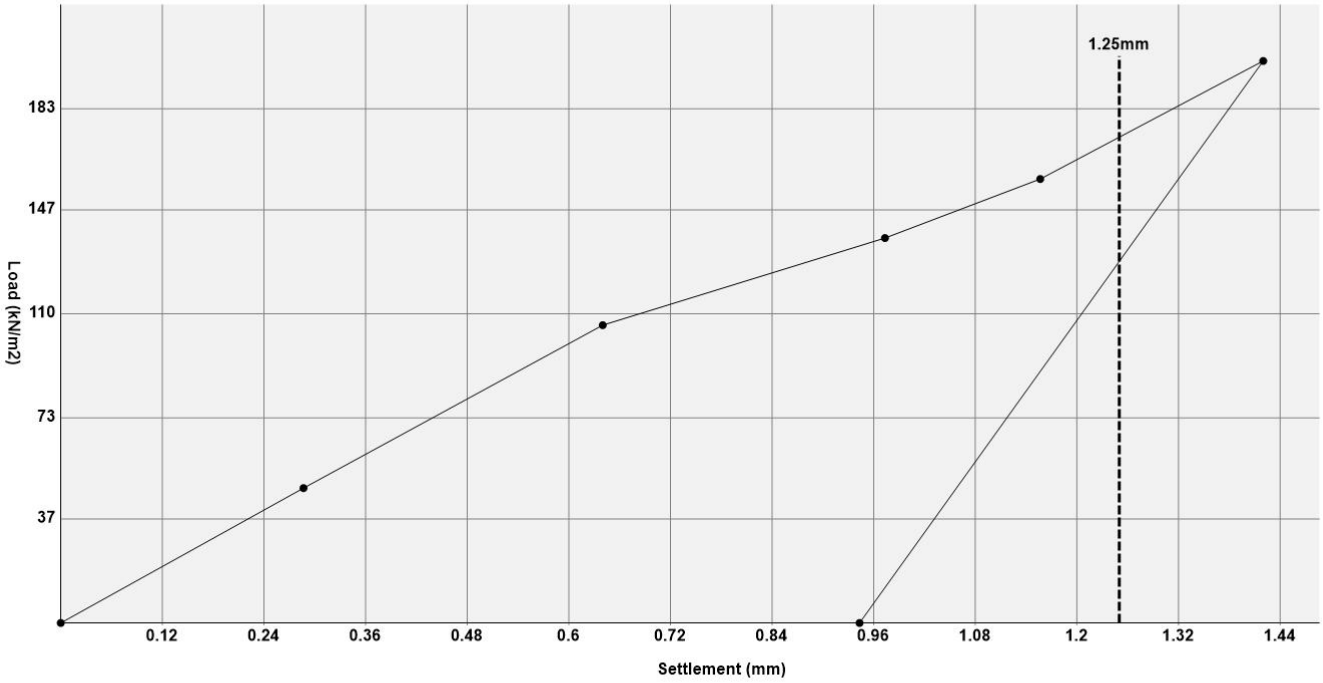
UKAS TESTING
0529

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 1
		^ **Test Location:**	-E 42 retest
Lab Ref.:	071220-01	**Layer:**	Sub Base
Kentledge:	16 tonne roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	07/12/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
48	0.29
106	0.64
137	0.97
158	1.16
200	1.42
0	0.94



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **86397 kN/m2/m**
Equivalent CBR = **21.9 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Kiwa CMT Testing
Unit 5 Prime Park Way
Prime Enterprise Park
Derby
DE1 3QB

T +44 (0)1332 383333
F +44 (0)1332 602607
E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Ltd
Scotland Farm
Far Lane
Ockbrook, Derby
Derbyshire
DE72 3RX

Date: 11/11/2020

Lab Ref: 111120-05

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just befor Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 11/11/2020 in order to carry out 10 Plate bearings for equivalent CBR% tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

Results:

The individual result sheets may be viewed on pages 2 to 11 of this report.

Kiwa CMT Testing

Checked and Authorised by: J. Eckford
Senior Geotechnical Technician

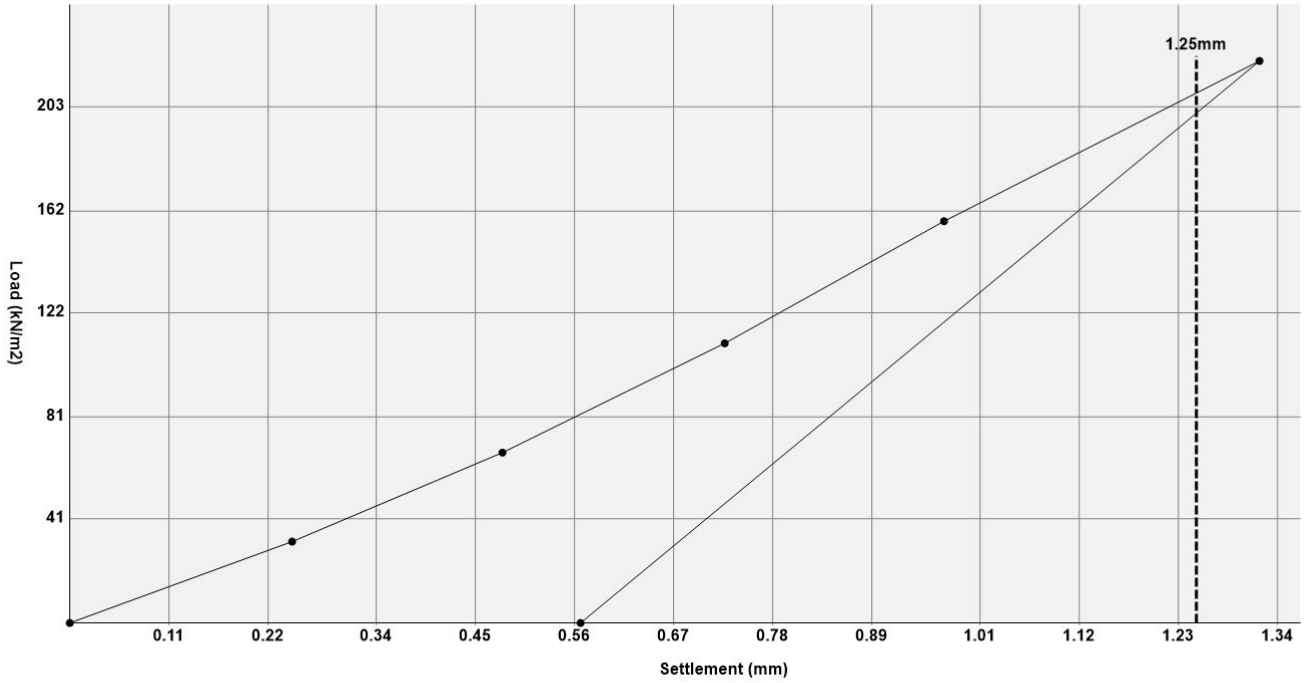
UKAS TESTING
0529

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 1
		^ **Test Location:**	- E9
Lab Ref.:	111120-05	**Layer:**	Sub Base
Kentledge:	13t dozer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	11/11/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
32	0.25
67	0.48
110	0.73
158	0.97
221	1.32
0	0.57



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **103877 kN/m2/m**
Equivalent CBR = **30.1 %**

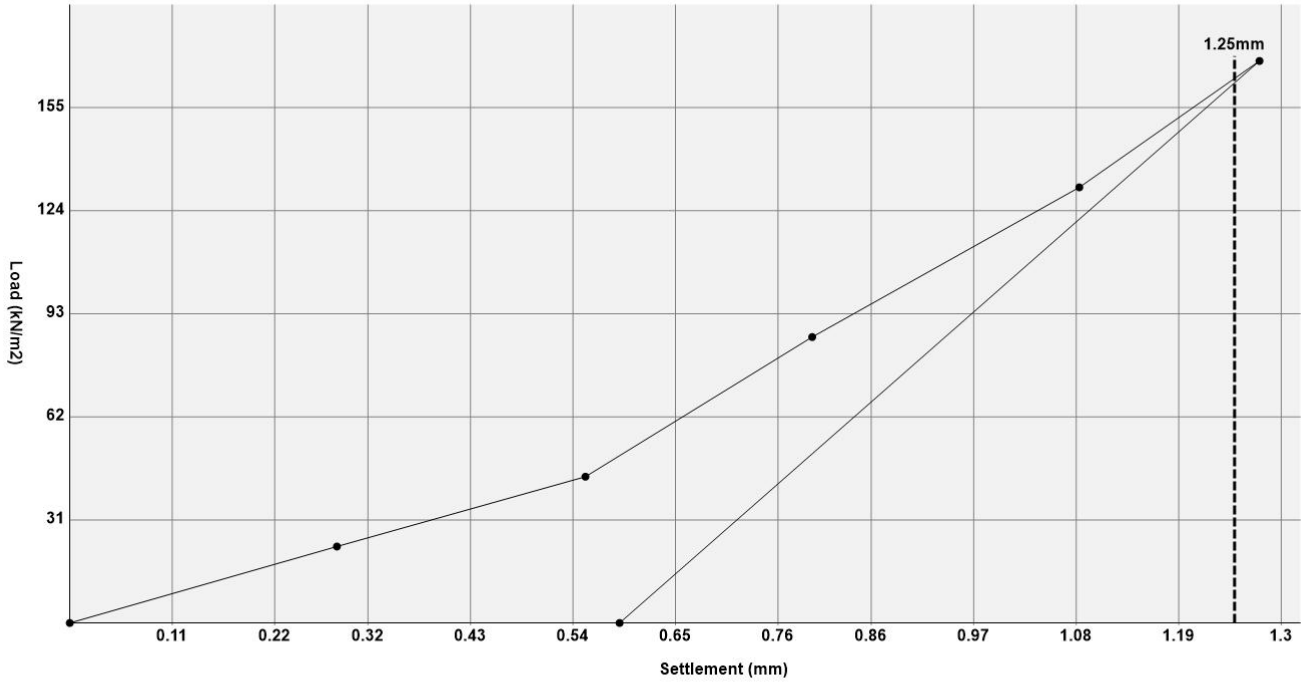
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 2
		^ **Test Location:**	- E8
Lab Ref.:	111120-05	**Layer:**	Sub Base
Kentledge:	13t dozer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	11/11/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
23	0.29
44	0.55
86	0.80
131	1.08
169	1.28
0	0.59



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **81903 kN/m2/m**
Equivalent CBR = **20 %**

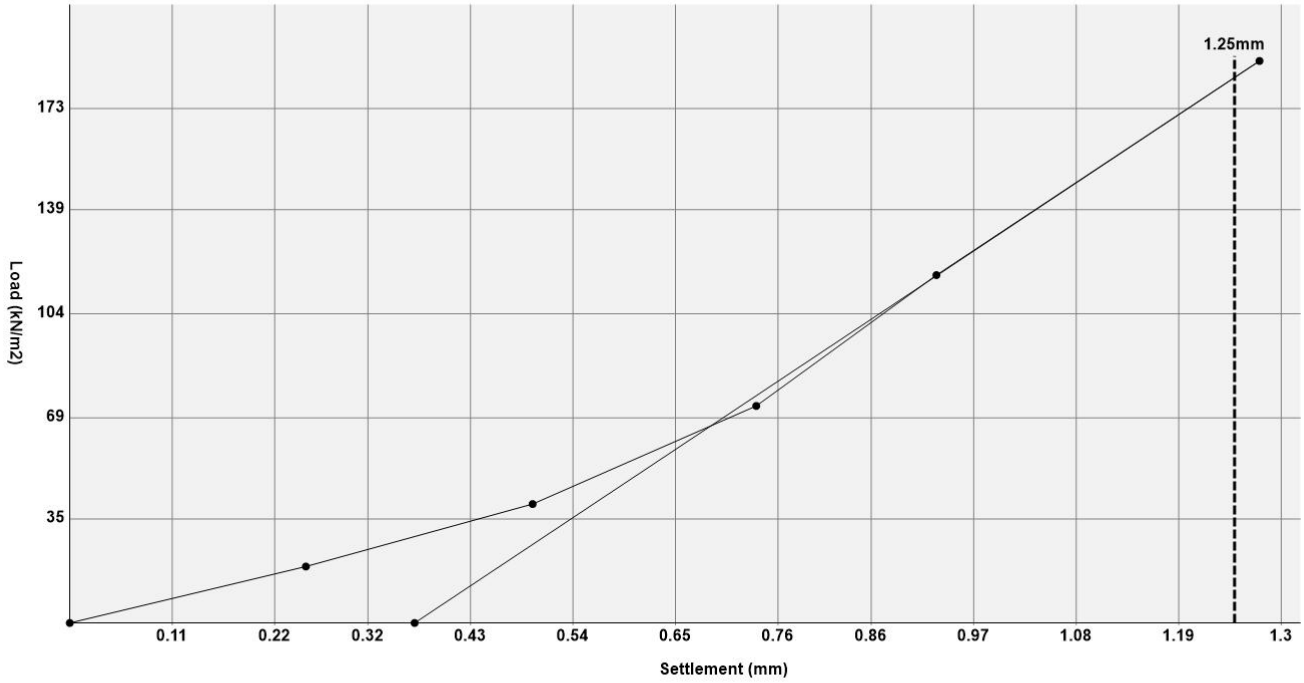
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 3
		^ **Test Location:**	- E2
Lab Ref.:	111120-05	**Layer:**	Sub Base
Kentledge:	13t dozer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	11/11/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
19	0.25
40	0.50
73	0.74
117	0.93
189	1.28
0	0.37



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **91392 kN/m2/m**
Equivalent CBR = **24.1 %**

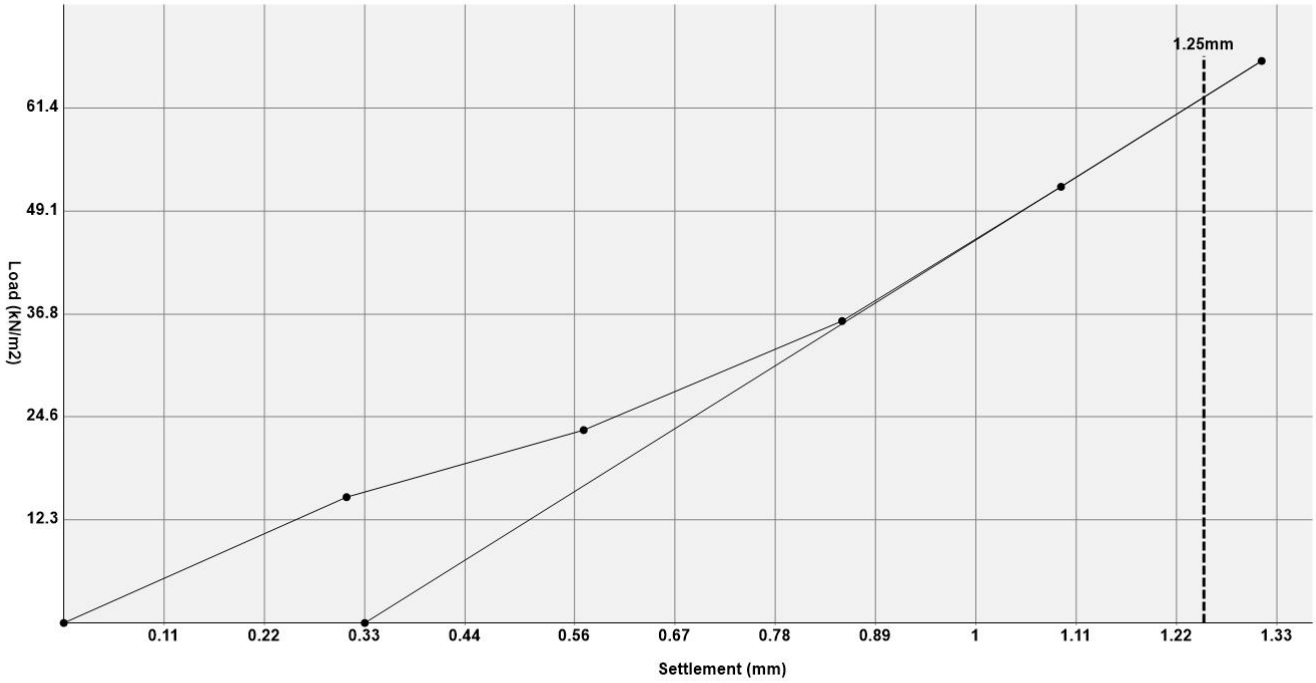
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 4
		^ **Test Location:**	- E25
Lab Ref.:	111120-05	**Layer:**	Sub Base
Kentledge:	13t dozer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	11/11/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
15	0.31
23	0.57
36	0.85
52	1.09
67	1.31
0	0.33



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **31463 kN/m2/m**
Equivalent CBR = **3.8 %**

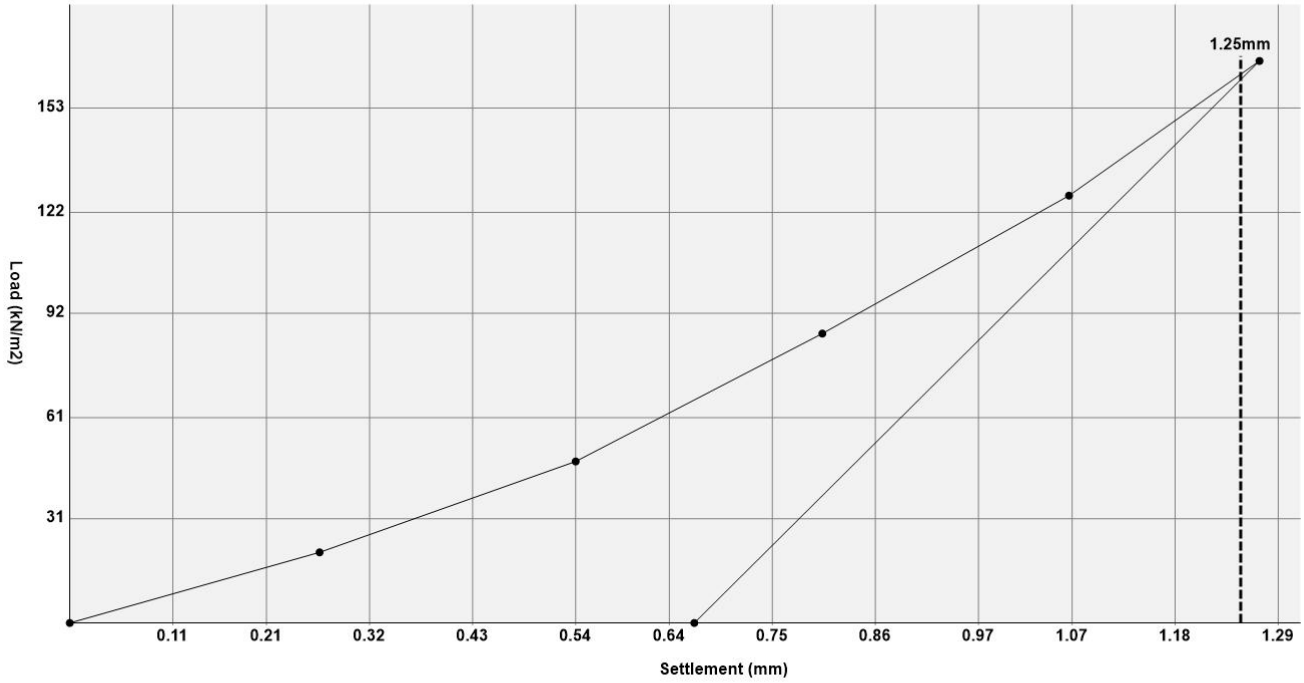
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 5
		^ **Test Location:**	- E34
Lab Ref.:	111120-05	**Layer:**	Sub Base
Kentledge:	13t dozer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	11/11/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
21	0.27
48	0.54
86	0.80
127	1.07
167	1.27
0	0.67



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **81403 kN/m2/m**
Equivalent CBR = **19.7 %**

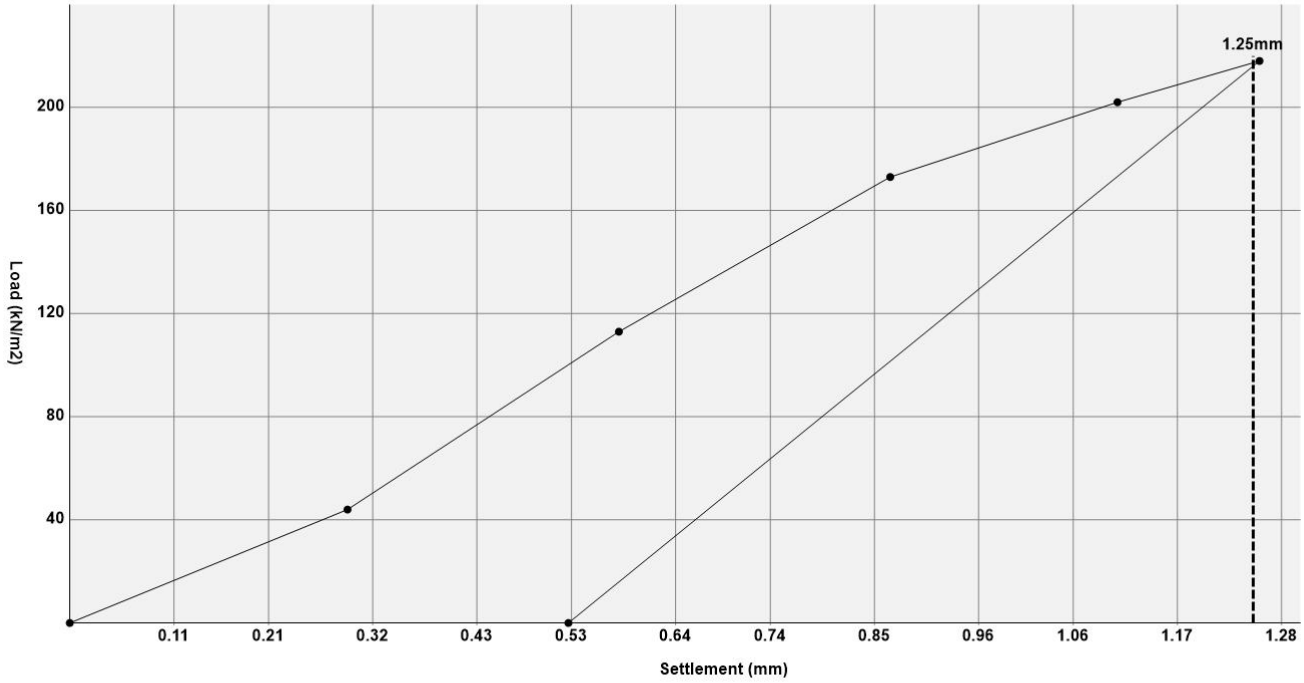
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 6
		^ **Test Location:**	- E37
Lab Ref.:	111120-05	**Layer:**	Sub Base
Kentledge:	13t dozer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	11/11/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
44	0.29
113	0.58
173	0.87
202	1.11
218	1.26
0	0.53



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **108371 kN/m2/m**
Equivalent CBR = **32.4 %**

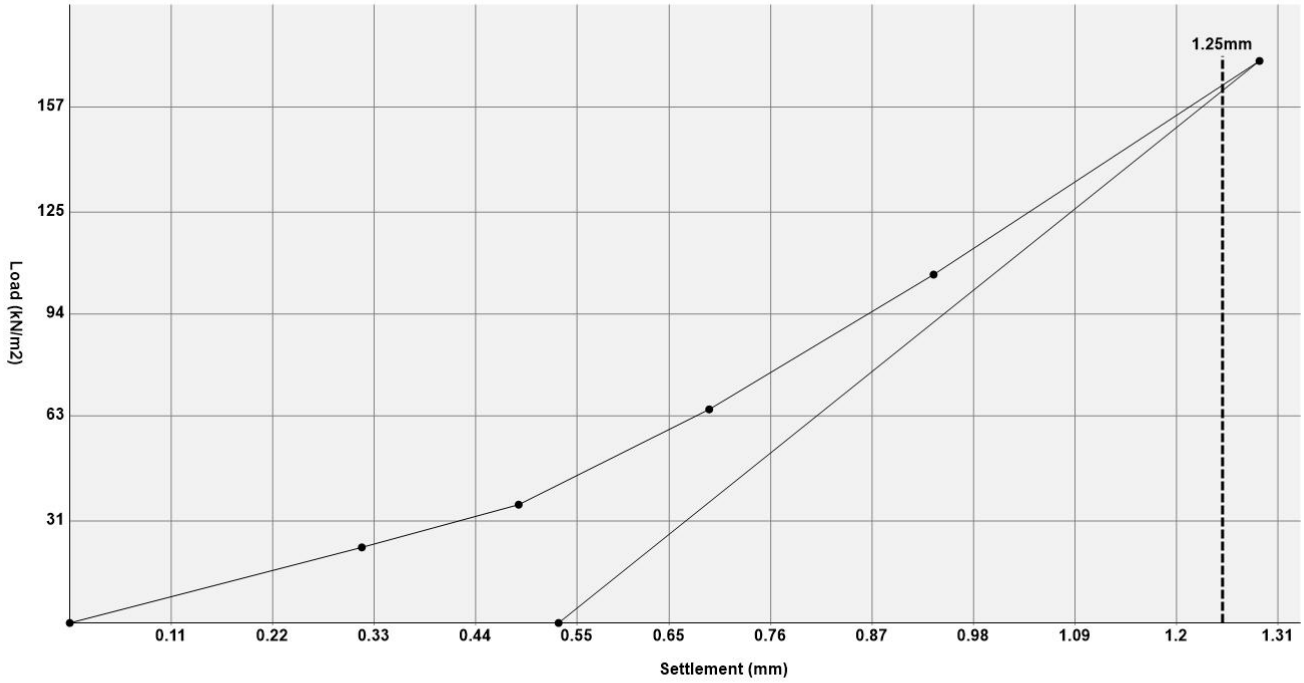
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 7
		^ **Test Location:**	- E43
Lab Ref.:	111120-05	**Layer:**	Sub Base
Kentledge:	13t dozer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	11/11/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
23	0.32
36	0.49
65	0.69
106	0.94
171	1.29
0	0.53



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **81903 kN/m2/m**
Equivalent CBR = **20 %**

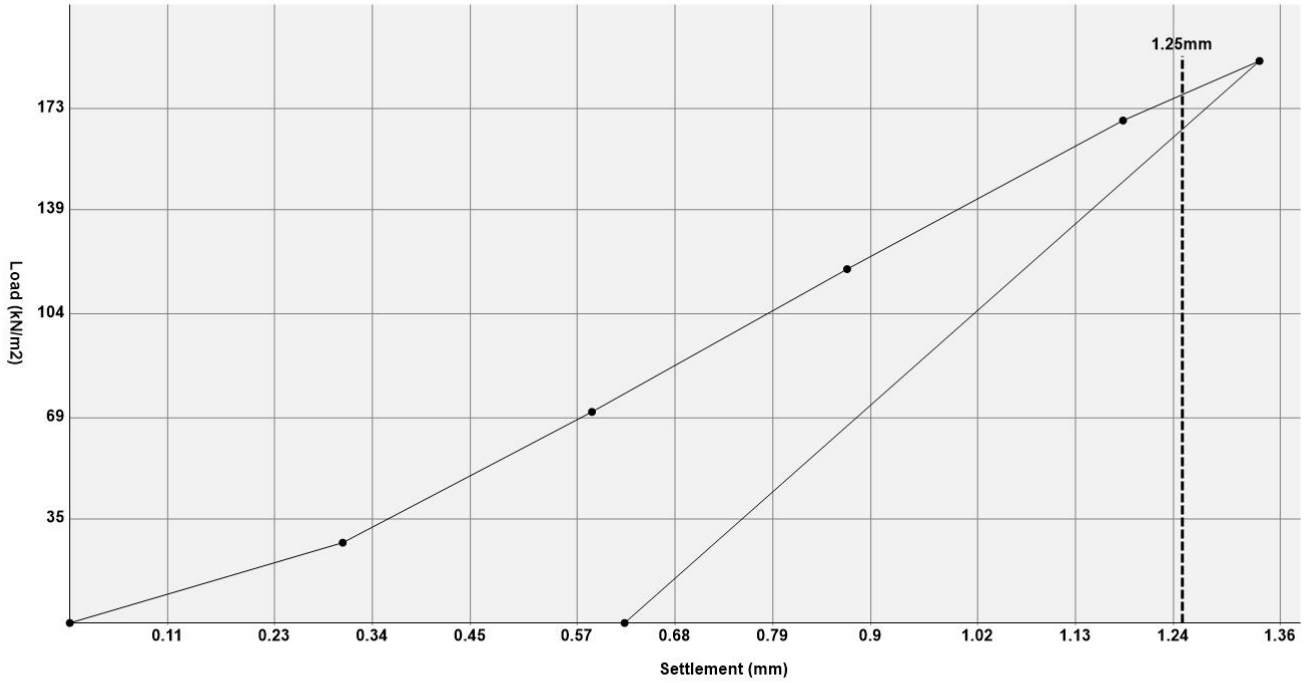
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 8
		^ **Test Location:**	-E25 retest
Lab Ref.:	111120-05	**Layer:**	Sub Base
Kentledge:	13t dozer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	11/11/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
27	0.31
71	0.59
119	0.87
169	1.18
189	1.34
0	0.62



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **88894 kN/m2/m**
Equivalent CBR = **23 %**

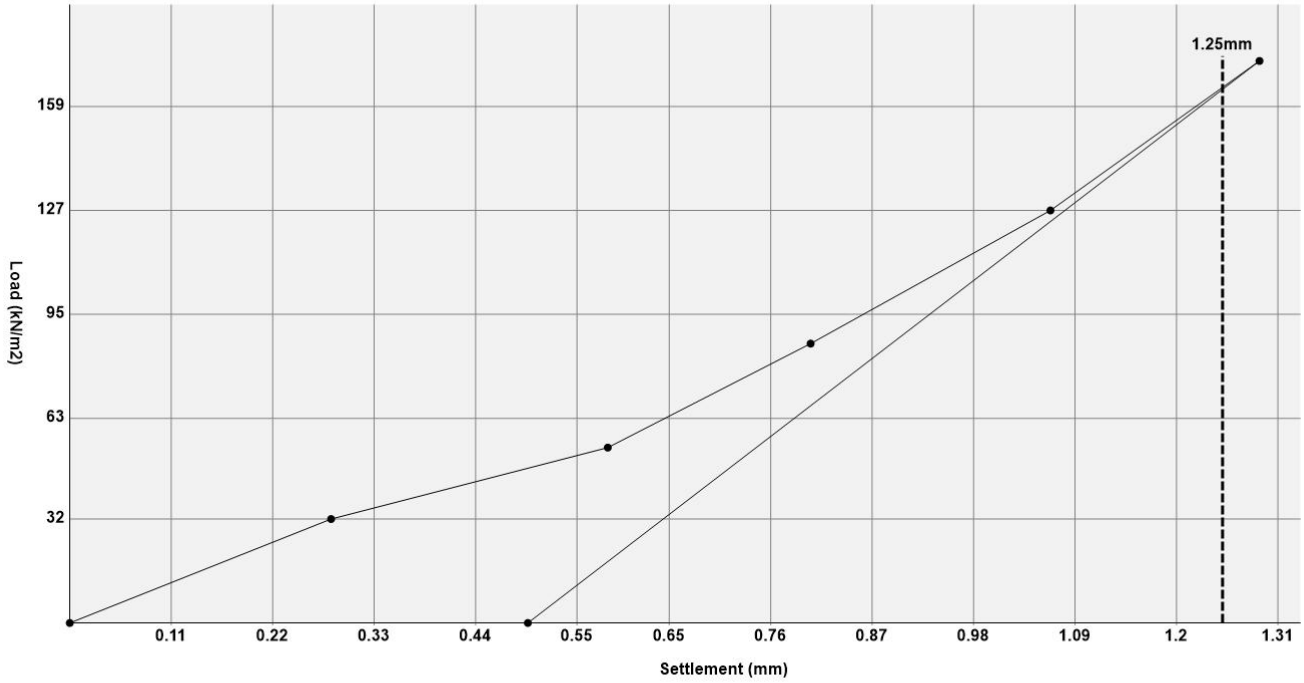
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 9
		^ **Test Location:**	- E50
Lab Ref.:	111120-05	**Layer:**	Sub Base
Kentledge:	13t dozer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	11/11/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
32	0.28
54	0.58
86	0.80
127	1.06
173	1.29
0	0.50



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **82402 kN/m2/m**
Equivalent CBR = **20.2 %**

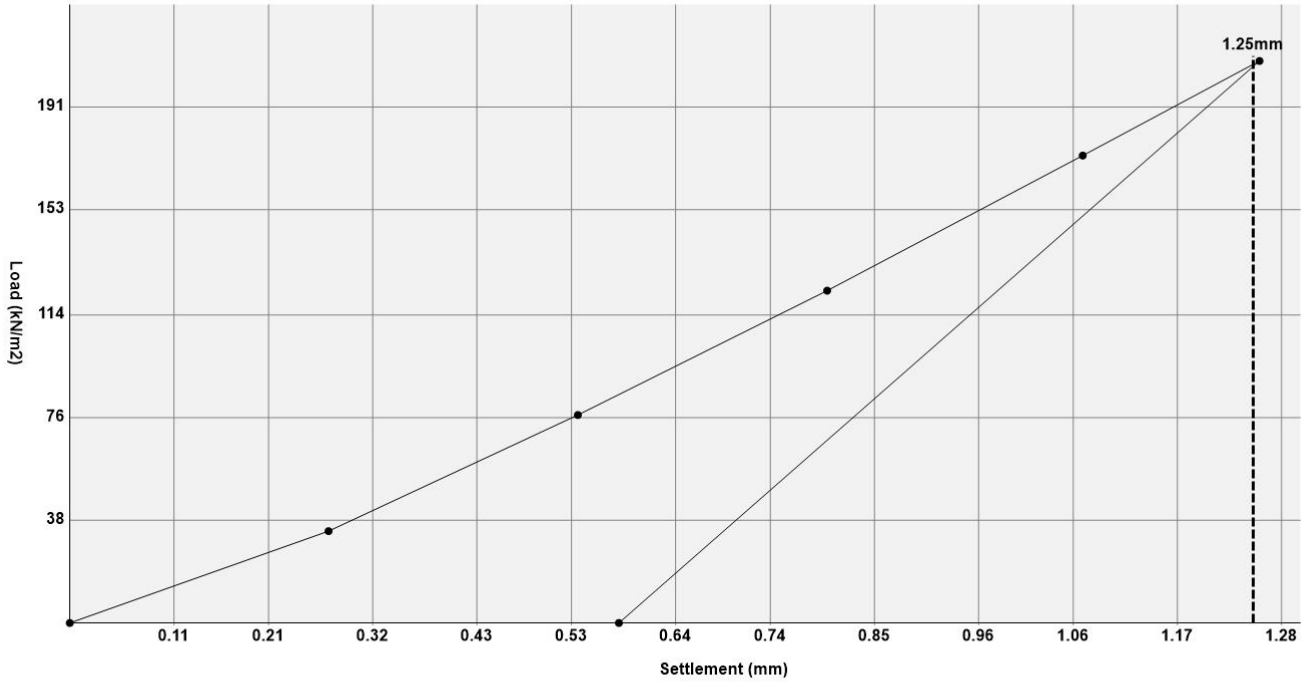
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 10
		^ **Test Location:**	- E49
Lab Ref.:	111120-05	**Layer:**	Sub Base
Kentledge:	13t dozer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	11/11/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.27
77	0.54
123	0.80
173	1.07
208	1.26
0	0.58



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **103377 kN/m2/m**
Equivalent CBR = **29.9 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Kiwa CMT Testing
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E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Ltd
Scotland Farm
Far Lane
Ockbrook, Derby
Derbyshire
DE72 3RX

Date: 03/07/2020

Lab Ref: 020720-02

Originator: Scott

Order Ref: TBC

Site: Mitchell Road
Corby
Just befor Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 02/07/2020 in order to carry out 16 NDG and 600 plate load testing tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

Results:

The individual result sheets and location plan may be viewed on pages 2 to 17 of this report.

Kiwa CMT Testing

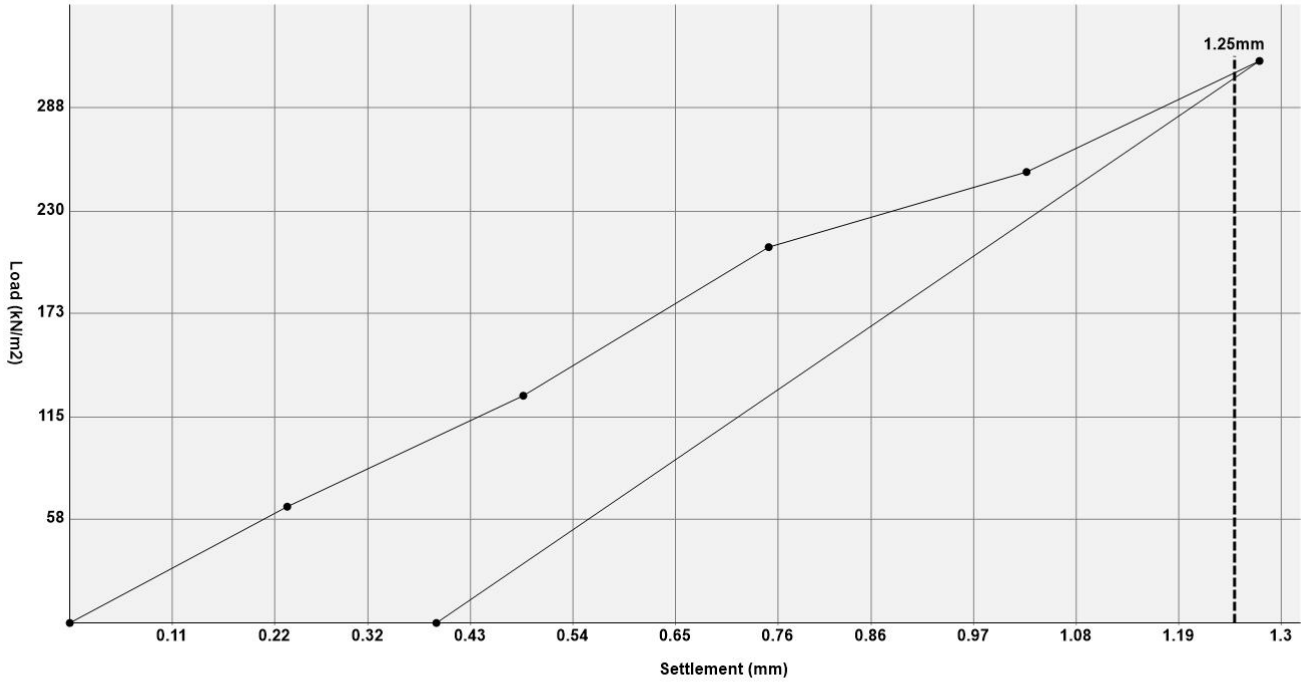
Checked and Authorised by: J. Eckford
Senior Geotechnical Technician

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 1
		^ **Test Location:**	- grid E64
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.23
127	0.49
210	0.75
252	1.03
314	1.28
0	0.39



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **153318 kN/m2/m**
Equivalent CBR = **59.2 %**

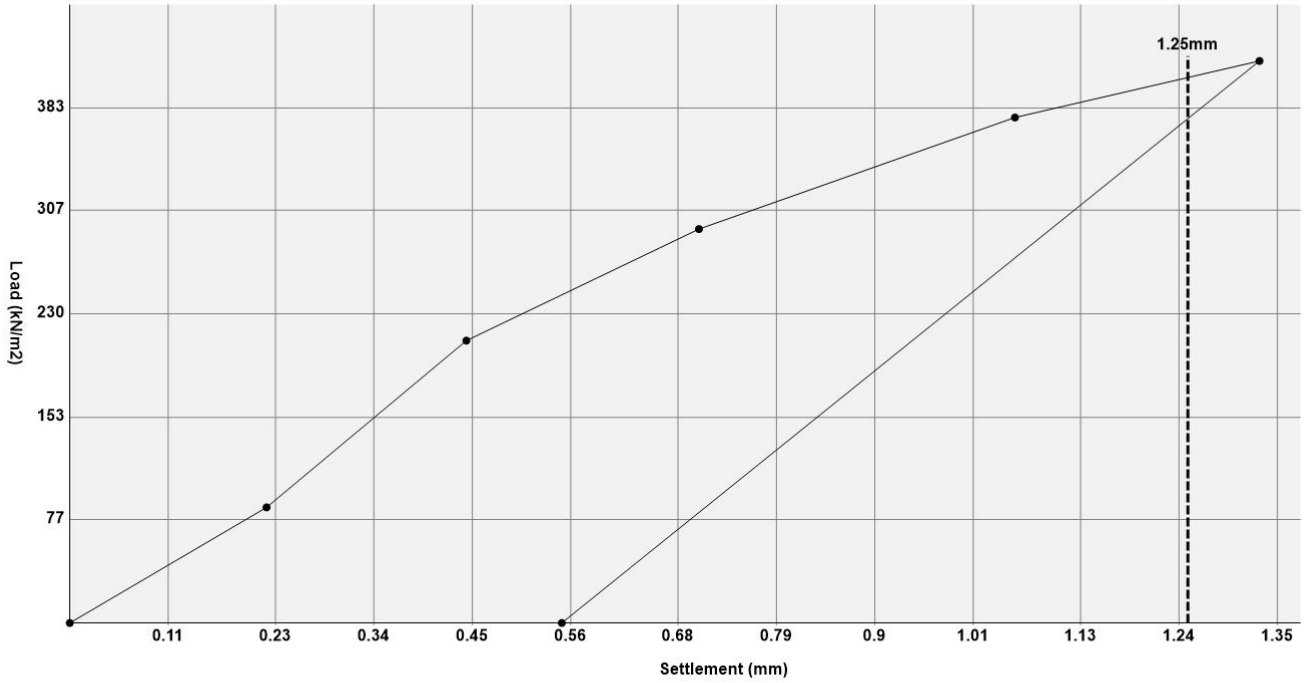
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 2
		^ **Test Location:**	-GRID E65
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
86	0.22
210	0.44
293	0.70
376	1.06
418	1.33
0	0.55



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **202759 kN/m2/m**
Equivalent CBR = **96 %**

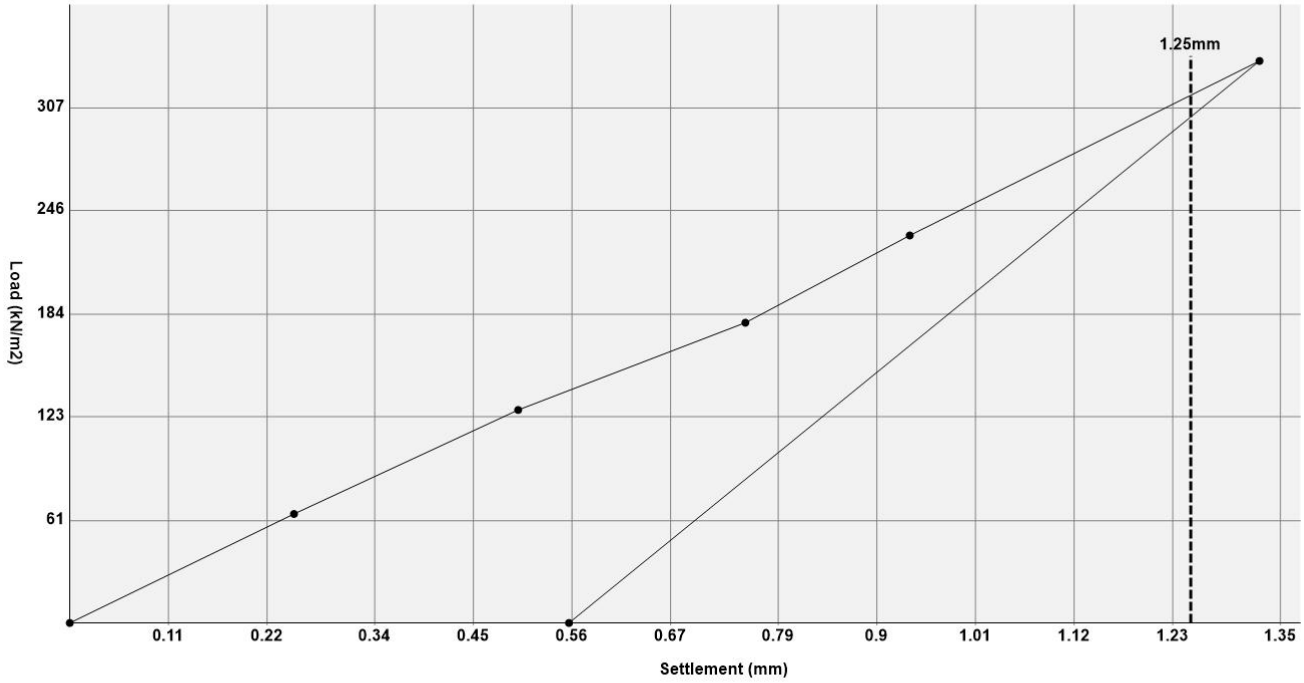
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 3
		^ **Test Location:**	-GRID E66
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.25
127	0.50
179	0.75
231	0.94
335	1.33
0	0.56



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **157313 kN/m2/m**
Equivalent CBR = **61.8 %**

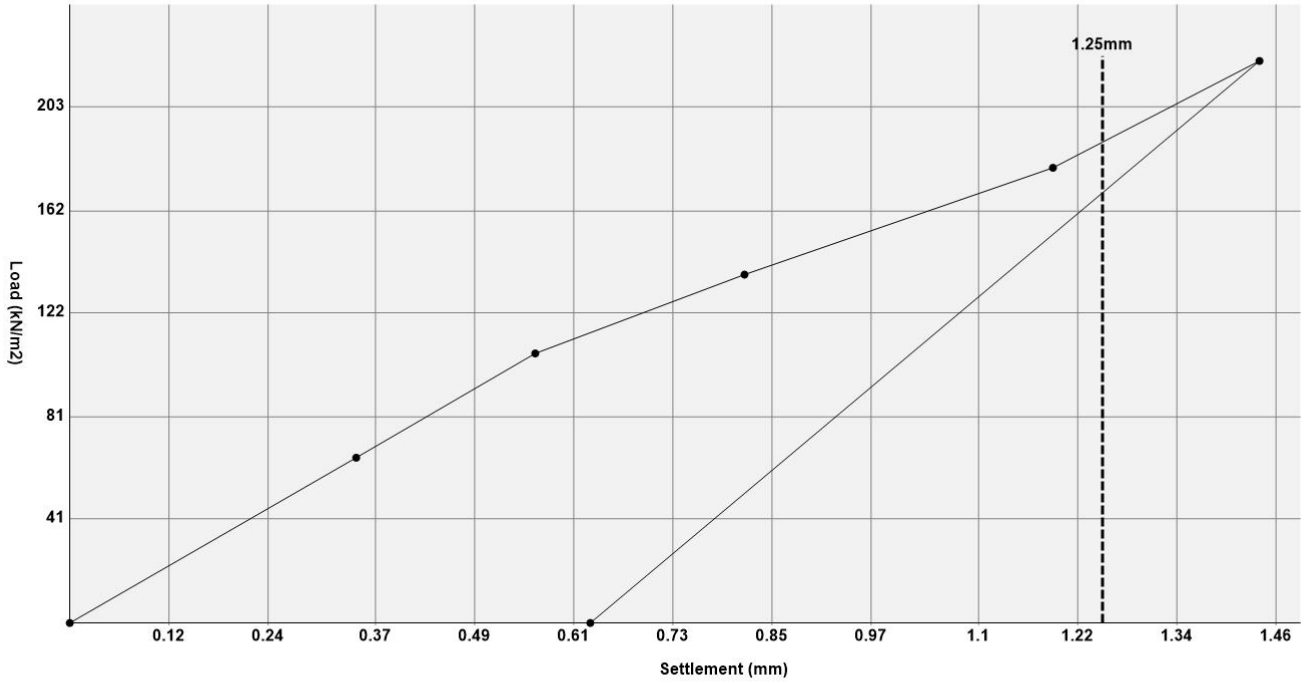
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 4
		^ **Test Location:**	-GRID E67
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.35
106	0.56
137	0.82
179	1.19
221	1.44
0	0.63



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **94388 kN/m2/m**
Equivalent CBR = **25.5 %**

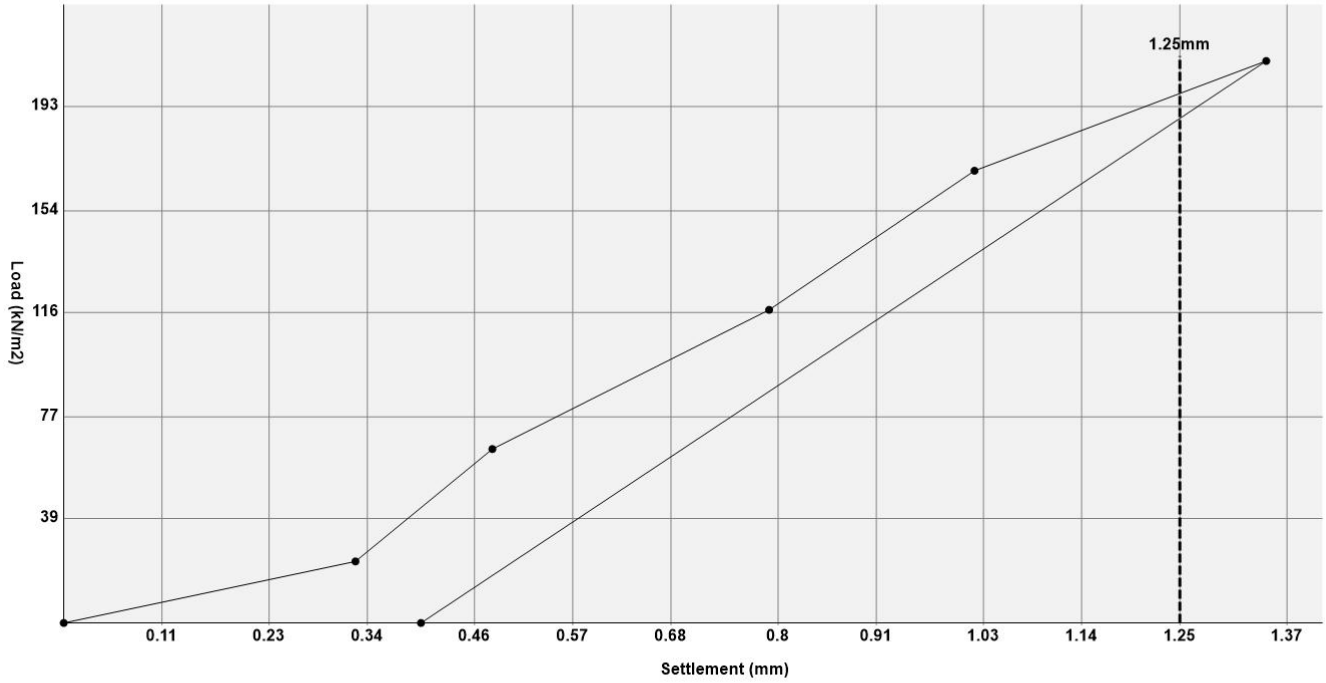
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 5
		^ **Test Location:**	- GRID E 68
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
23	0.33
65	0.48
117	0.79
169	1.02
210	1.35
0	0.40



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **98883 kN/m2/m**
Equivalent CBR = **27.7 %**

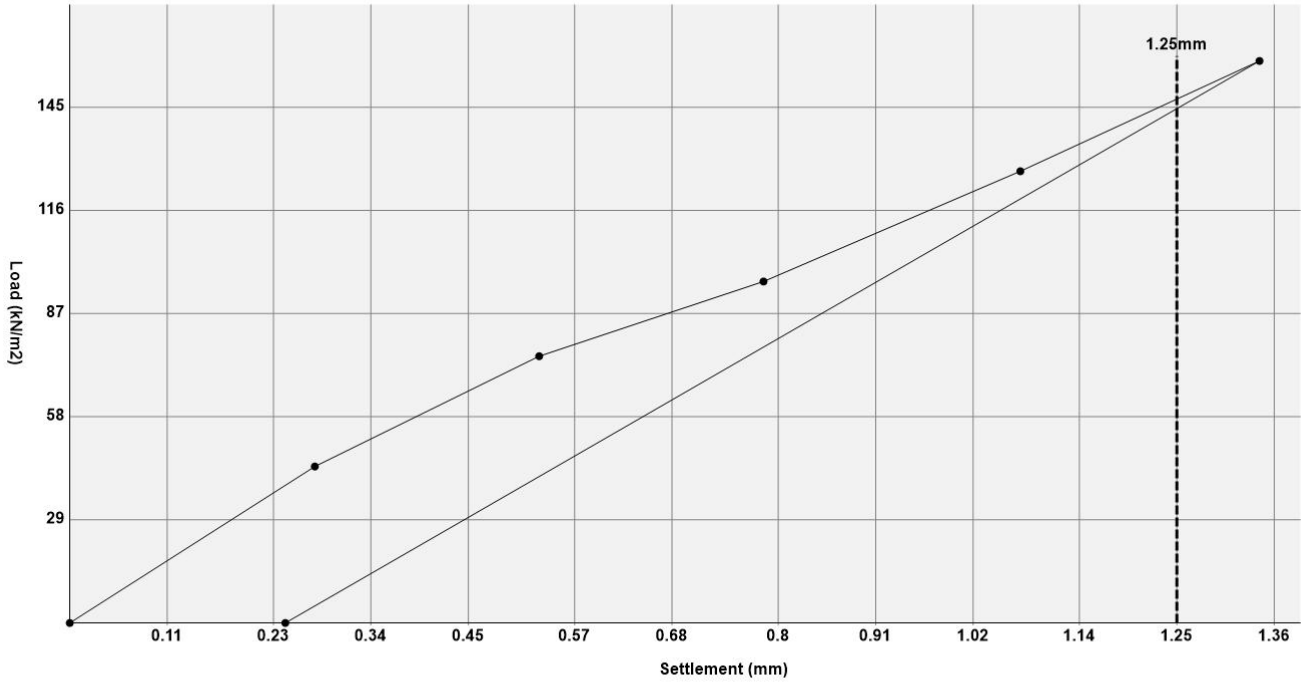
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 6
		^ **Test Location:**	- GRID E 69
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
44	0.28
75	0.53
96	0.78
127	1.07
158	1.34
0	0.24



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **73413 kN/m2/m**
Equivalent CBR = **16.5 %**

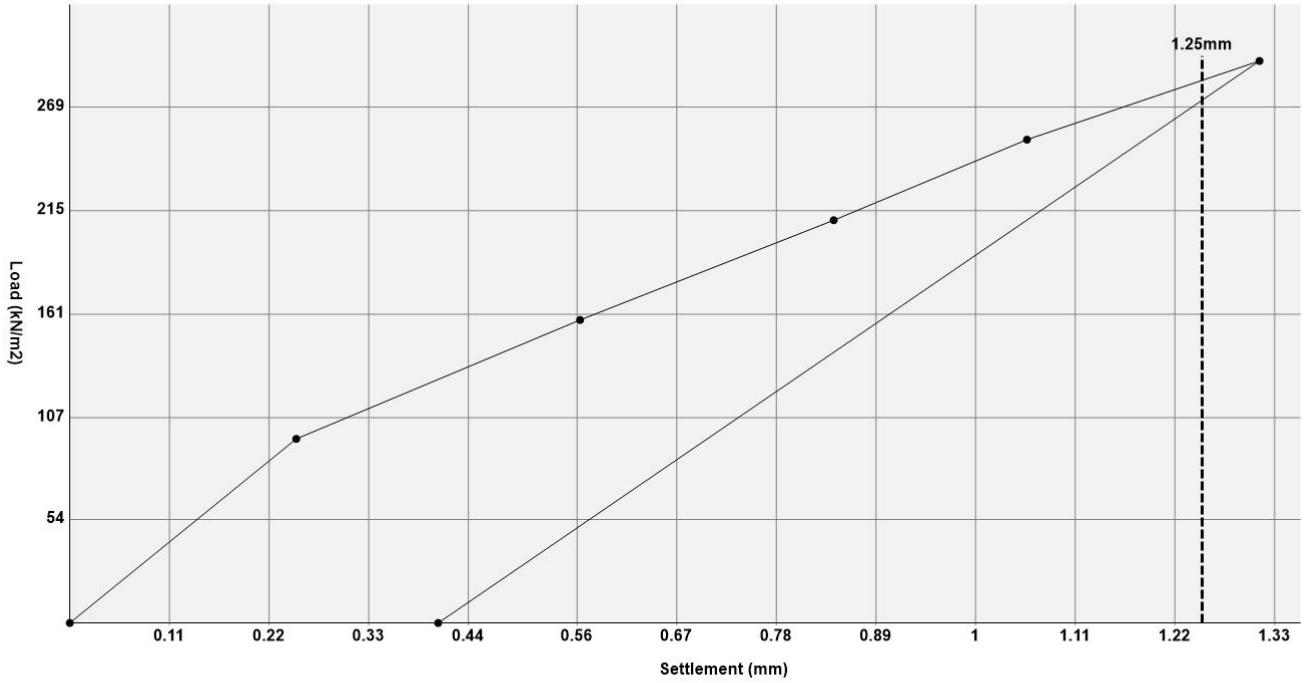
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 7
		^ **Test Location:**	GRID E 61
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
96	0.25
158	0.56
210	0.84
252	1.06
293	1.31
0	0.41



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **141332 kN/m2/m**
Equivalent CBR = **51.4 %**

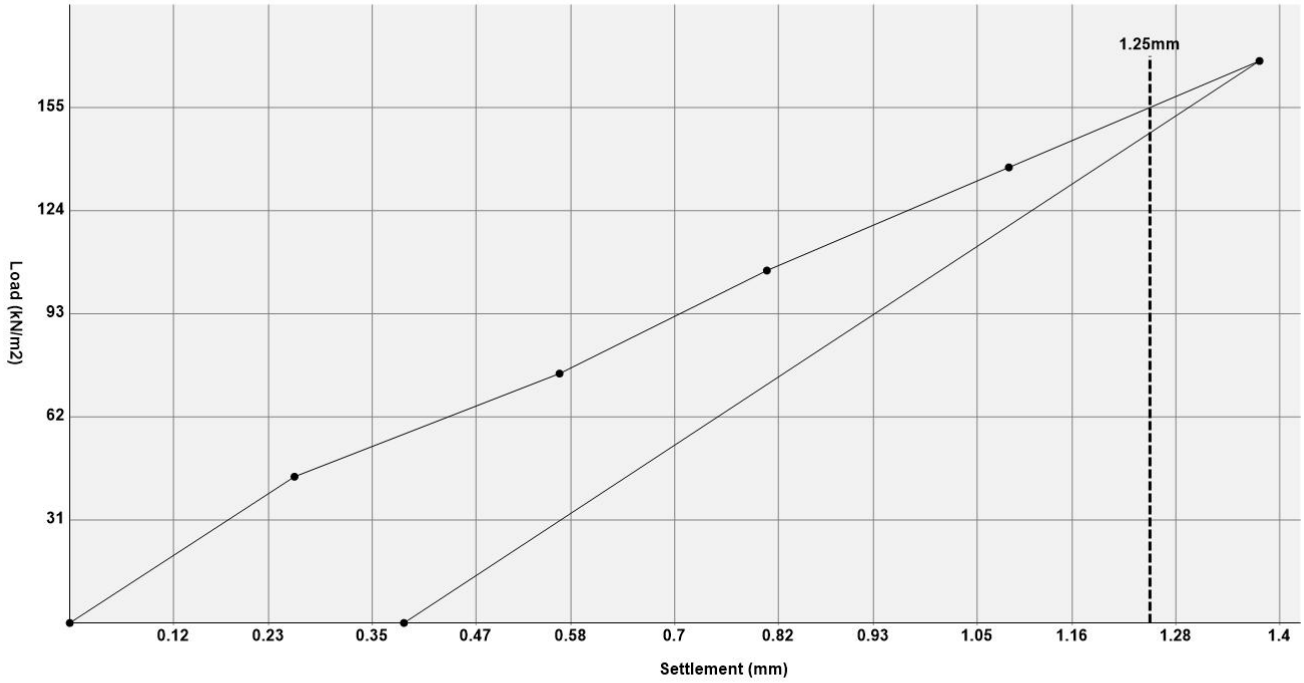
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 8
		^ **Test Location:**	- GRID E 60
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
44	0.26
75	0.57
106	0.81
137	1.09
169	1.38
0	0.39



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **77408 kN/m2/m**
Equivalent CBR = **18.1 %**

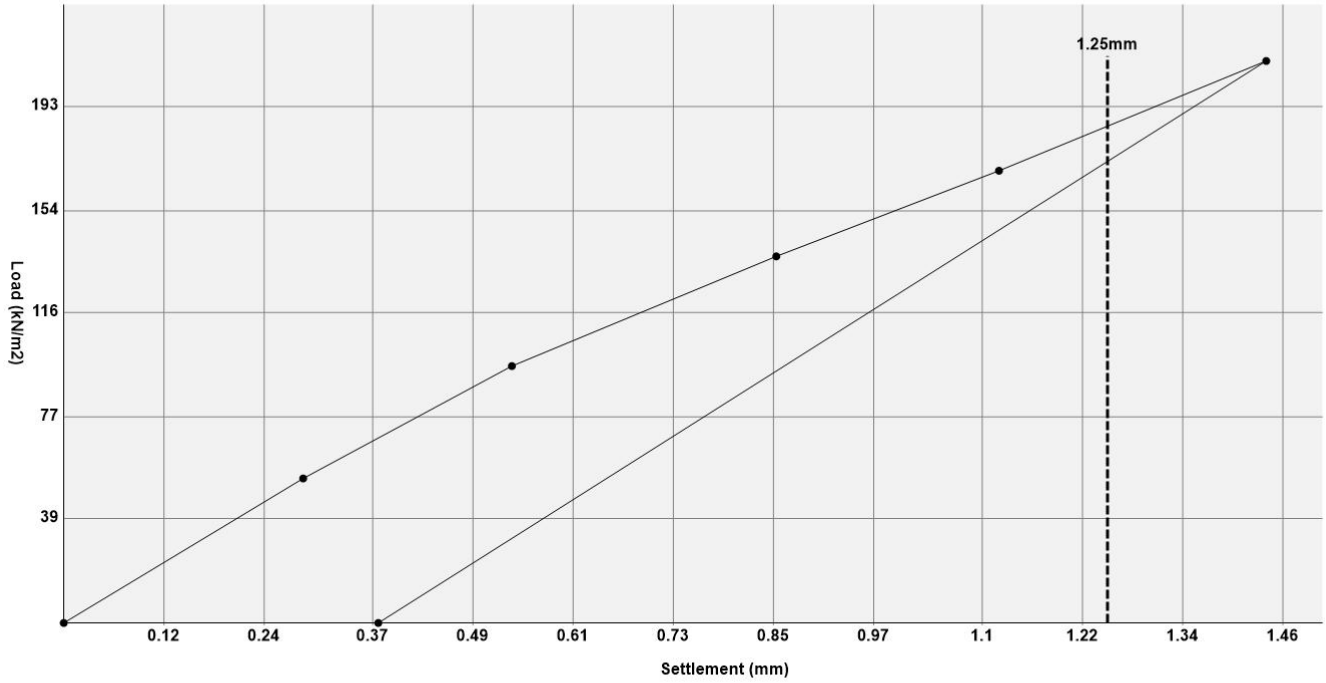
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 9
		^ **Test Location:**	-GRID E59
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
54	0.29
96	0.54
137	0.85
169	1.12
210	1.44
0	0.38



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **92890 kN/m2/m**
Equivalent CBR = **24.8 %**

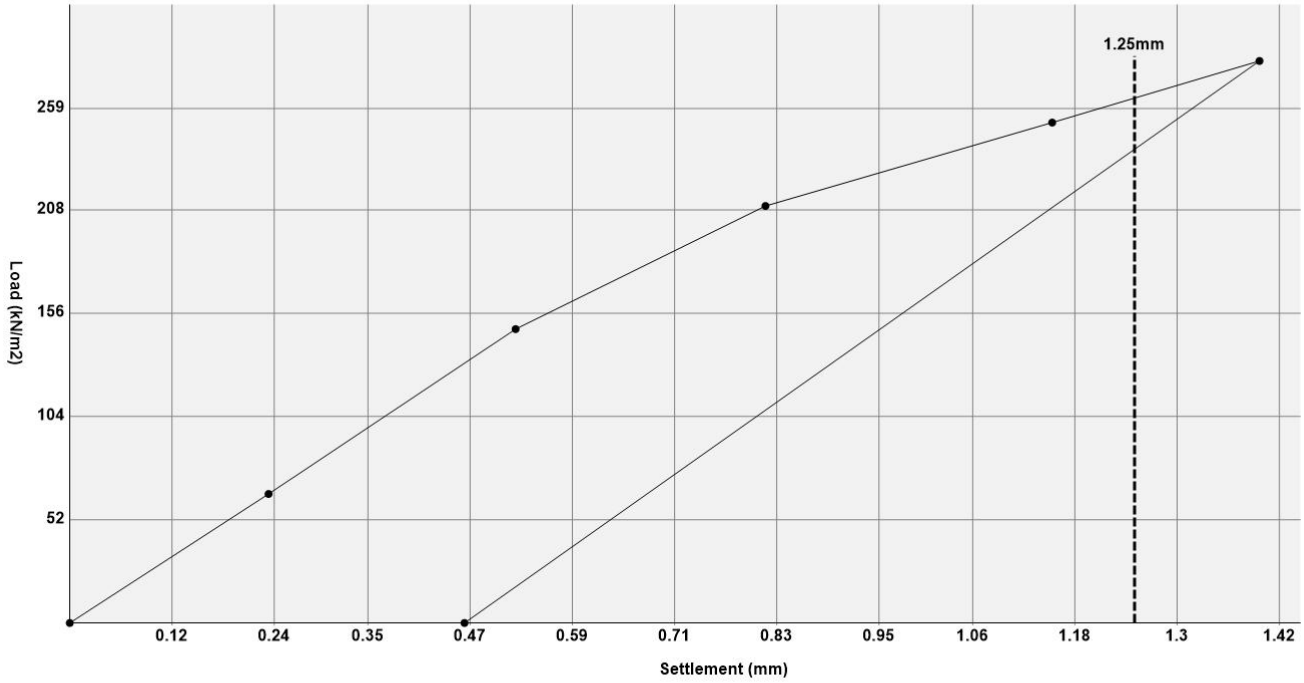
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 10
		^ **Test Location:**	- GRID E 58
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.23
148	0.52
210	0.82
252	1.15
283	1.40
0	0.46



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **131844 kN/m2/m**
Equivalent CBR = **45.5 %**

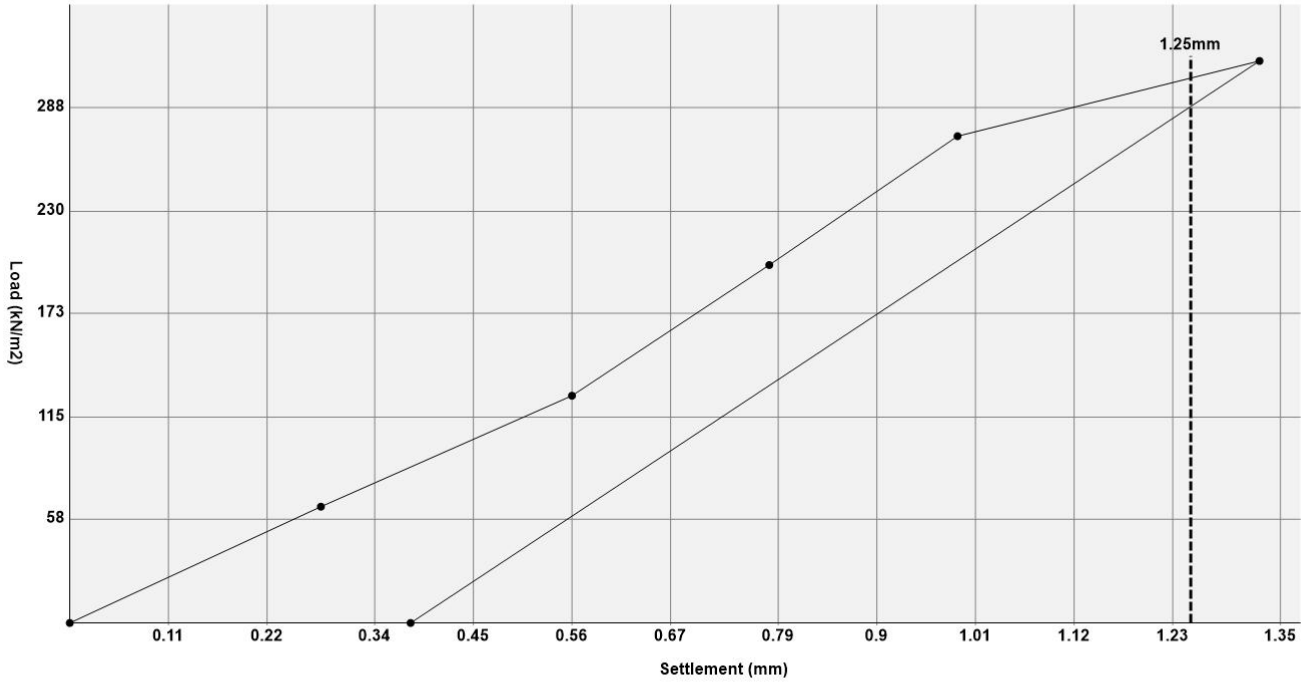
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 11
		^ **Test Location:**	-GRID E 57
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.28
127	0.56
200	0.78
272	0.99
314	1.33
0	0.38



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **151820 kN/m2/m**
Equivalent CBR = **58.2 %**

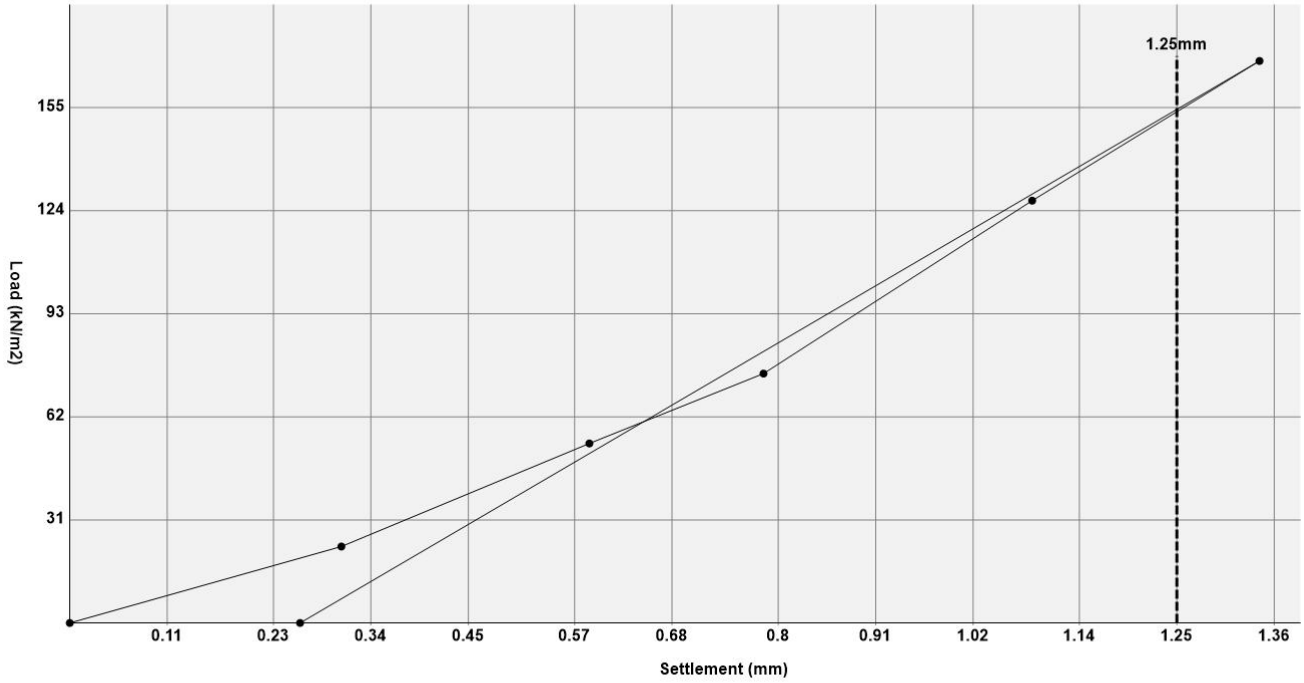
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 12
		^ **Test Location:**	- grid E35
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
23	0.31
54	0.59
75	0.78
127	1.09
169	1.34
0	0.26



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **76909 kN/m2/m**
Equivalent CBR = **17.9 %**

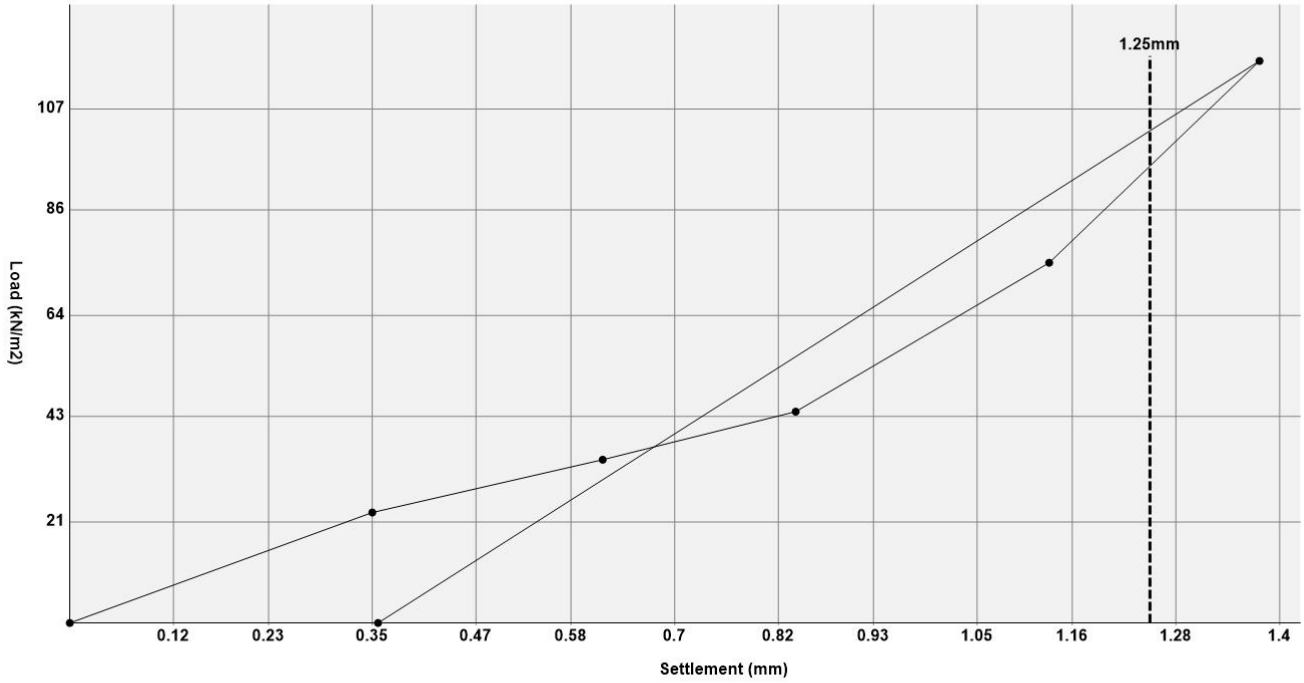
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 13
		^ **Test Location:**	- GRID E 34
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
23	0.35
34	0.62
44	0.84
75	1.13
117	1.38
0	0.36



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **47444 kN/m2/m**
Equivalent CBR = **7.7 %**

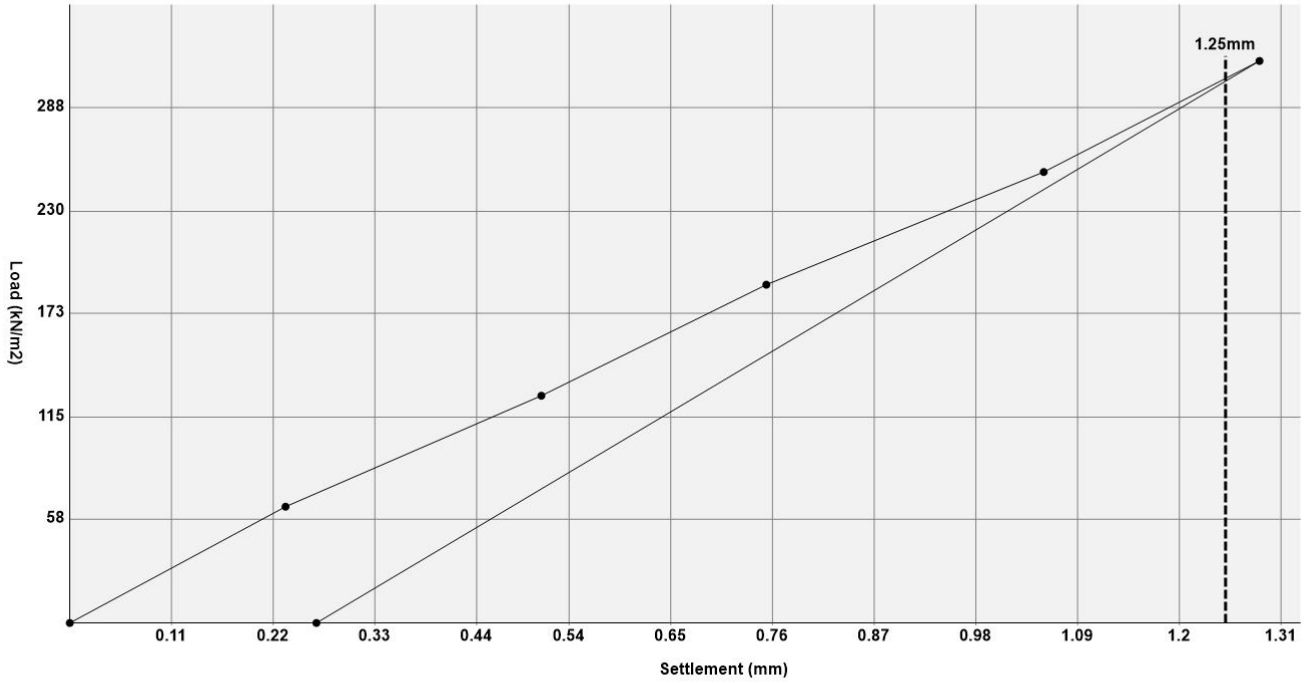
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 14
		^ **Test Location:**	- GRID E33
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.23
127	0.51
189	0.75
252	1.05
314	1.29
0	0.27



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **151820 kN/m2/m**
Equivalent CBR = **58.2 %**

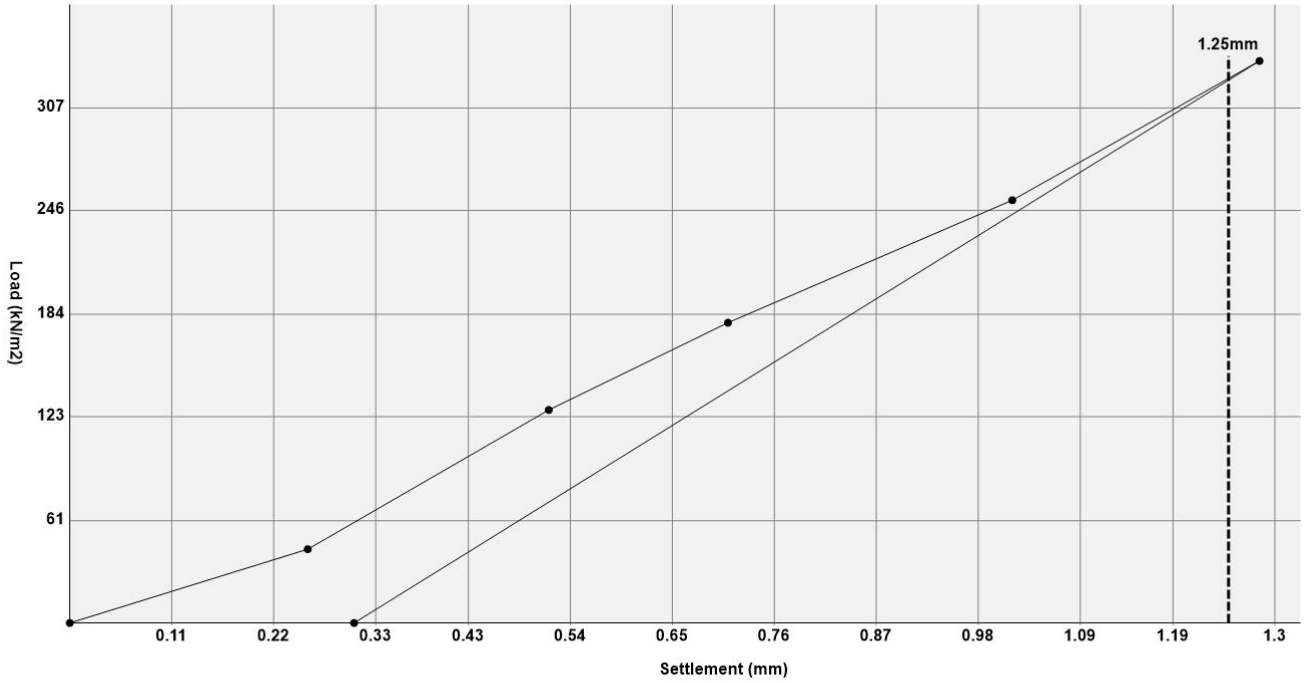
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 15
		^ **Test Location:**	- GRID E 39
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
44	0.26
127	0.52
179	0.71
252	1.02
335	1.28
0	0.31



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **162307 kN/m2/m**
Equivalent CBR = **65.3 %**

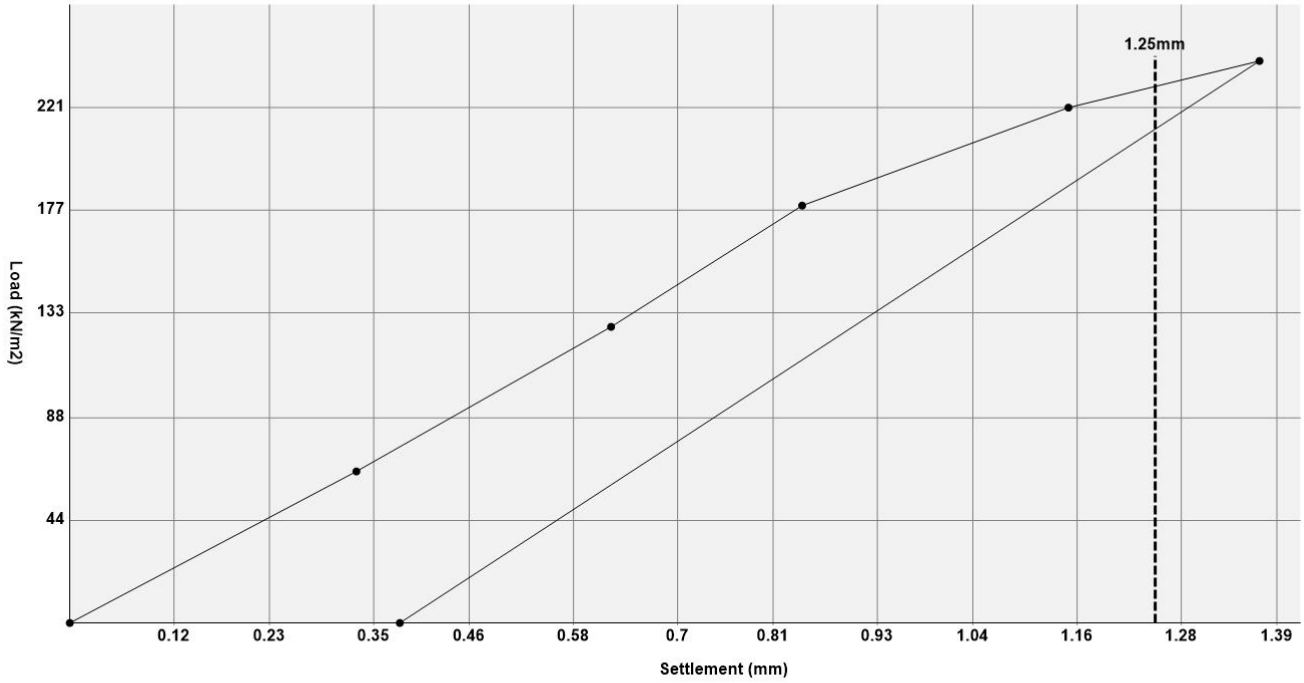
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 16
		^ **Test Location:**	- GRID E40
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.33
127	0.62
179	0.84
221	1.15
241	1.37
0	0.38



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **114864 kN/m2/m**
Equivalent CBR = **35.9 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Job Nº:	020720-02	Client Ref: TBC	Date: 02/07/20	Weather:	
Client:	IVY HOUSE ENVIROMENTAL		Tech Name:	JOHN MACINTYRE	
Site:	MITCHEL RD CORBY NN17 5AF		Max DD/OMC Source:	CLIENT	
			MDD: 1740	PD: 268	OMC: 17%
			Density offset:	Moisture offset:	
			Test depth mm: 300	Time: 15 sec	
Material:	brown soil and clay with small aggregate		New MS 688	% Difference 0.1 %	
			New DS 1733	% Difference 0.2 %	

Nº	Wet density kg/m³	Dry Density kg/m³	Compaction %	MC %	Air Voids %	Plot and Grid	Level	Test No.	SRD
N	2159	1951	112.1	10.6	6.7	B4	300 MM	1	
S	2249	2035	118.0	9.5	4.1			AOD	
E	2094	1899	109.1	10.2	10.1			E	
W	2076	1805	108.3	10.2	10.2			N	
Mean	2145	1923	111.9	10.1	7.8				
N	2003	1760	101.8	13.8	10.3	B3	300 MM	2	
S	1951	1721	98.4	14.0	12.5			AOD	
E	2090	1891	108.1	10.5	9.8			E	
W	2040	1780	102.3	14.7	7.6			N	
Mean	2021	1788	102.7	13.3	10.1				
N	2126	1879	108.4	13.2	5.4	B2	300 MM	3	
S	2076	1881	108.1	10.4	10.5			AOD	
E	2063	1828	105.1	12.8	8.6			E	
W	2069	1900	109.2	10.3	9.8			N	
Mean	2084	1872	107.7	11.7	8.6				
N	1996	1824	104.8	9.5	14.9	B1	300 MM	4	
S	1910	1738	99.9	9.9	18.2			AOD	
E	2010	1807	103.9	11.2	12.5			E	
W	1997	1816	104.4	10.2	14.3			N	
Mean	1978	1796	103.3	10.2	15.0				

Kiwa CMT

Kiwa CMT Testing
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Prime Enterprise Park
Derby
DE1 3QB

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F +44 (0)1332 602607
E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
Derbyshire
DE72 3RX

Date: 15th July 2020

Lab Ref: 140720-03

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just before Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 14th July 2020 in order to carry out 13 Plate bearings for equivalent CBR% tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

To carry out Nuclear Density Testing in accordance with **Documented In-House Method** SO35.

Results:

The individual result sheets may be viewed on pages 2 to 14 of this report.

Kiwa CMT Testing

Author: J. Eckford
Senior Geotechnical Technician

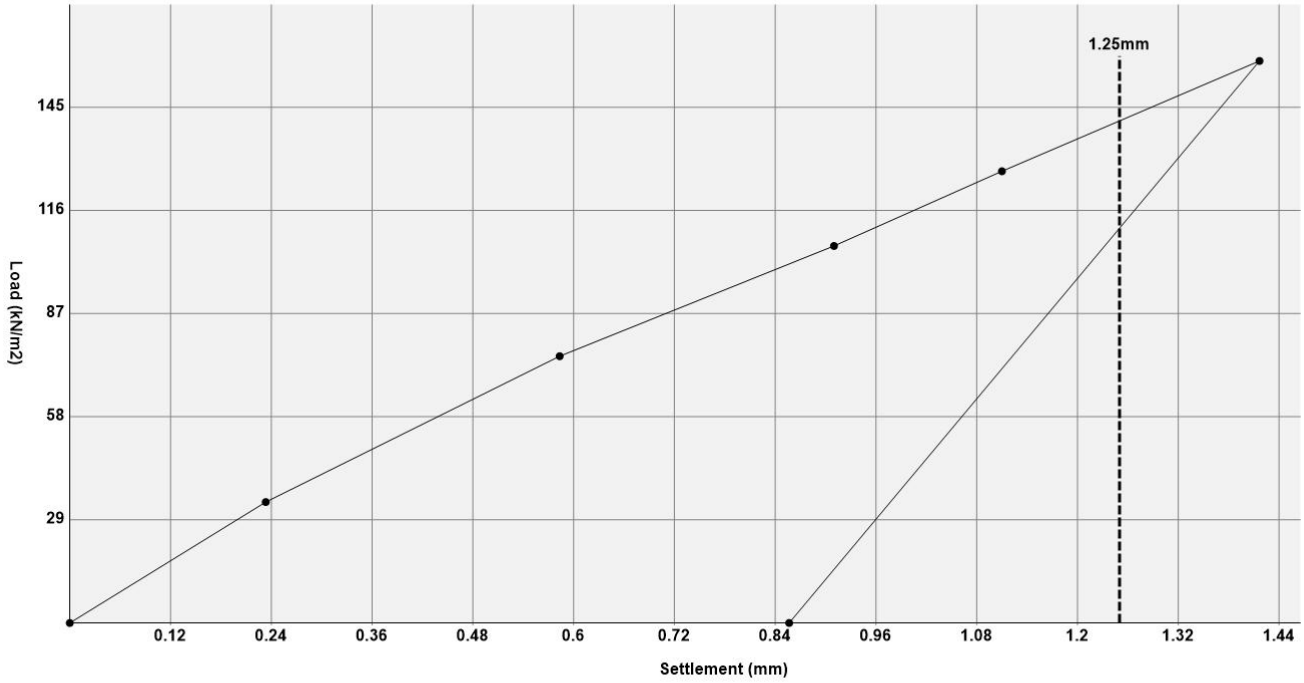
Checked and Approved by: Richard Cartlidge
Department Manager

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 1
		^ **Test Location:**	B1 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.23
75	0.58
106	0.91
127	1.11
158	1.42
0	0.86



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **70416 kN/m2/m**
Equivalent CBR = **15.4 %**

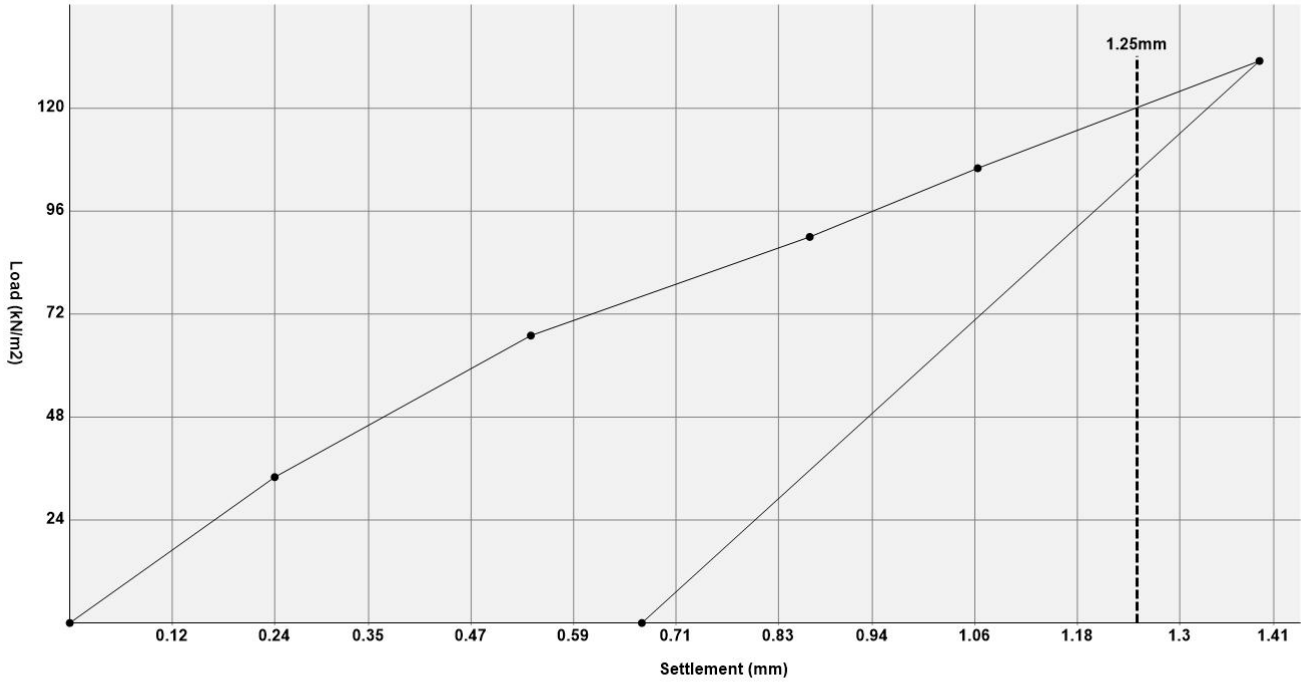
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 2
		^ **Test Location:**	B2 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.24
67	0.54
90	0.87
106	1.06
131	1.39
0	0.67



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **59929 kN/m2/m**
Equivalent CBR = **11.6 %**

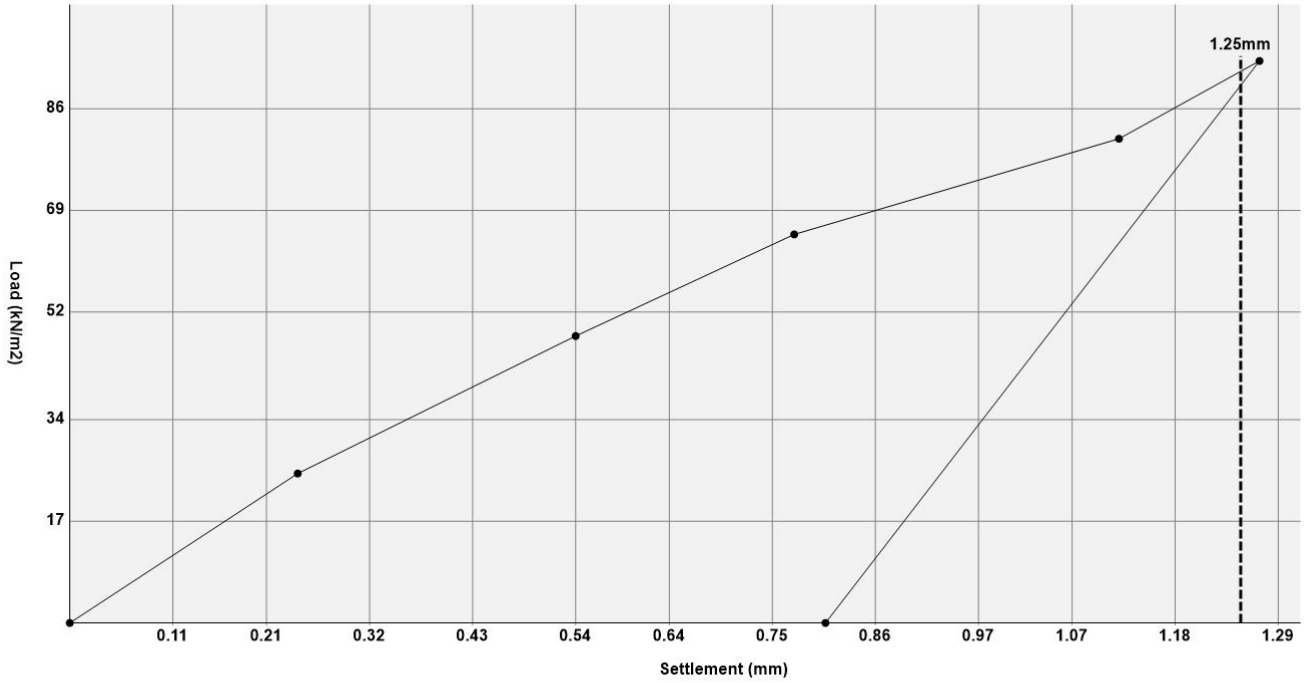
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 3
		^ **Test Location:**	B3 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
25	0.24
48	0.54
65	0.77
81	1.12
94	1.27
0	0.81



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **45945 kN/m2/m**
Equivalent CBR = **7.3 %**

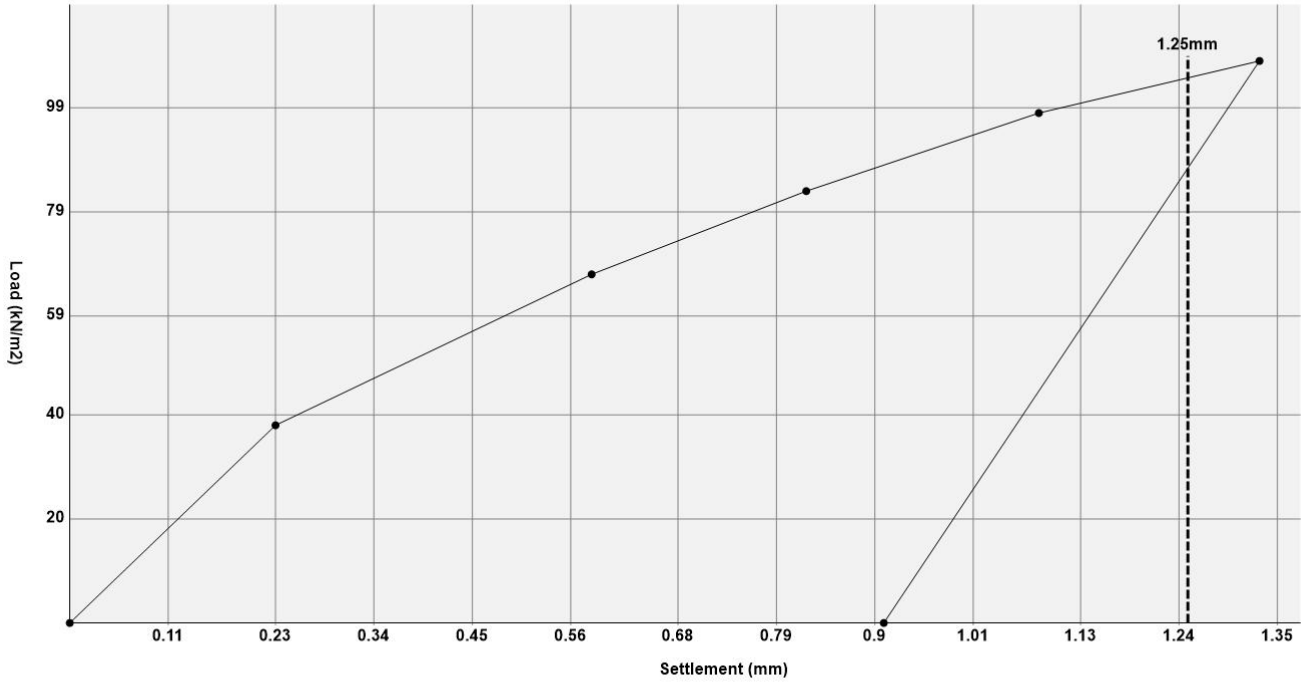
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 4
		^ **Test Location:**	B4 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
38	0.23
67	0.58
83	0.82
98	1.08
108	1.33
0	0.91



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **52438 kN/m2/m**
Equivalent CBR = **9.2 %**

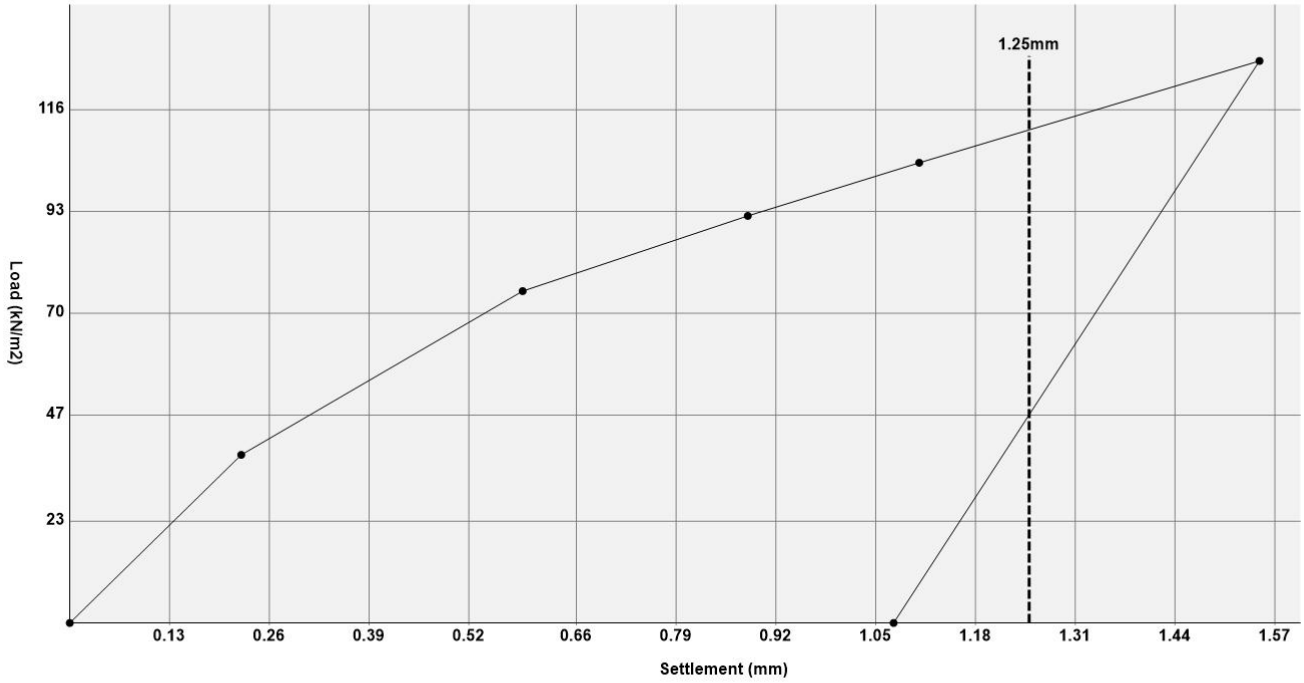
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 5
		^ **Test Location:**	B10 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
38	0.22
75	0.59
92	0.88
104	1.11
127	1.55
0	1.07



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **55434 kN/m2/m**
Equivalent CBR = **10.1 %**

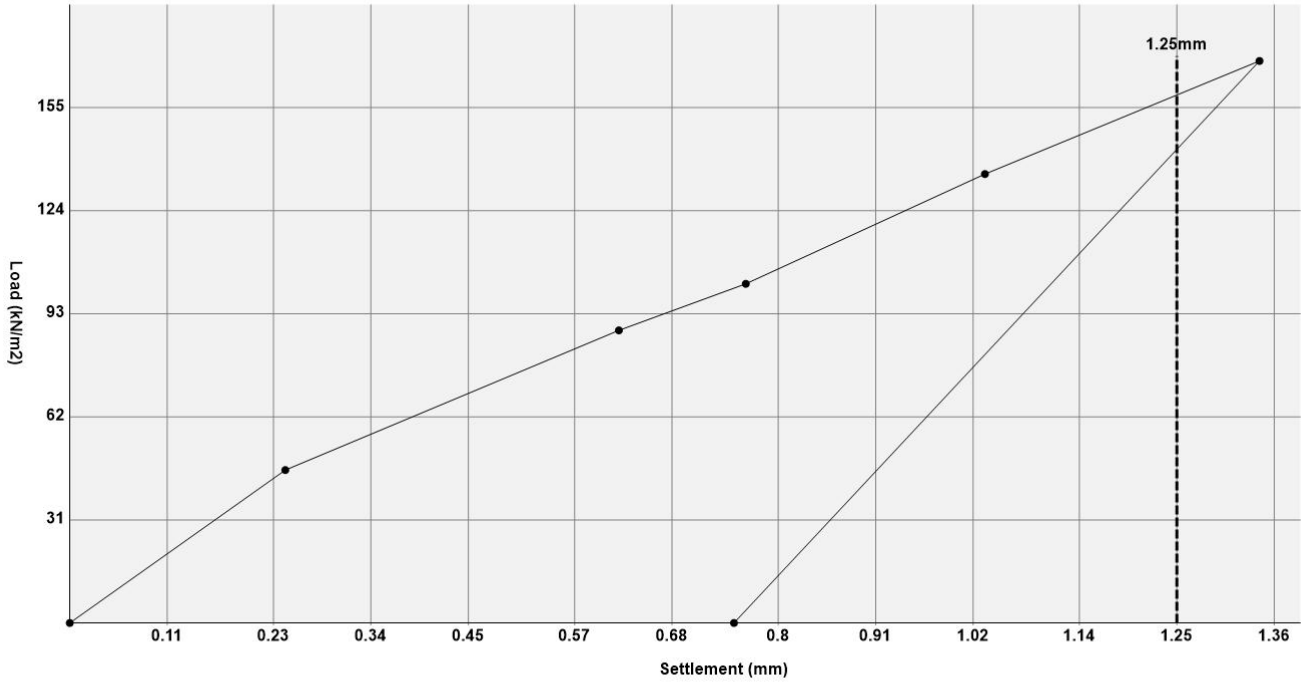
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 6
		^ **Test Location:**	B9 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
46	0.24
88	0.62
102	0.76
135	1.03
169	1.34
0	0.75



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **79406 kN/m2/m**
Equivalent CBR = **18.9 %**

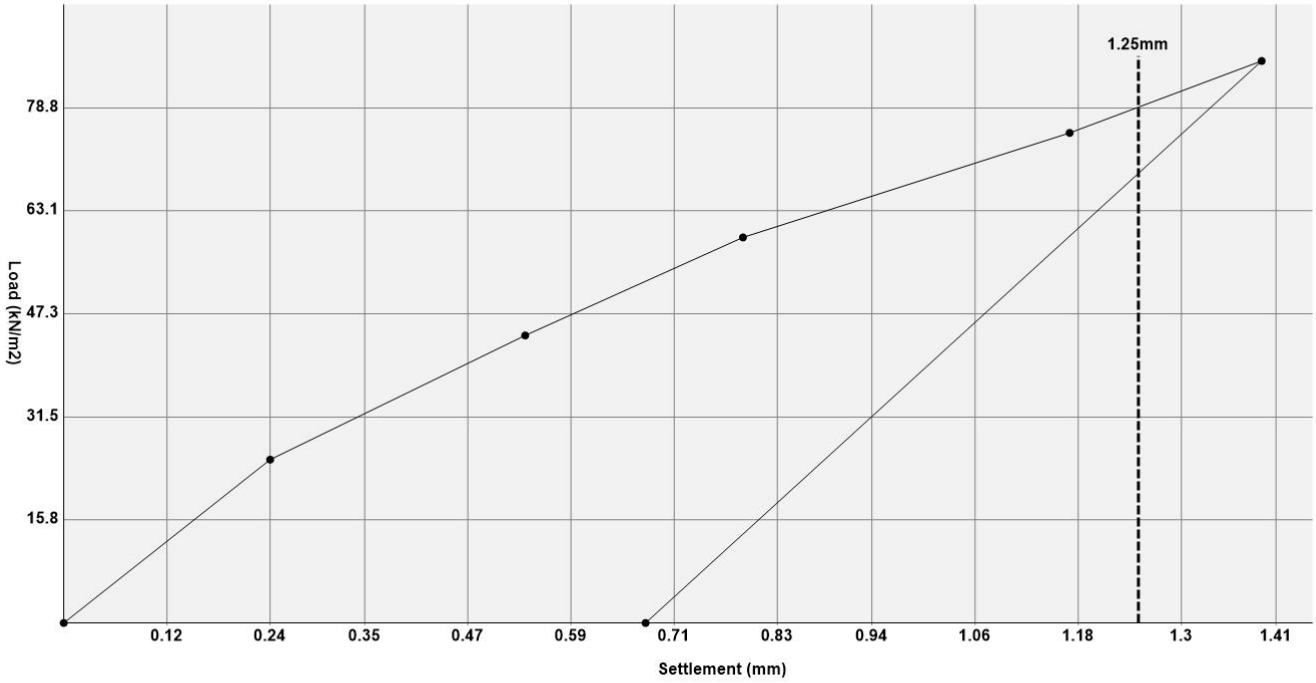
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 7
		^ **Test Location:**	B8 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
25	0.24
44	0.54
59	0.79
75	1.17
86	1.39
0	0.68



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **39453 kN/m2/m**
Equivalent CBR = **5.6 %**

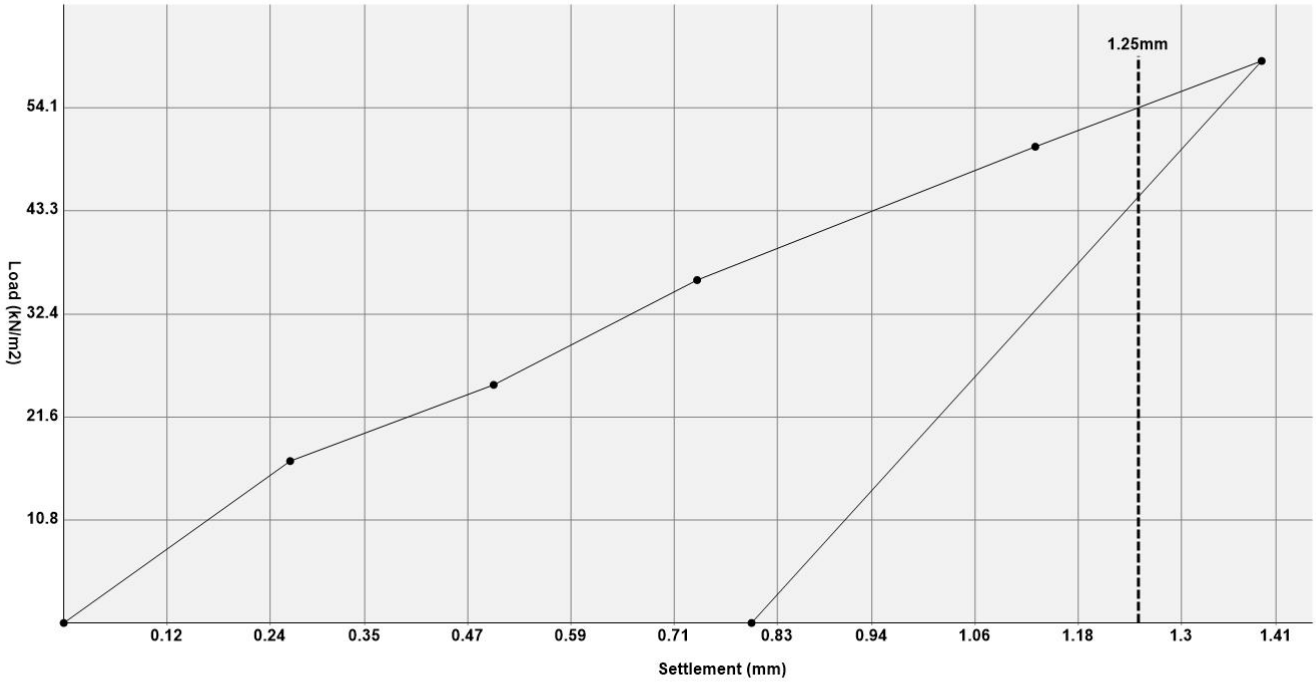
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 8
		^ **Test Location:**	B7 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
17	0.26
25	0.50
36	0.74
50	1.13
59	1.39
0	0.80



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **26968 kN/m2/m**
Equivalent CBR = **2.9 %**

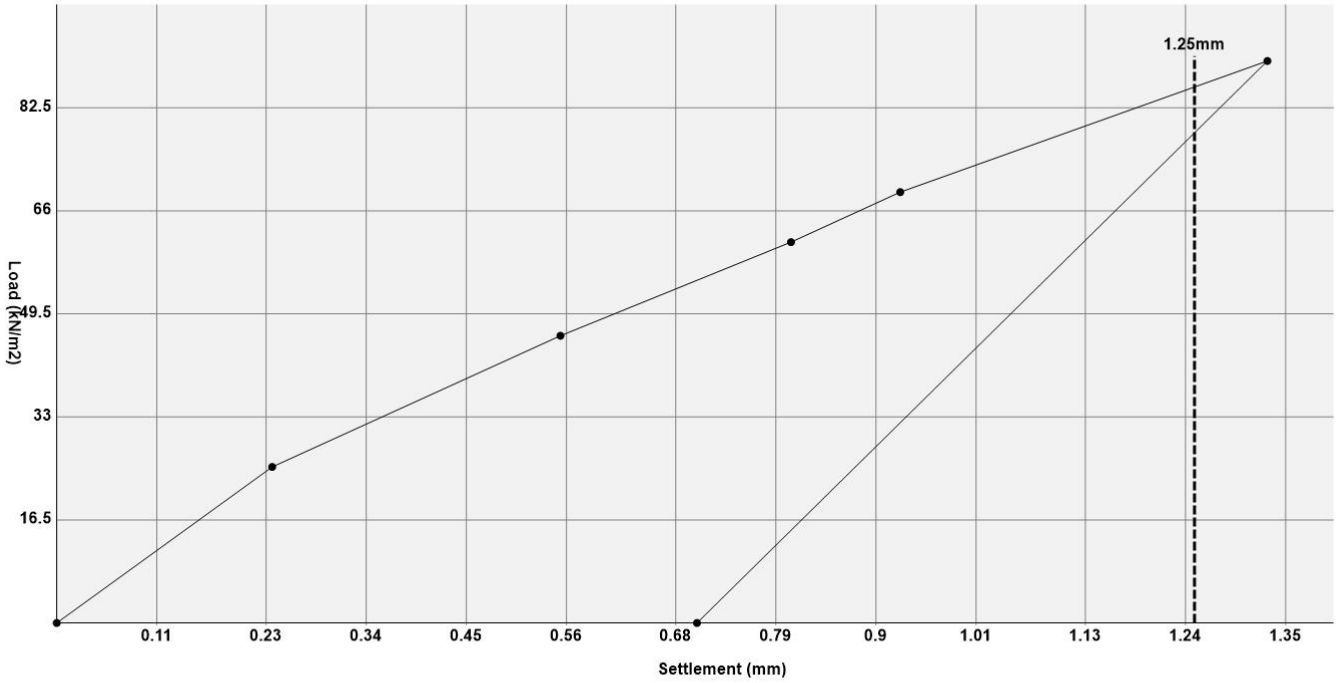
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 9
		^ **Test Location:**	B6 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
25	0.24
46	0.55
61	0.81
69	0.93
90	1.33
0	0.70



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **42949 kN/m2/m**
Equivalent CBR = **6.5 %**

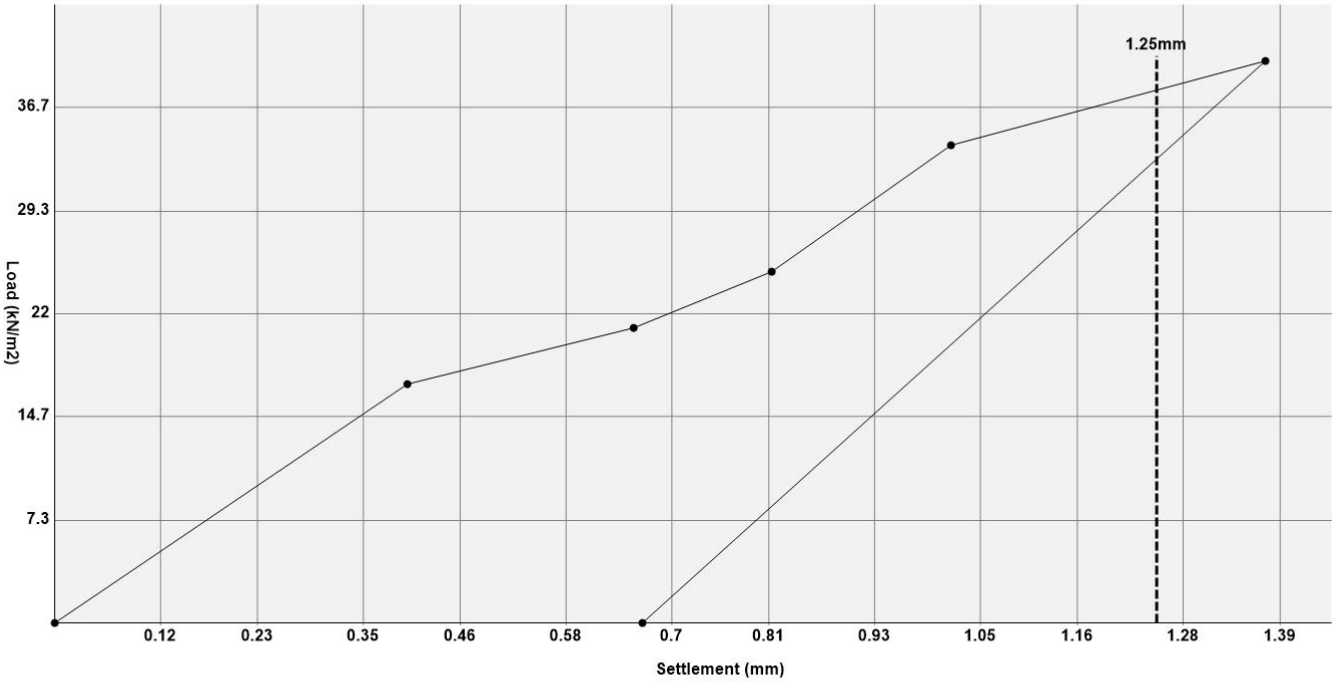
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 10
		^ **Test Location:**	B5 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
17	0.40
21	0.66
25	0.81
34	1.02
40	1.37
0	0.67



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **18977 kN/m2/m**
Equivalent CBR = **1.6 %**

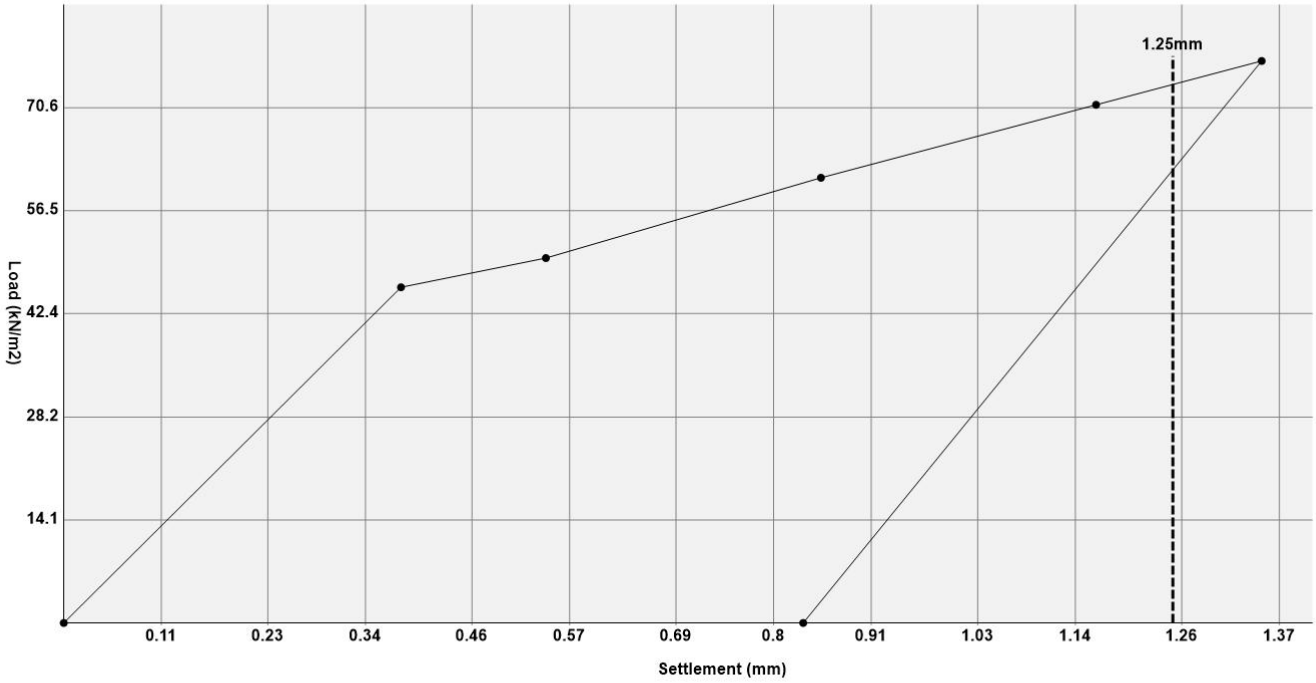
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 11
		^ **Test Location:**	E59 Layer2
Lab Ref.:	140720-03	**Layer:**	Laid
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
46	0.38
50	0.54
61	0.85
71	1.16
77	1.35
0	0.83



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **36956 kN/m2/m**
Equivalent CBR = **5 %**

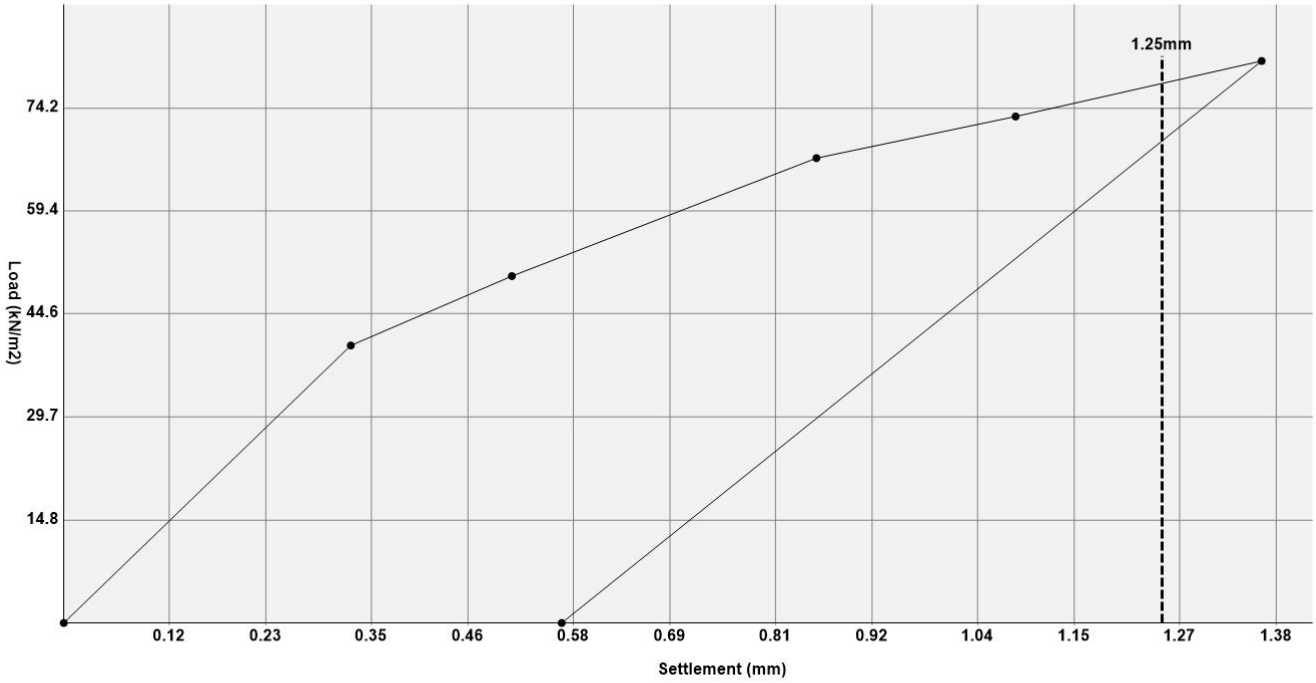
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 12
		^ **Test Location:**	E60 Layer2
Lab Ref.:	140720-03	**Layer:**	Laid
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
40	0.33
50	0.51
67	0.86
73	1.08
81	1.36
0	0.57



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **38954 kN/m2/m**
Equivalent CBR = **5.5 %**

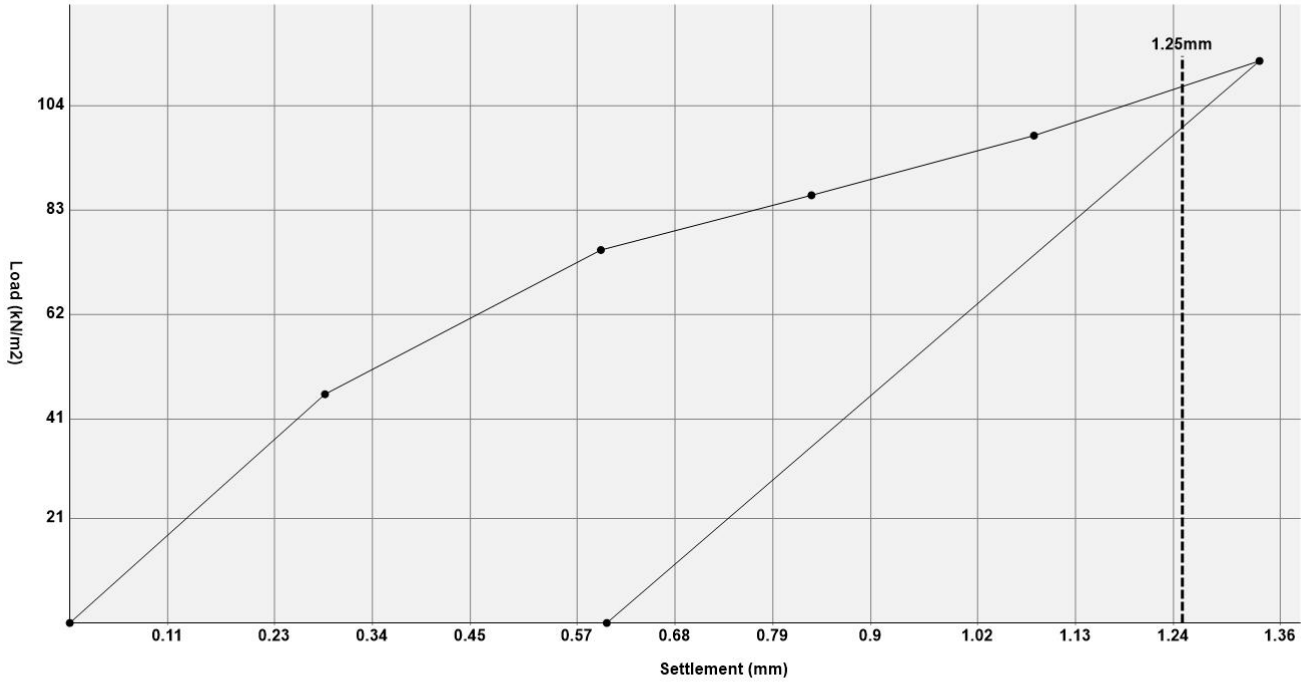
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 13
		^ **Test Location:**	E69 Formation
Lab Ref.:	140720-03	**Layer:**	Formation
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
46	0.29
75	0.60
86	0.83
98	1.08
113	1.34
0	0.60



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **53936 kN/m2/m**
Equivalent CBR = **9.7 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Job Nº:	140720-03	Client Ref:	IV.131.20	Date:	14/07/20	Weather:	fine				
Client:	Ivy House Environmental Ltd.			Tech Name:		PO					
Site:	Rockingham Logistics Hub, Corby			Max DD/OMC Source:		Client					
				MDD:	1820	PD:	2.69	OMC:			
				Density offset:				Moisture offset:			
				Test depth mm:		300		Time: 15 sec			
Material:	Brown gravelly, sandy CLAY			New MS	647			% Difference	0.46	%	
				New DS	1662			% Difference	0.03	%	

Nº	Wet density kg/m³	Dry Density kg/m³	Compaction %	MC %	Air Voids %	Plot and Grid	Level	Test No.	SRD
N	2149	1952	107.2	10.1	7.5	E59	L2	1	NO
S	2160	1921	105.5	12.4	4.4			AOD	
E	2041	1814	99.7	12.5	9.6			E	
W	2005	1804	99.1	11.2	12.6			N	
Mean	2089	1873	102.9	11.6	8.5				
N	2101	1871	102.8	12.3	7.2	E60	L2	2	NO
S	2138	1936	106.4	10.4	7.6			AOD	
E	2093	1888	103.8	10.8	9.1			E	
W	2206	1981	108.8	11.4	3.6			N	
Mean	2135	1919	105.5	11.2	6.9				

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Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
Derbyshire
DE72 3RX

Date: 8th July 2020

Lab Ref: 060720-04

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just before Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 6th July 2020 in order to carry out 5No. 450mm plate load tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

To carry out Nuclear Density Testing in accordance with **Documented In-House Method** SO33.

Results:

The individual result sheets may be viewed on pages 2 to 8 of this report.

Kiwa CMT Testing

Author: D. Spencer
Administrator

Checked and Approved by: Richard Cartlidge
Department Manager

Kiwa CMT

Job Nº:	060720-04	Client Ref: IV.131.20	Date: 06/07/20	Weather: fine	
Client:	IVY HOUSE ENVIROMENTAL		Tech Name:	PO	
Site:	Mitchell Road, Corby		Max DD/OMC Source:	CLIENT	
			MDD: 1820	PD: 2.68	OMC:
			Density offset:	Moisture offset:	
			Test depth mm: 300	Time: 15 sec	
Material:	Brown very gravelly, sandy CLAY		New MS 649	% Difference 0.11 %	
			New DS 1660	% Difference 0.27 %	

Nº	Wet density kg/m³	Dry Density kg/m³	Compaction %	MC %	Air Voids %	Plot and Grid	Level	Test No.	SRD
N	2154	1932	106.1	11.5	5.7	E 57		1	NO
S	2158	1928	105.9	11.9	5.1			AOD	
E	2059	1814	99.7	13.5	7.8			E	
W	2053	1894	104.1	8.4	13.4			N	
Mean	2106	1892	104.0	11.3	8.0				
N	2160	1918	105.4	12.6	4.3	E 58		2	NO
S	2206	1975	108.5	11.7	3.2			AOD	
E	2126	1907	104.8	11.5	6.9			E	
W	2160	1919	105.5	12.5	0.4			N	
Mean	2163	1930	106.1	12.1	3.7				
N	1942	1697	93.3	14.4	12.2	E 59		3	NO
S	1928	1626	89.3	18.6	9.1			AOD	
E	1948	1644	90.3	18.5	8.2			E	
W	2027	1727	94.9	17.4	5.5			N	
Mean	1961	1674	92.0	17.2	8.8				
N	2101	1914	105.1	9.8	9.8	E 48	1	4	NO
S	2012	1821	100.1	10.5	12.9			AOD	
E	2013	1793	98.5	12.3	11.1			E	
W	2046	1854	101.9	10.4	1.6			N	
Mean	2043	1846	101.4	10.8	8.9				
N	2064	1881	103.3	9.7	11.5	E 54	1	5	NO
S	1997	1790	98.3	11.6	12.5			AOD	
E	2054	1883	103.5	9.1	12.6			E	
W	2066	1856	102.0	11.3	9.8			N	
Mean	2045	1853	101.8	10.4	11.6				
N	2097	1892	104.0	10.8	8.9	E53	1	6	NO
S	2119	1919	105.4	10.4	8.4			AOD	
E	2133	1922	105.6	10.9	7.3			E	
W	2051	1843	101.3	11.2	10.5			N	
Mean	2100	1894	104.1	10.8	8.8				
N	2121	1890	103.8	12.2	6.4	E 47	1	7	NO
S	2181	1993	109.5	9.4	6.9			AOD	
E	2146	1946	106.9	10.3	7.4			E	
W	2052	1839	101.1	11.6	10.1			N	
Mean	2125	1917	105.3	10.9	7.7				
N	2085	1906	104.7	9.4	11.0	E 35	1	8	NO
S	2059	1887	103.7	9.2	12.3			AOD	
E	2084	1898	104.3	9.8	10.6			E	
W	2119	1933	106.2	9.6	9.3			N	
Mean	2087	1906	104.7	9.5	10.8				

Kiwa CMT

Job Nº:	060720-04	Client Ref:	IV.131.20	Date:	06/07/20	Weather:	fine				
Client:	Ivy House			Tech Name:		PO					
Site:	Mitchell Road, Corby			Max DD/OMC Source:		Client					
				MDD:	1820	PD:	2.68	OMC:			
				Density offset:				Moisture offset:			
				Test depth mm:		300		Time: 15 sec			
Material:	Brown very gravelly, sandy CLAY			New MS	649			% Difference	0.11	%	
				New DS	1660			% Difference	0.27	%	

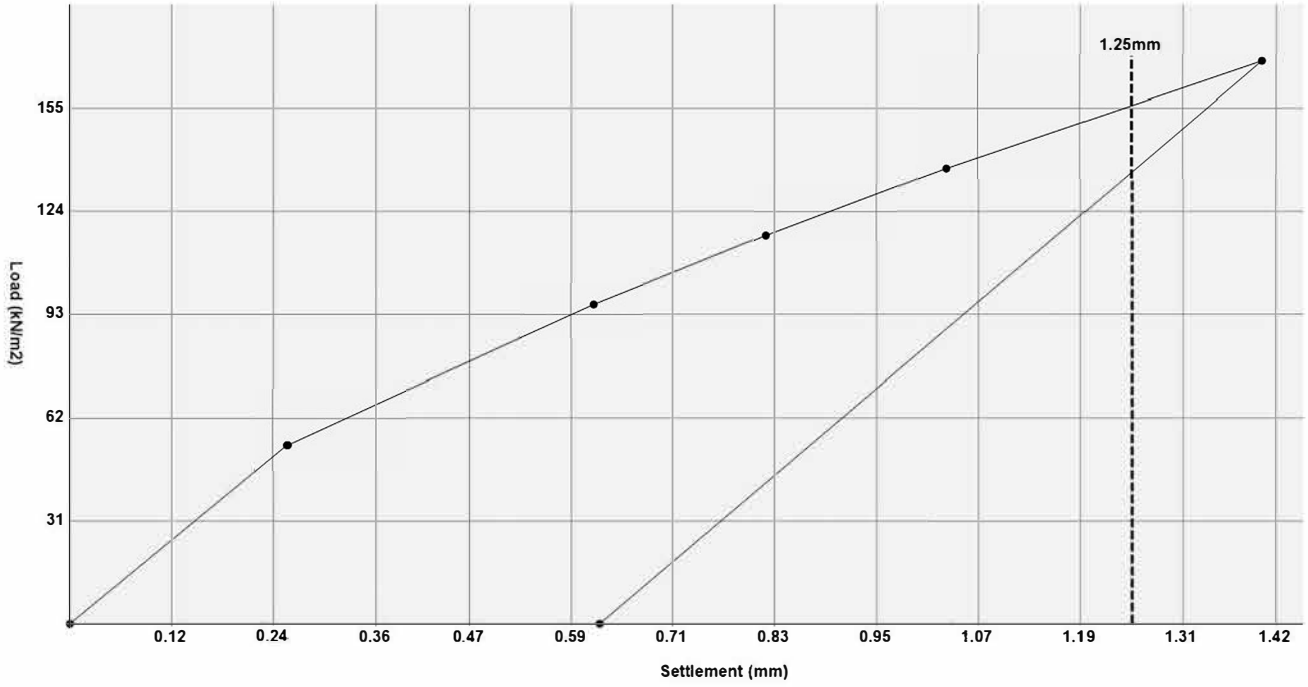
Nº	Wet density kg/m³	Dry Density kg/m³	Compaction %	MC %	Air Voids %	Plot and Grid	Level	Test No.	SRD
N	2011	1752	96.2	14.8	8.7	E 46	1	9	NO
S	2027	1750	96.2	15.8	7.0			AOD	
E	1960	1690	92.8	16.0	9.9			E	
W	1980	1699	93.3	16.5	8.5			N	
Mean	1995	1723	94.6	15.8	8.5				
N	2038	1880	103.3	8.4	14.1	E 41	1	10	NO
S	2077	1936	106.4	7.3	13.6			AOD	
E	2051	1917	105.3	7.0	15.1			E	
W	1988	1839	101.1	8.1	16.5			N	
Mean	2039	1893	104.0	7.7	14.8				
N	2075	1857	102.0	11.7	8.9	E 42	1	11	NO
S	2005	1752	96.2	14.5	9.3			AOD	
E	1991	1749	96.1	13.8	10.6			E	
W	2105	1877	103.1	12.2	7.1			N	
Mean	2044	1809	99.4	13.1	9.0				

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown very gravelly, sandy CLAY
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 1
		^ **Test Location:**	E 57
Lab Ref.:	060720-04	**Layer:**	Laid
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	06/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
54	0.26
96	0.62
117	0.82
137	1.03
169	1.40
0	0.62



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **77908 kN/m2/m**
Equivalent CBR = **18.3 %**

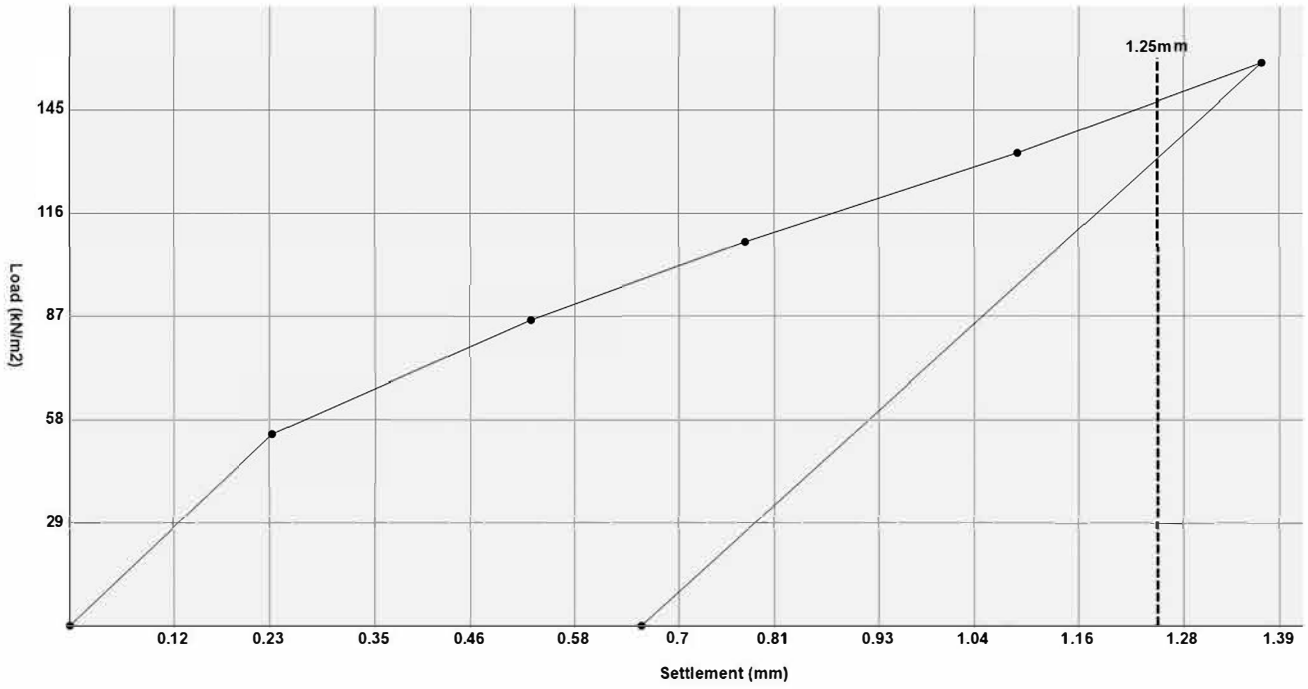
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown very gravelly, sandy CLAY
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 2
		^ **Test Location:**	E 58
Lab Ref.:	060720-04	**Layer:**	Laid
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	06/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
54	0.23
86	0.53
108	0.78
133	1.09
158	1.37
0	0.66



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **73413 kN/m2/m**
Equivalent CBR = **16.5 %**

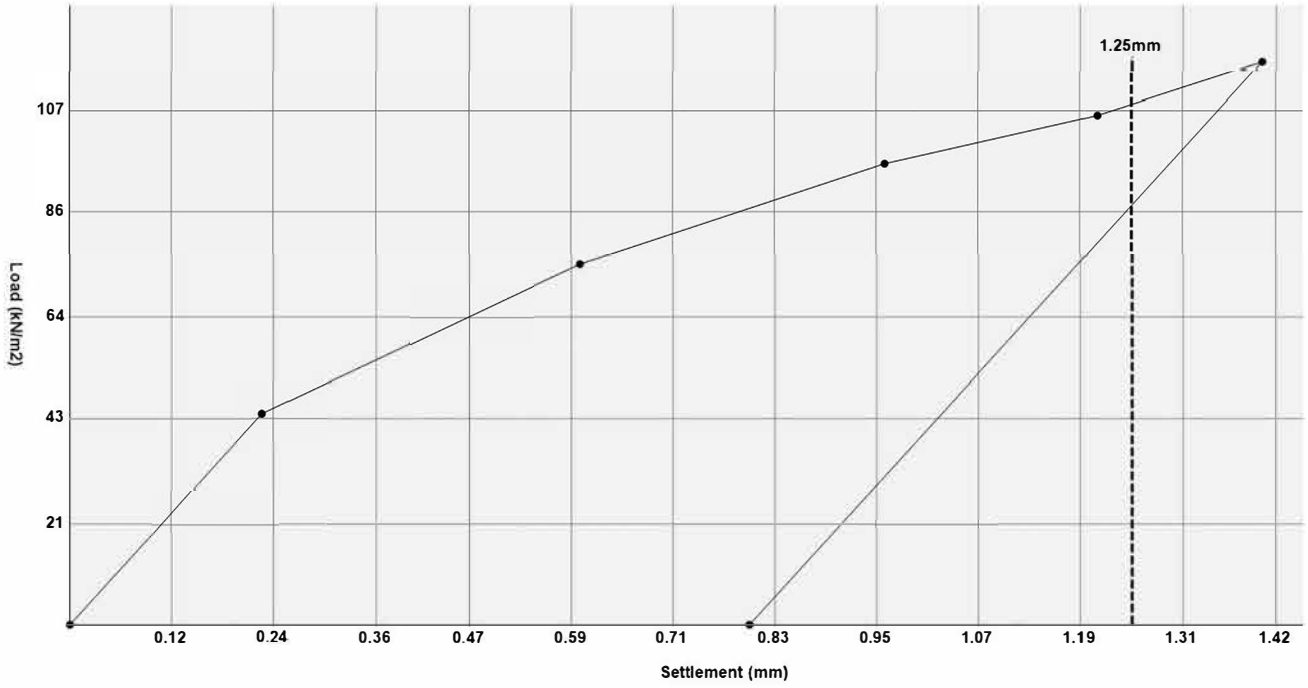
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown very gravelly, sandy CLAY
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 3
		^ **Test Location:**	E 59
Lab Ref.:	060720-04	**Layer:**	Laid
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	06/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
44	0.23
75	0.60
96	0.96
106	1.21
117	1.40
0	0.80



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **53936 kN/m2/m**
Equivalent CBR = **9.7 %**

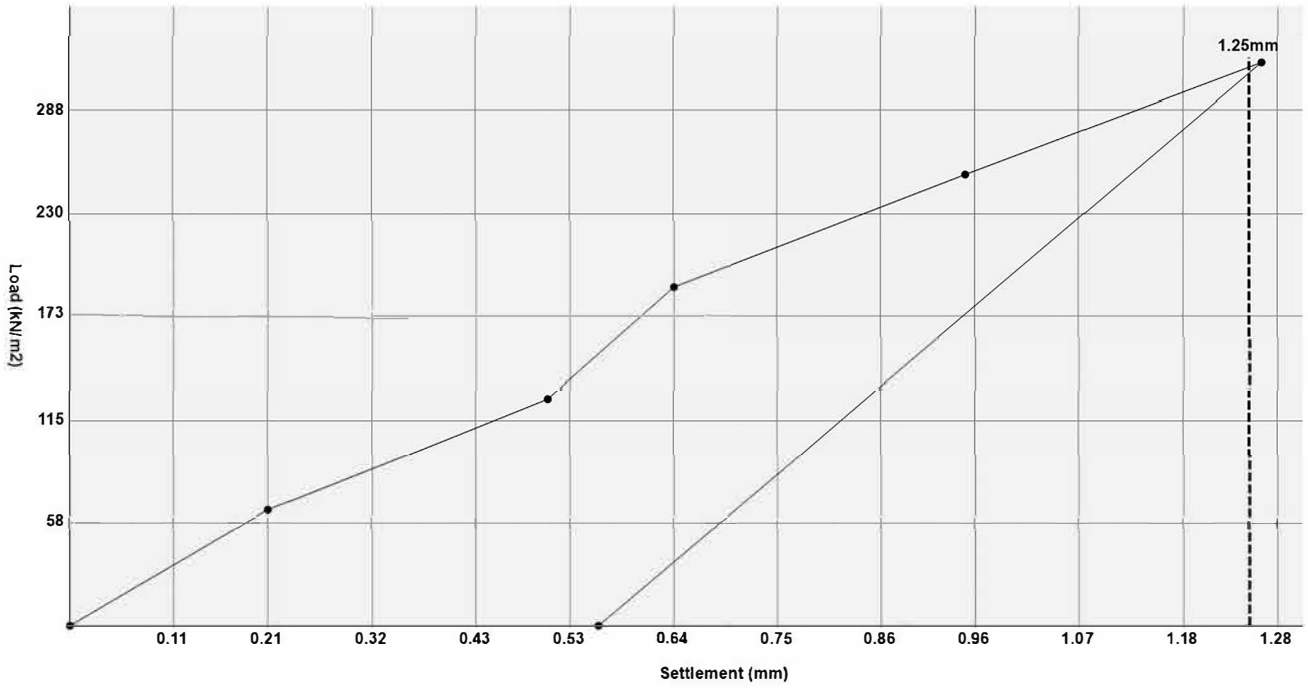
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown very gravelly, sandy CLAY
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 4
		^ **Test Location:**	E 50
Lab Ref.:	060720-04	**Layer:**	Laid
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	06/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.21
127	0.51
189	0.64
252	0.95
314	1.26
0	0.56



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **155316 kN/m2/m**
Equivalent CBR = **60.5 %**

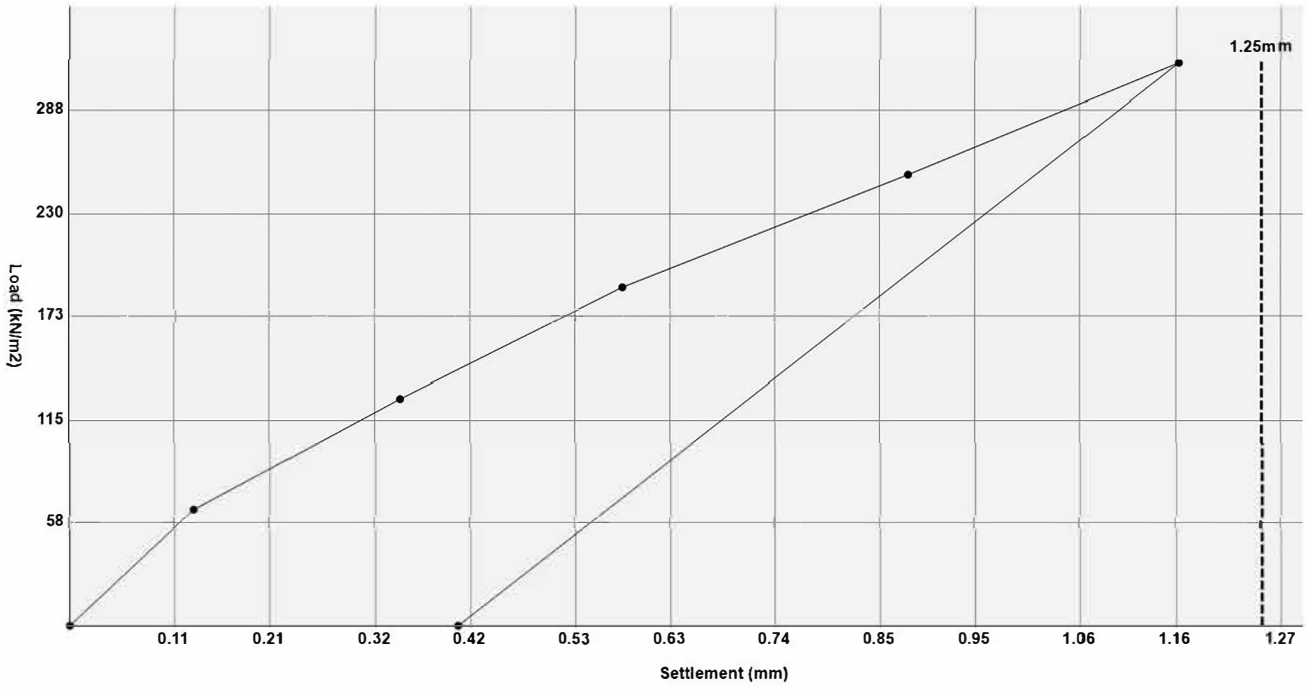
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown very gravelly, sandy CLAY
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 5
		^ **Test Location:**	E 51
Lab Ref.:	060720-04	**Layer:**	Laid
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	06/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.13
127	0.35
189	0.58
252	0.88
314	1.16
0	0.41



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

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Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
Derbyshire
DE72 3RX

Date: 8th July 2020

Lab Ref: 030720-02

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just before Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 3rd July 2020 in order to carry out 11 Plate bearings for equivalent CBR% tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

To carry out Nuclear Density Testing in accordance with **Documented In-House Method** SO33.

Results:

The individual result sheets may be viewed on pages 2 to 13 of this report.

Kiwa CMT Testing

Author: D. Spencer
Administrator

Checked and Approved by: Richard Cartlidge
Department Manager

Kiwa CMT

Job Nº:	030720-02	Client Ref:	IV.131.20	Date:	03/07/20
Weather:	fine				
Client:	IVY HOUSE ENVIRONMENTAL			Tech Name:	PO
Site:	Mitchell Road, Corby, Just before Rockingham Speedway			Max DD/OMC Source:	CLIENT
				MDD:	1820
PD:	2.68	OMC:			
Density offset:		Moisture offset:			
Test depth mm:	300	Time: 15 sec			
Material:	Brown very gravelly,sandy CLAY			New MS	651
% Difference	0.07	%			
New DS	1665	% Difference	0.25g	%	

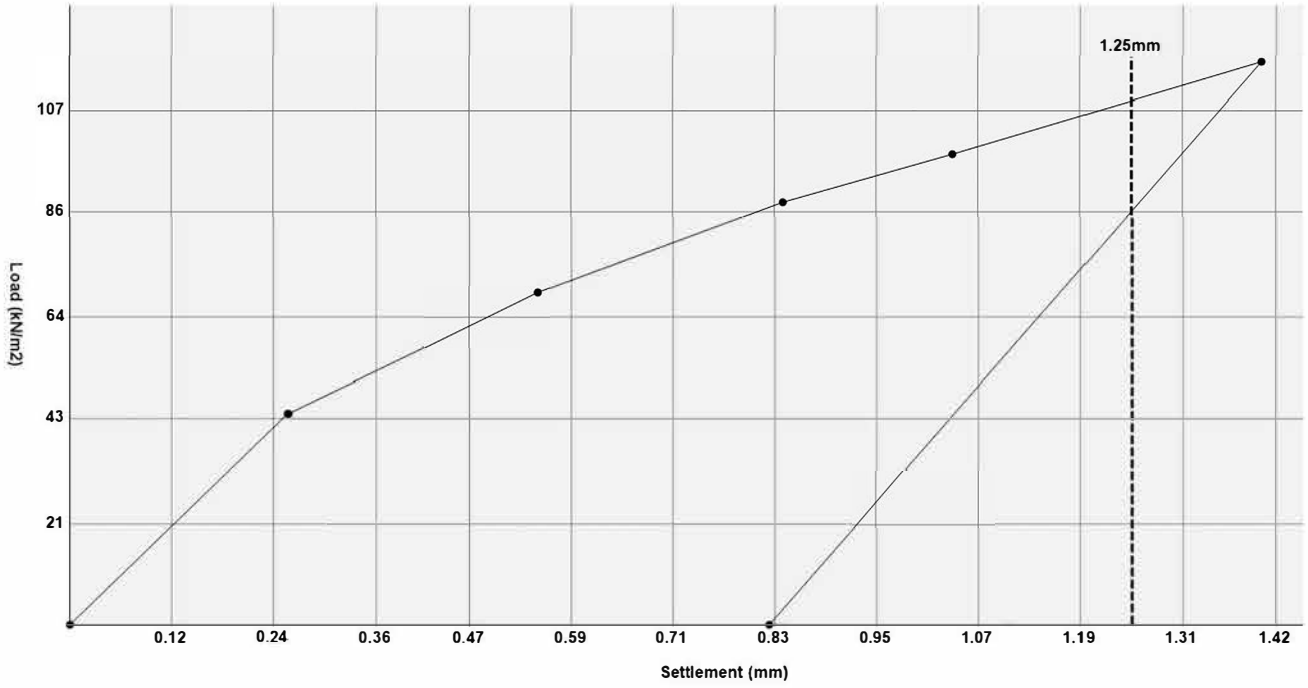
Nº	Wet density kg/m³	Dry Density kg/m³	Compaction %	MC %	Air Voids %	Plot and Grid	Level	Test No.	SRD
N	2113	1867	102.6	13.2	5.7			B5	NO
S	2153	1936	106.4	11.2	6.1			AOD	
E	2073	1834	100.8	13.0	7.7			E	
W	2102	1872	102.9	12.3	7.1			N	
Mean	2110	1877	103.2	12.4	6.7				
N	2105	1844	101.3	14.1	5.1			B6	NO
S	2199	1954	107.3	12.5	2.6			AOD	
E	2040	1782	97.9	14.5	7.7			E	
W	2140	1889	103.8	13.3	4.4			N	
Mean	2121	1867	102.6	13.6	5.0				
N	2164	1983	109.0	9.1	7.9			B7	NO
S	2104	1913	105.1	10.0	9.5			AOD	
E	2116	1849	101.6	14.5	4.2			E	
W	2144	1879	103.3	14.1	3.4			N	
Mean	2132	1906	104.8	11.9	6.3				
N	2363	2217	121.8	6.6	2.7			B8	NO
S	2483	2358	129.6	5.3	-0.5			AOD	
E	2246	2115	116.2	6.2	8.0			E	
W	2173	2037	111.9	6.7	10.4			N	
Mean	2316	2182	119.9	6.2	5.2				

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown very Gravelly Sandy CLAY
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 1
		^ **Test Location:**	B 5
Lab Ref.:	030720-02	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
44	0.26
69	0.55
88	0.84
98	1.04
117	1.40
0	0.82



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **54435 kN/m2/m**
Equivalent CBR = **9.8 %**

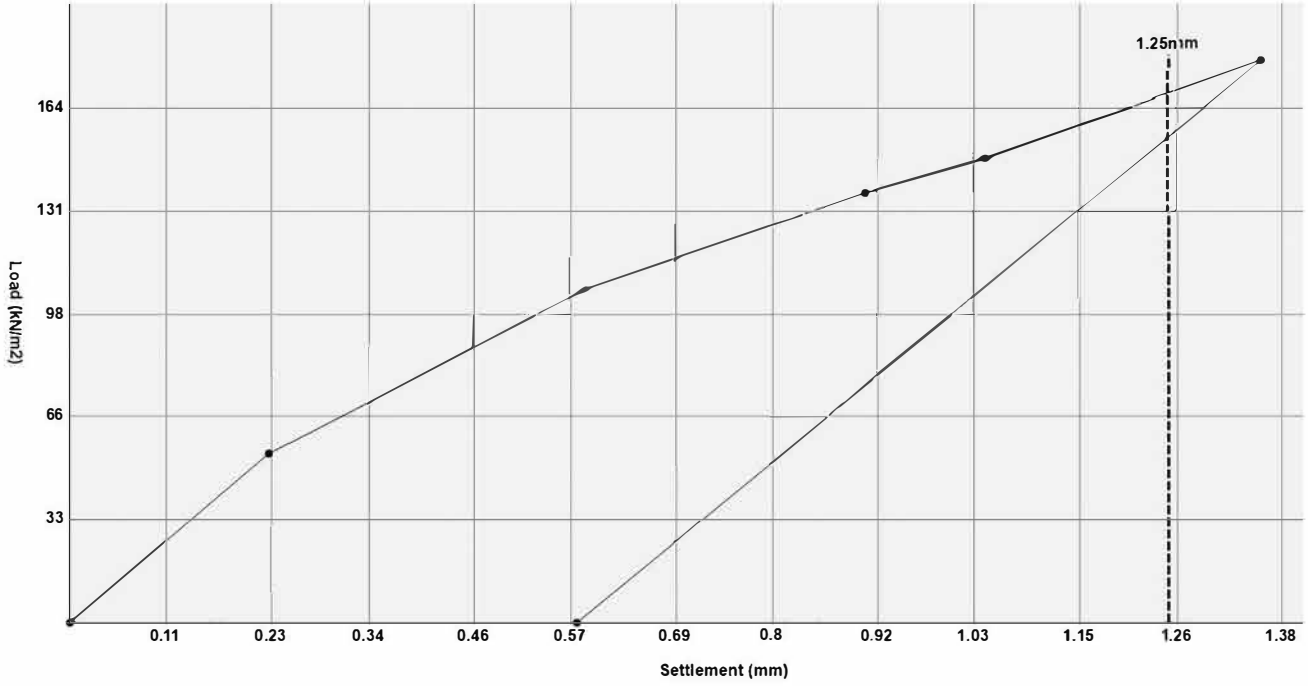
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown very Gravelly Sandy CLAY
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 2
		^ **Test Location:**	B 6
Lab Ref.:	030720-02	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
54	0.23
106	0.59
137	0.91
148	1.04
179	1.36
0	0.58



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **83900 kN/m2/m**
Equivalent CBR = **20.8 %**

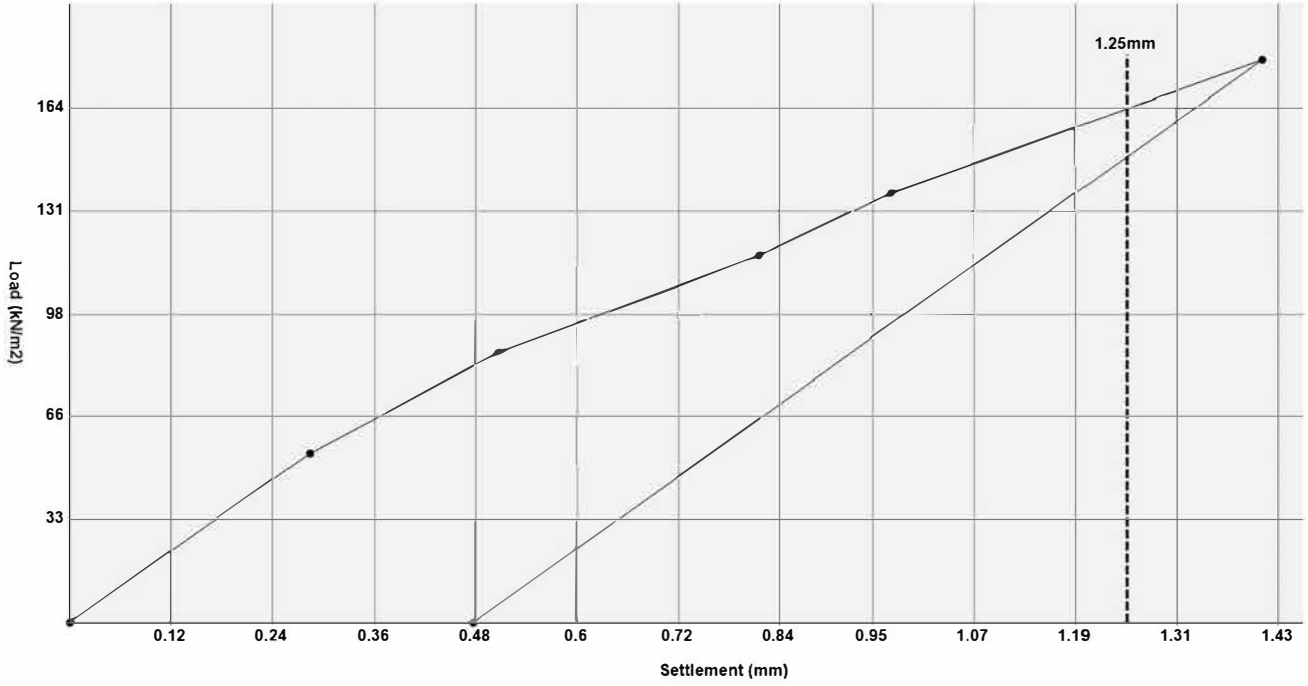
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown very Gravelly Sandy CLAY
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 3
		^ **Test Location:**	B 7
Lab Ref.:	030720-02	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
54	0.28
86	0.51
117	0.82
137	0.97
179	1.41
0	0.48



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **81903 kN/m2/m**
Equivalent CBR = **20 %**

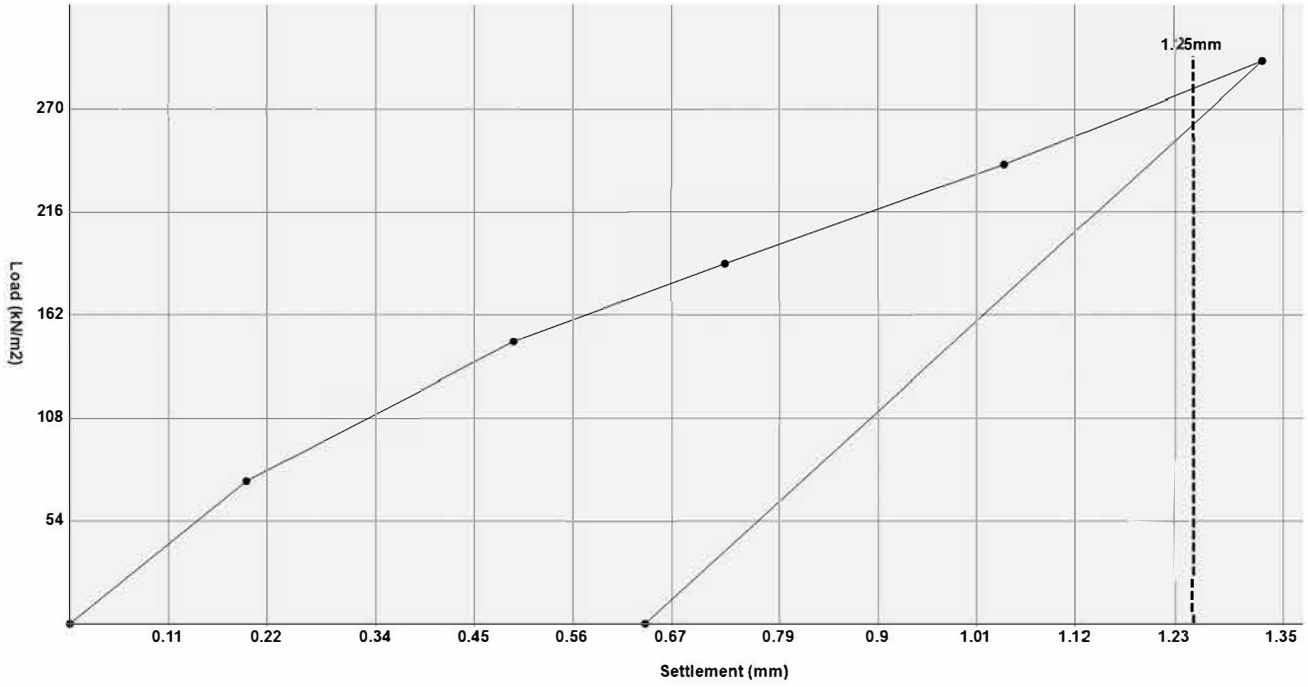
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown very Gravelly Sandy CLAY
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 4
		^ **Test Location:**	B 8
Lab Ref.:	030720-02	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
75	0.20
148	0.49
189	0.73
241	1.04
295	1.33
0	0.64



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **140333 kN/m2/m**
Equivalent CBR = **50.7 %**

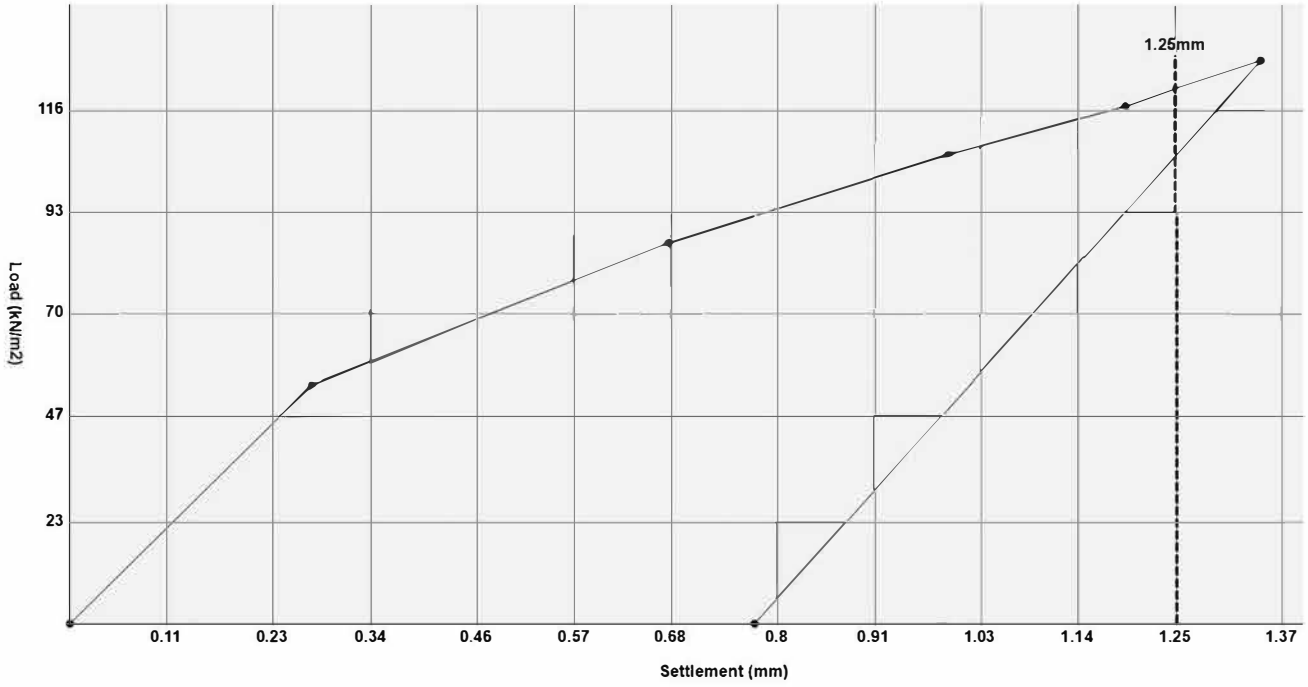
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown very Gravelly Sandy CLAY
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 5
		^ **Test Location:**	B 1
Lab Ref.:	030720-02	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
54	0.27
86	0.68
106	0.99
117	1.19
127	1.35
0	0.77



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **60428 kN/m2/m**
Equivalent CBR = **11.8 %**

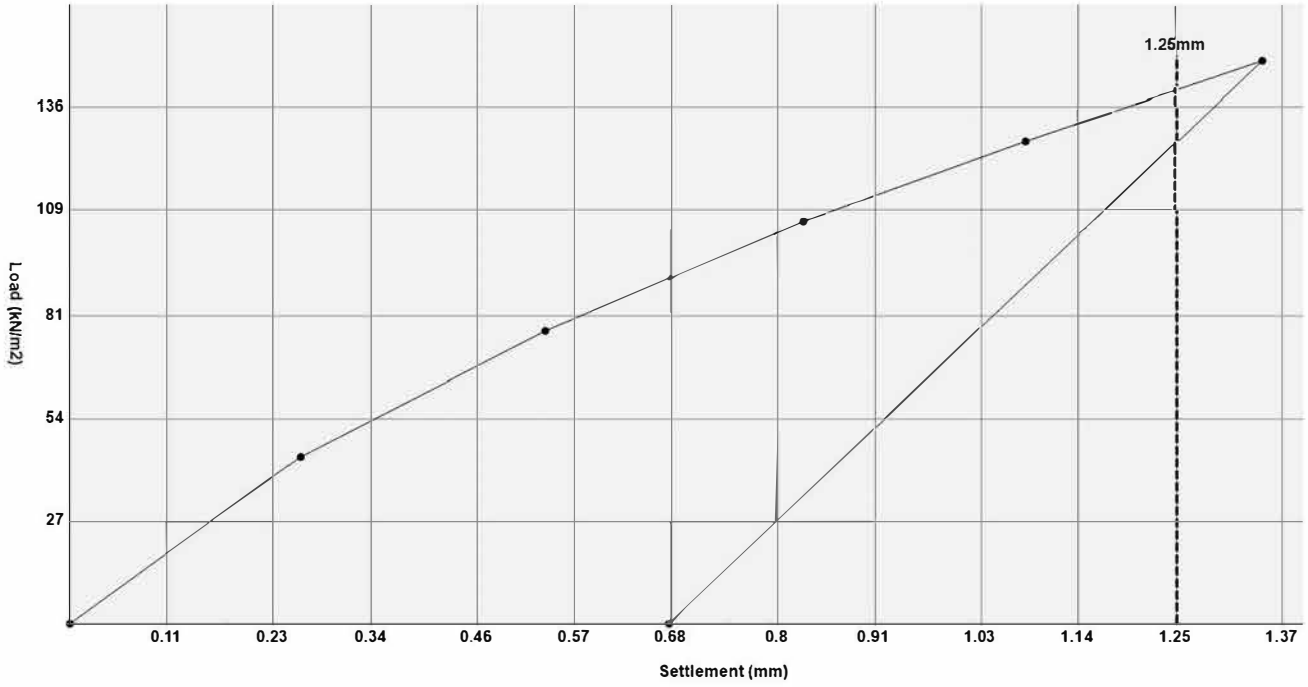
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown very Gravelly Sandy CLAY
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 6
		^ **Test Location:**	B 2
Lab Ref.:	030720-02	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
44	0.26
77	0.54
106	0.83
127	1.08
148	1.35
0	0.68



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **69917 kN/m2/m**
Equivalent CBR = **15.2 %**

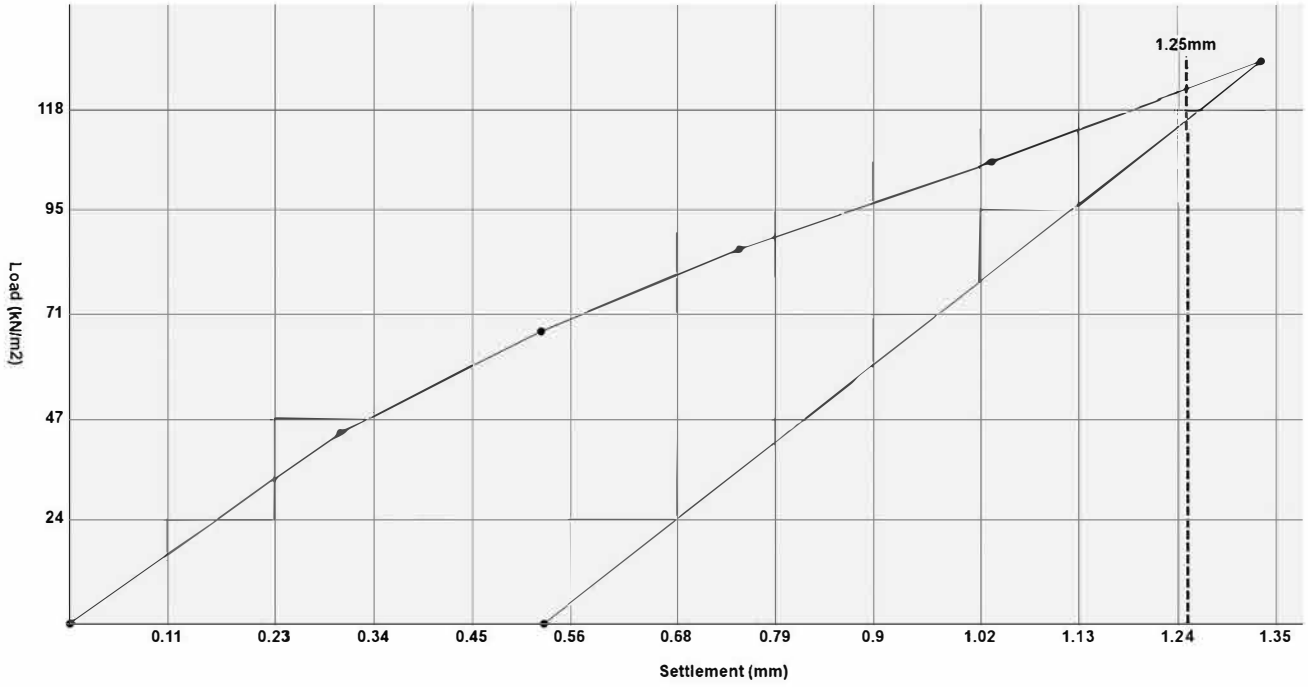
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown very Gravelly Sandy CLAY
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 7
		^ **Test Location:**	B 3
Lab Ref.:	030720-02	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
44	0.30
67	0.53
86	0.75
106	1.03
129	1.33
0	0.53



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **61427 kN/m2/m**
Equivalent CBR = **12.1 %**

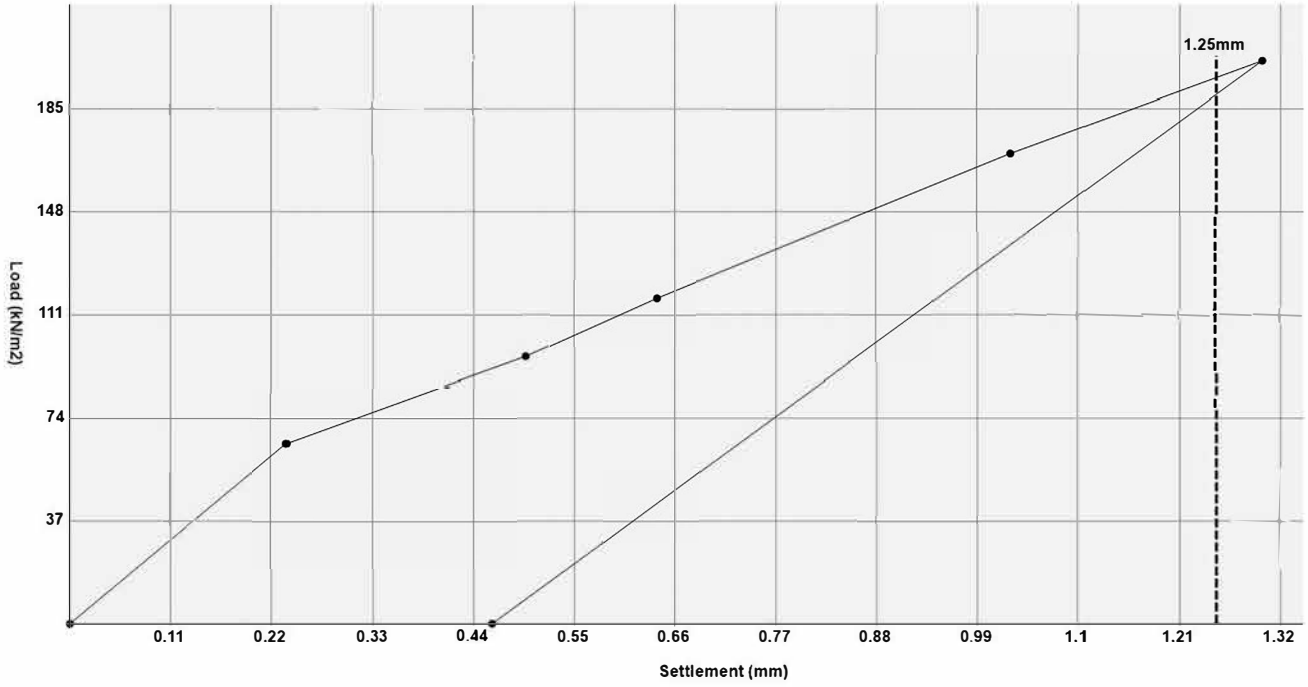
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown very Gravelly Sandy CLAY
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 8
		^ **Test Location:**	B 4
Lab Ref.:	030720-02	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.24
96	0.50
117	0.64
169	1.03
202	1.30
0	0.46



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **97884 kN/m2/m**
Equivalent CBR = **27.2 %**

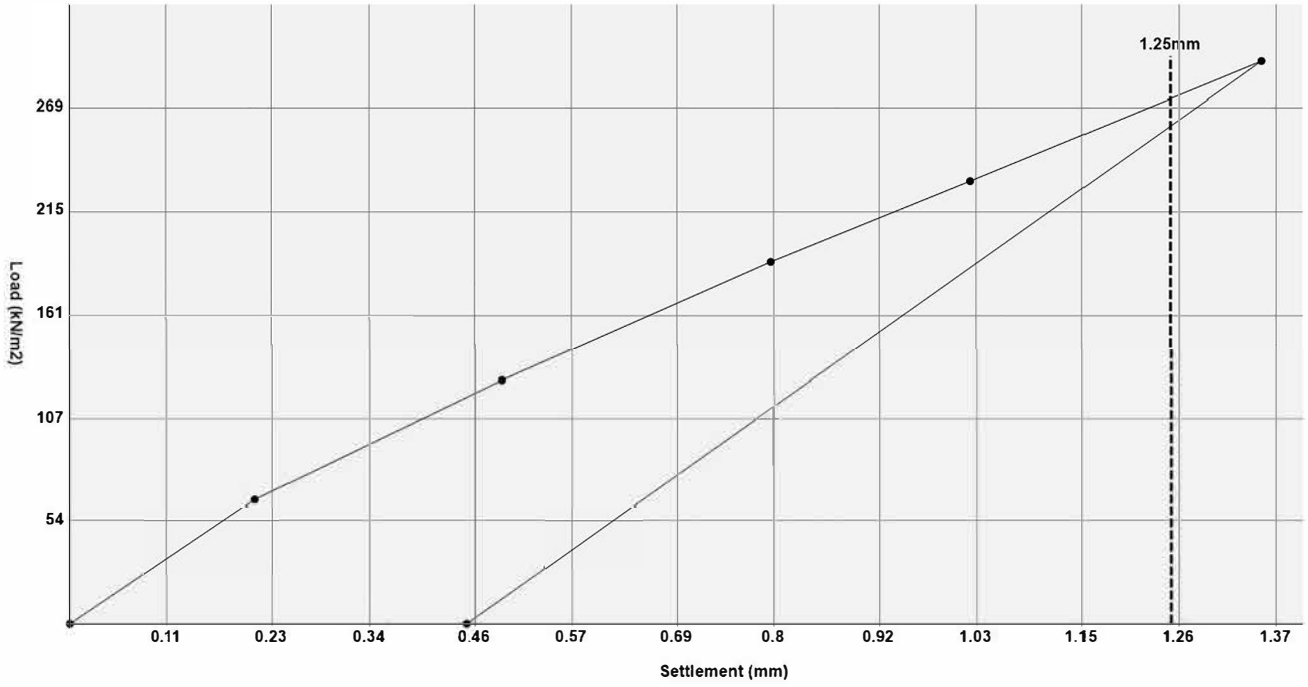
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown very Gravelly Sandy CLAY
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 9
		^ **Test Location:**	E 47
Lab Ref.:	030720-02	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.21
127	0.49
189	0.80
231	1.02
293	1.35
0	0.45



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **136838 kN/m2/m**
Equivalent CBR = **48.6 %**

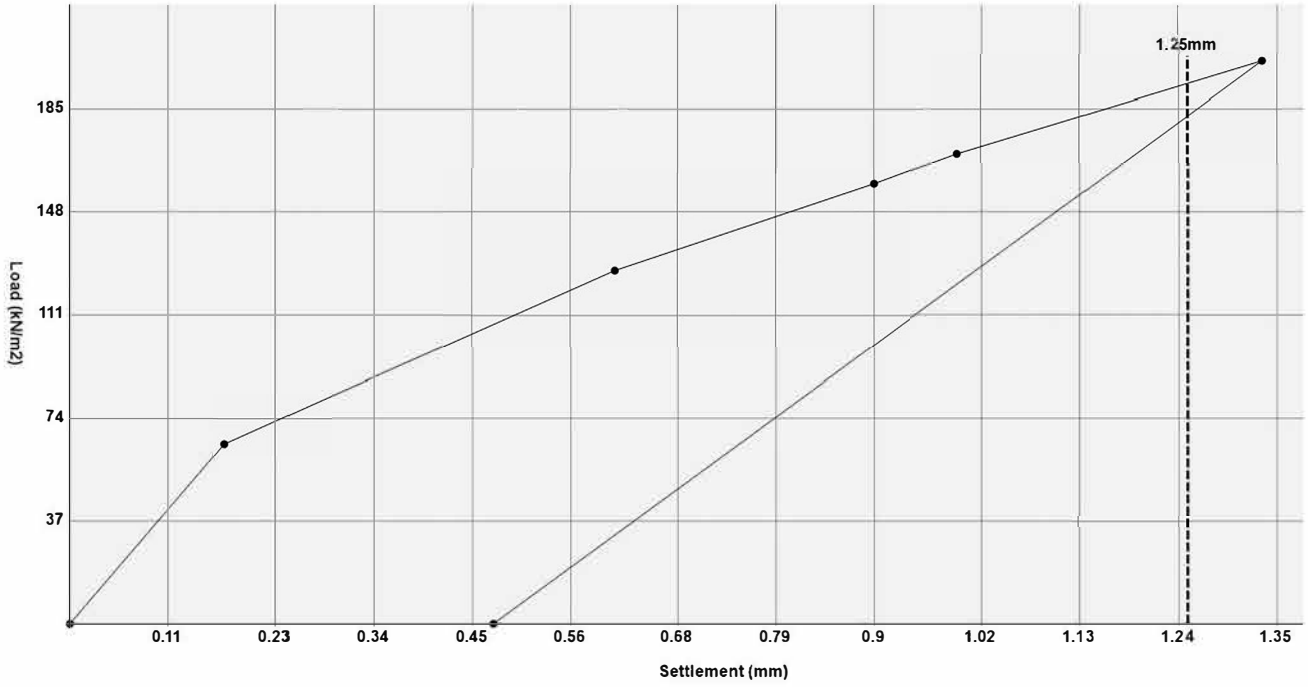
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown very Gravelly Sandy CLAY
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 10
		^ **Test Location:**	E 53
Lab Ref.:	030720-02	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.17
127	0.61
158	0.90
169	0.99
202	1.33
0	0.47



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **96885 kN/m2/m**
Equivalent CBR = **26.7 %**

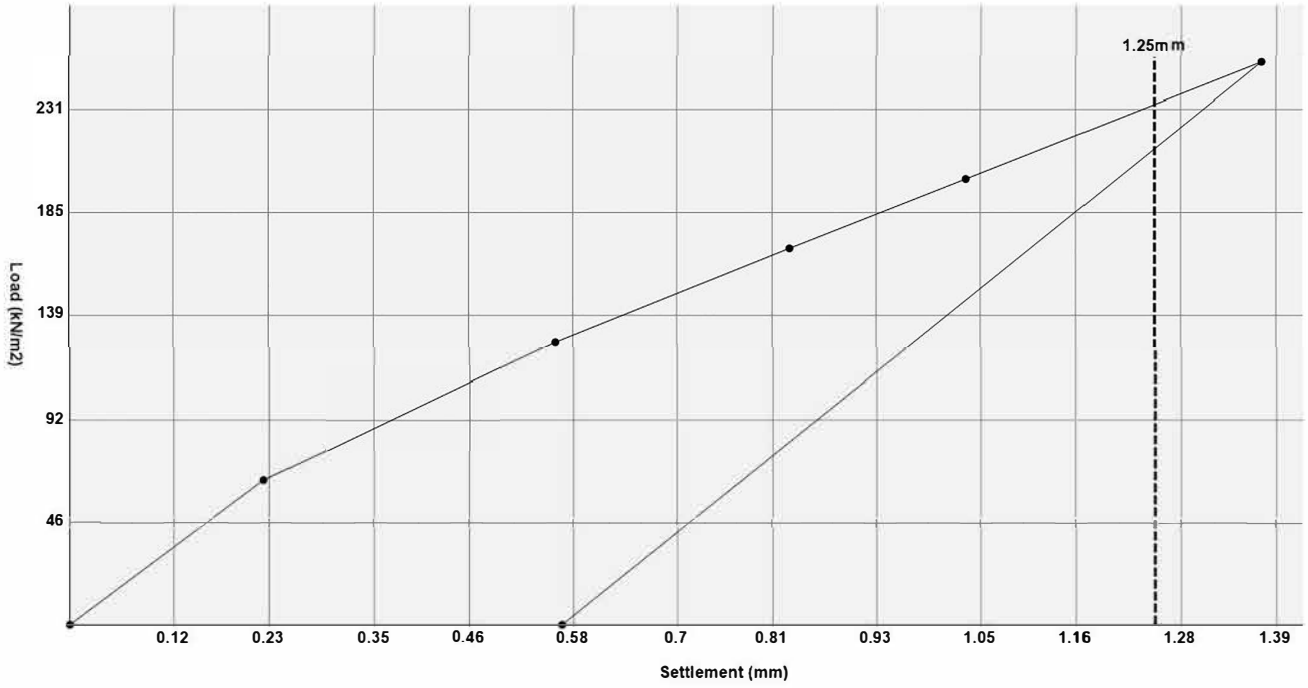
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown very Gravelly Sandy CLAY
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 11
		^ **Test Location:**	E 52
Lab Ref.:	030720-02	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.22
127	0.56
169	0.83
200	1.03
252	1.37
0	0.57



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **116362 kN/m2/m**
Equivalent CBR = **36.7 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Kiwa CMT Testing
Unit 5 Prime Park Way
Prime Enterprise Park
Derby
DE1 3QB

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F +44 (0)1332 602607
E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
Derbyshire
DE72 3RX

Date: 22nd July 2020

Lab Ref: 170720-03

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just before Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 17th July 2020 in order to carry out 11 Plate bearings for equivalent CBR% tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

To carry out Nuclear Density Testing in accordance with **Documented In-House Method** SO35.

Results:

The individual result sheets may be viewed on pages 2 to 14 of this report.

Kiwa CMT Testing

Author: D. Spencer
Administrator

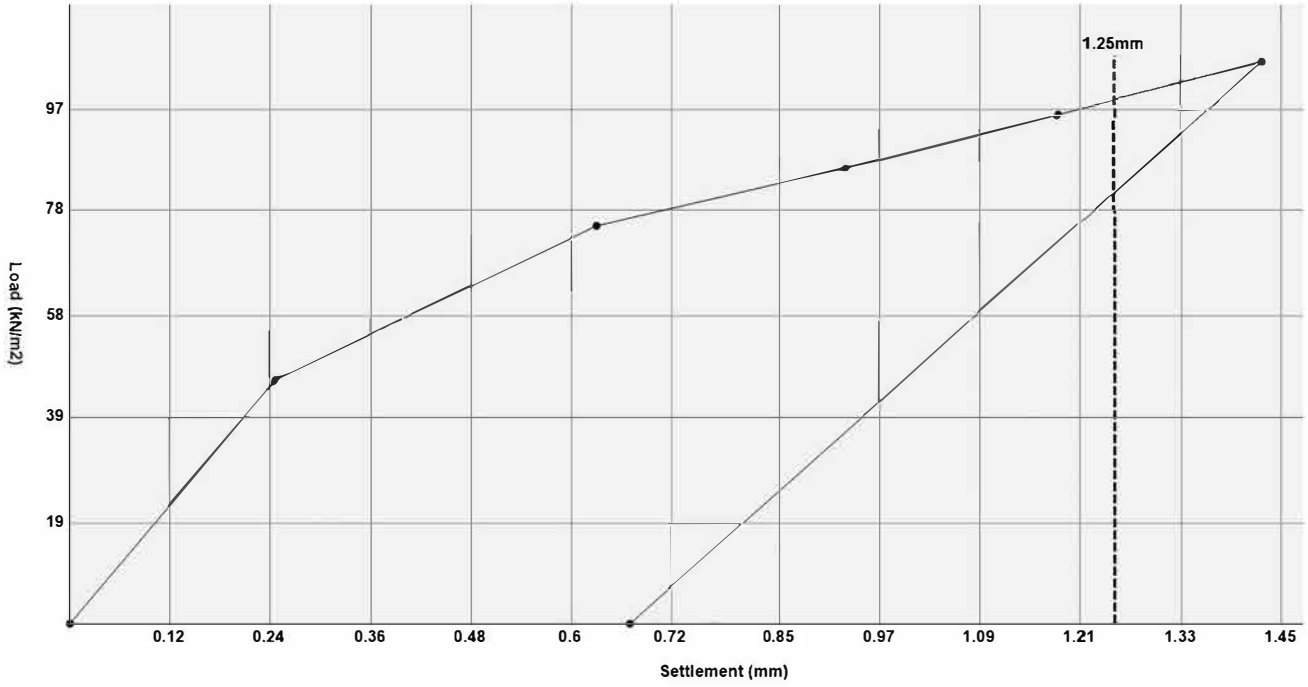
Checked and Approved by: Richard Cartlidge
Department Manager

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 1
		^ **Test Location:**	E32 Site Won, Layer1
Lab Ref.:	170720-03	**Layer:**	Laid.
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	17/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
46	0.25
75	0.63
86	0.93
96	1.18
106	1.43
0	0.67



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **49441 kN/m2/m**
Equivalent CBR = **8.3 %**

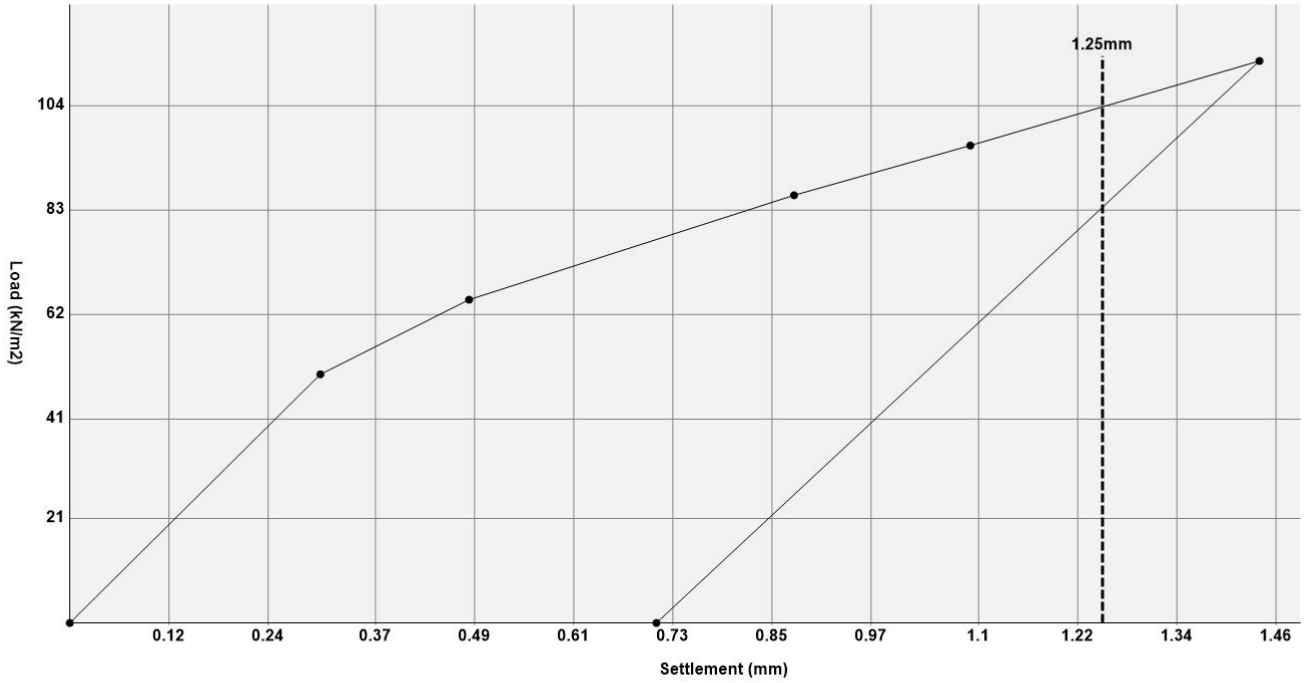
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 2
		^ **Test Location:**	E38 Site Won, Layer1
Lab Ref.:	170720-03	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	17/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
50	0.30
65	0.48
86	0.88
96	1.09
113	1.44
0	0.71



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **51938 kN/m2/m**
Equivalent CBR = **9.1 %**

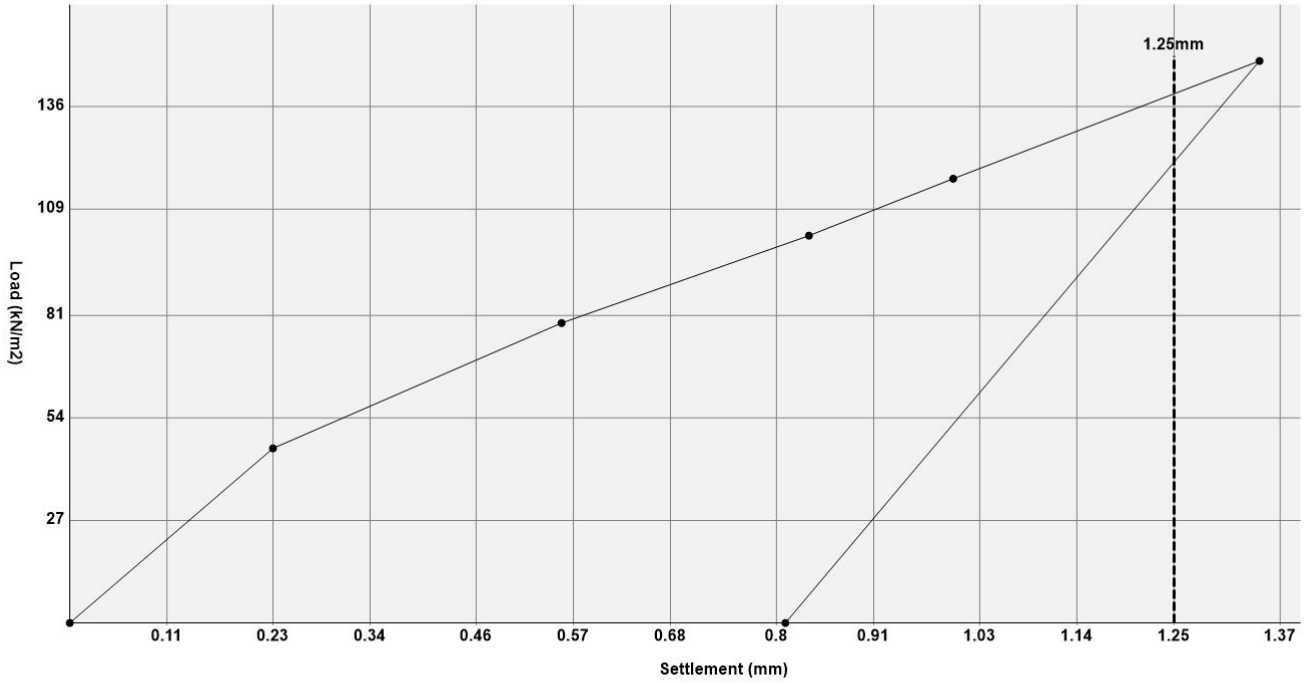
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 3
		^ **Test Location:**	E34 Site Won, Layer1
Lab Ref.:	170720-03	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	17/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
46	0.23
79	0.56
102	0.84
117	1.00
148	1.35
0	0.81



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **69418 kN/m2/m**
Equivalent CBR = **15 %**

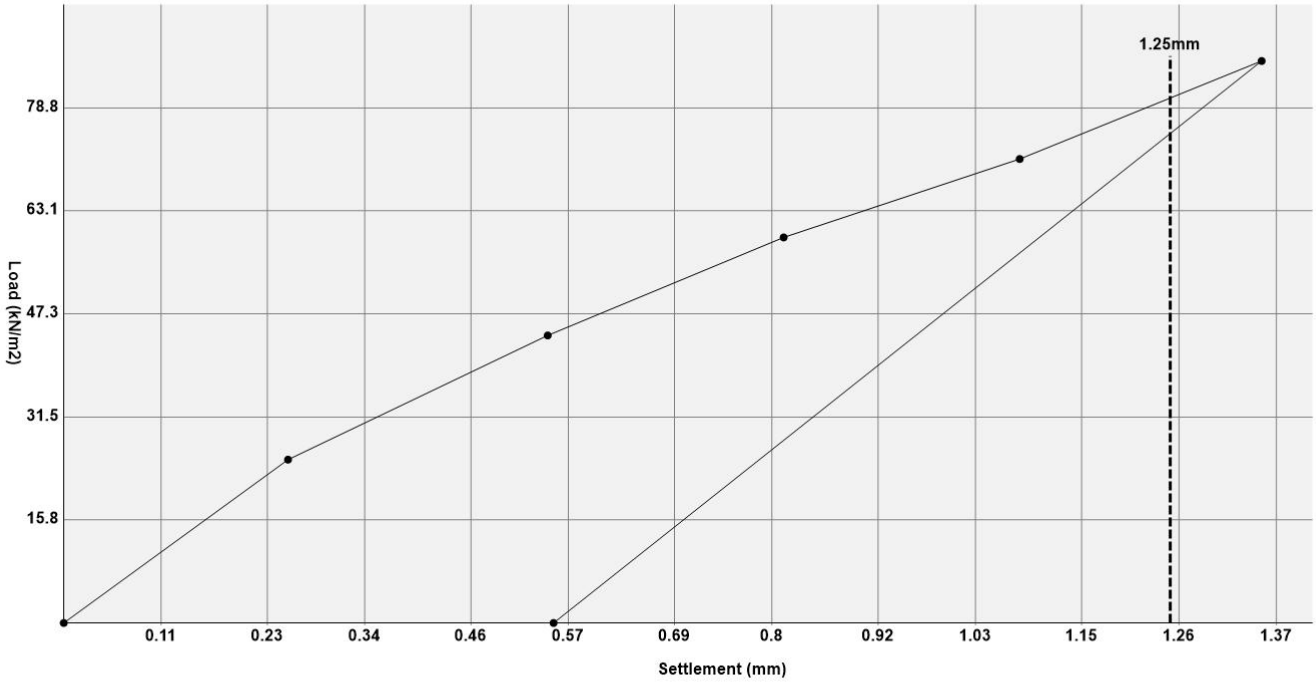
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 4
		^ **Test Location:**	B5 6F5 Final Layer
Lab Ref.:	170720-03	**Layer:**	Capping
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	17/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
25	0.25
44	0.55
59	0.81
71	1.08
86	1.35
0	0.55



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **39953 kN/m2/m**
Equivalent CBR = **5.8 %**

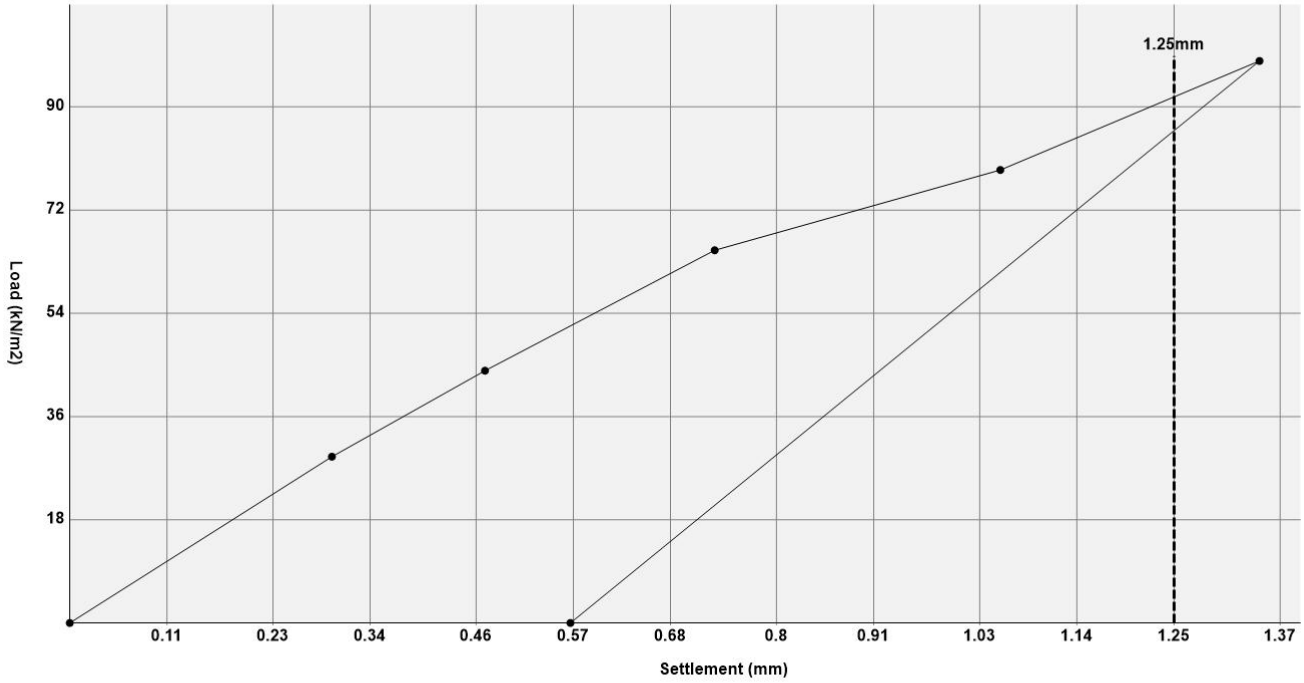
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 5
		^ **Test Location:**	B7 6F5 Final Layer
Lab Ref.:	170720-03	**Layer:**	Capping
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	17/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
29	0.30
44	0.47
65	0.73
79	1.05
98	1.35
0	0.57



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **45945 kN/m2/m**
Equivalent CBR = **7.3 %**

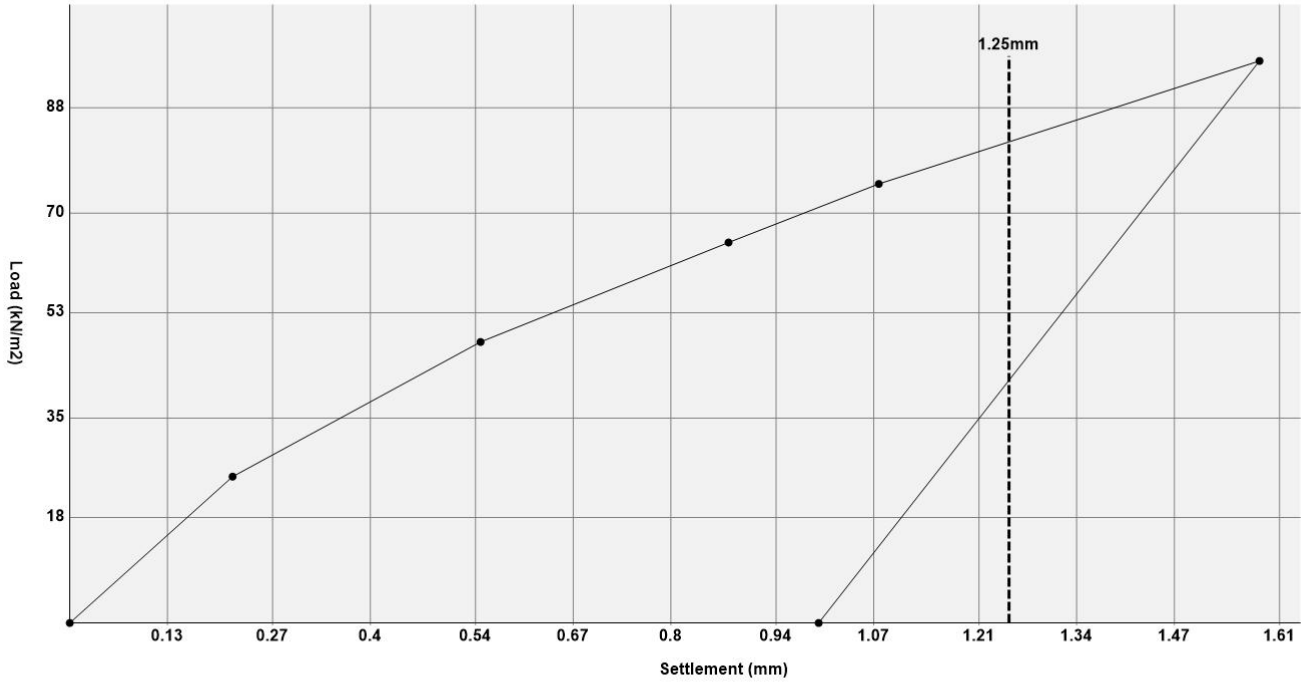
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 6
		^ **Test Location:**	E40 Site Won, Layer1
Lab Ref.:	170720-03	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	17/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
25	0.22
48	0.55
65	0.88
75	1.08
96	1.58
0	1.00



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **40951 kN/m2/m**
Equivalent CBR = **6 %**

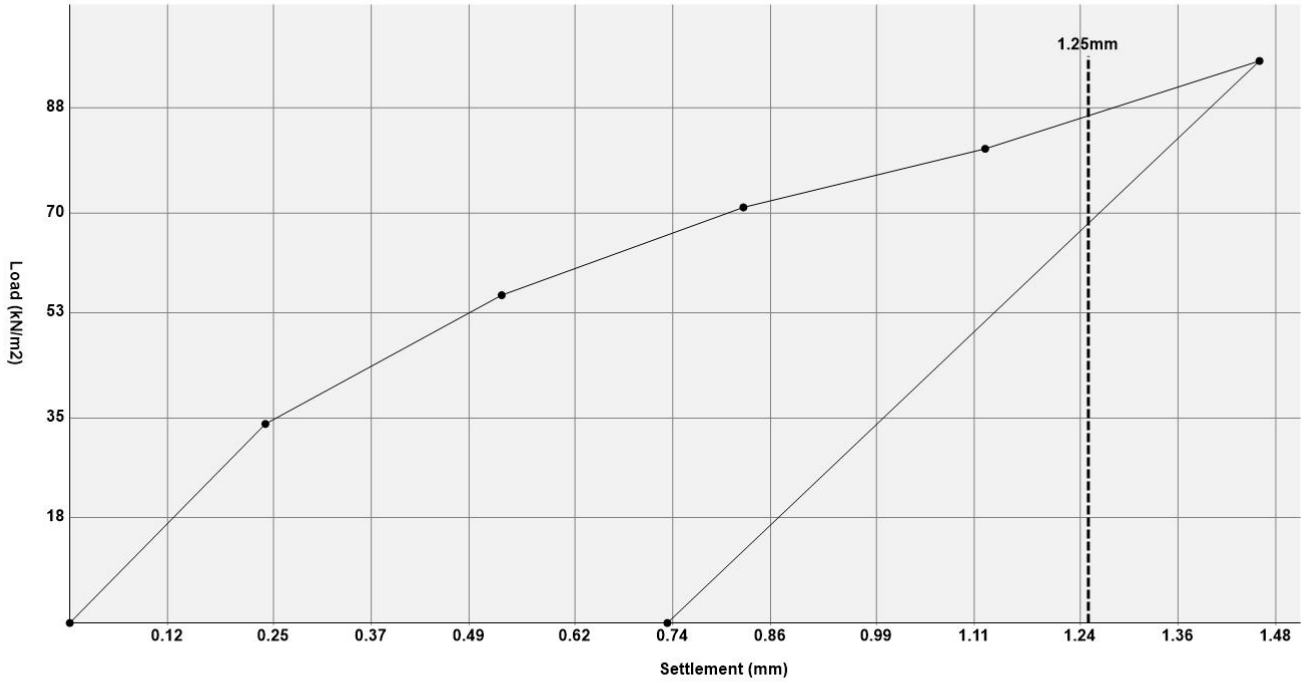
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 7
		^ **Test Location:**	E46 Site Won, Layer 1
Lab Ref.:	170720-03	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	17/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.24
56	0.53
71	0.83
81	1.12
96	1.46
0	0.73



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **43448 kN/m2/m**
Equivalent CBR = **6.7 %**

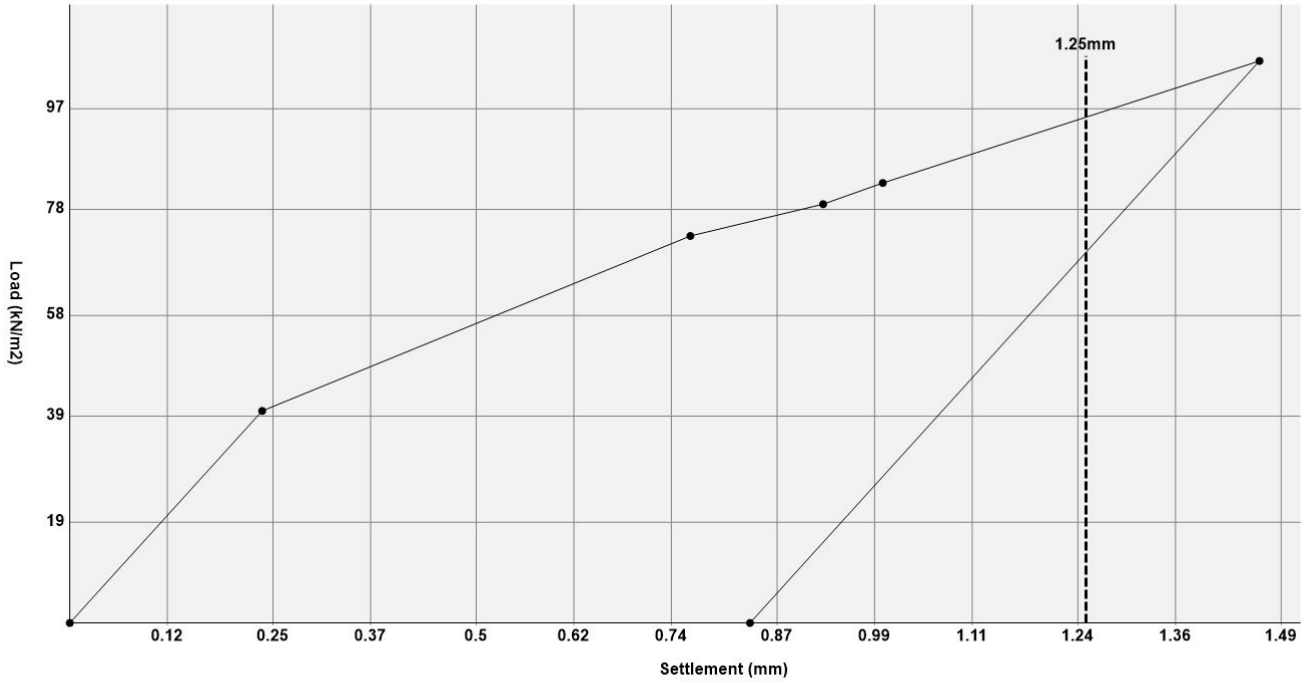
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 8
		^ **Test Location:**	E45 Site Won, Layer 1
Lab Ref.:	170720-03	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	17/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
40	0.24
73	0.76
79	0.93
83	1.00
106	1.46
0	0.84



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **47444 kN/m2/m**
Equivalent CBR = **7.7 %**

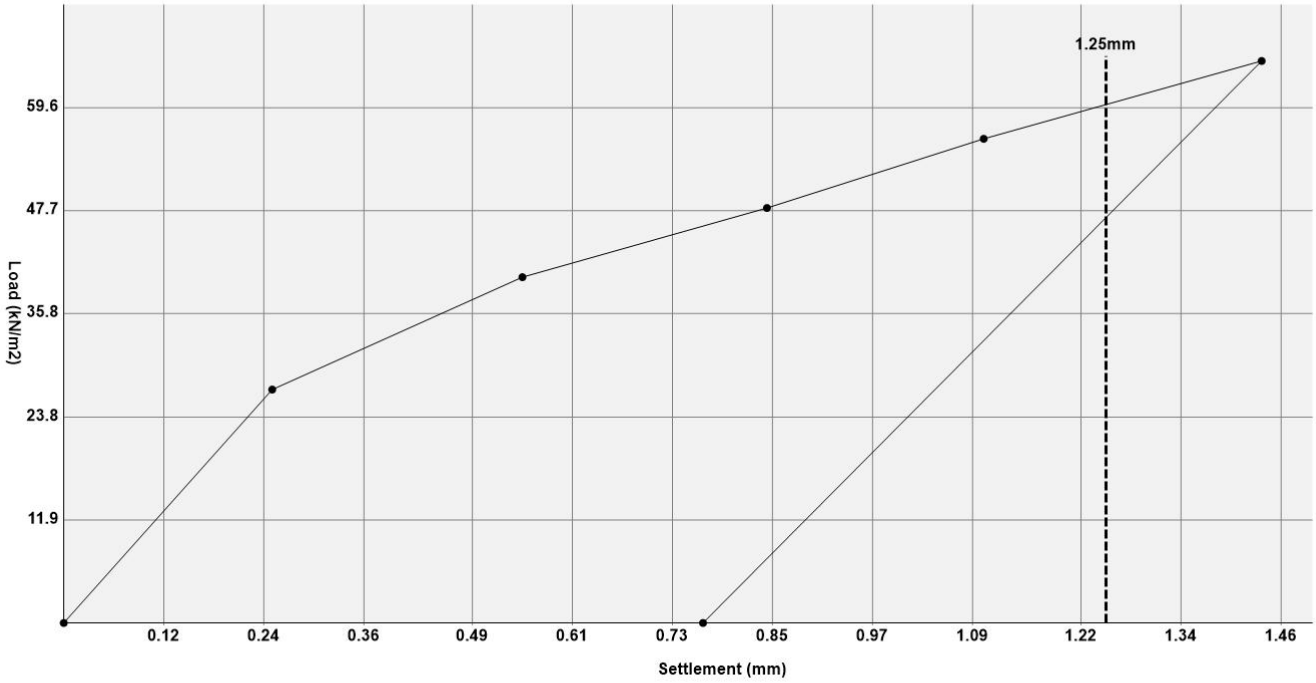
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 9
		^ **Test Location:**	E51 Site Won, Layer1
Lab Ref.:	170720-03	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	17/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
27	0.25
40	0.55
48	0.84
56	1.10
65	1.44
0	0.77



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **29964 kN/m2/m**
Equivalent CBR = **3.5 %**

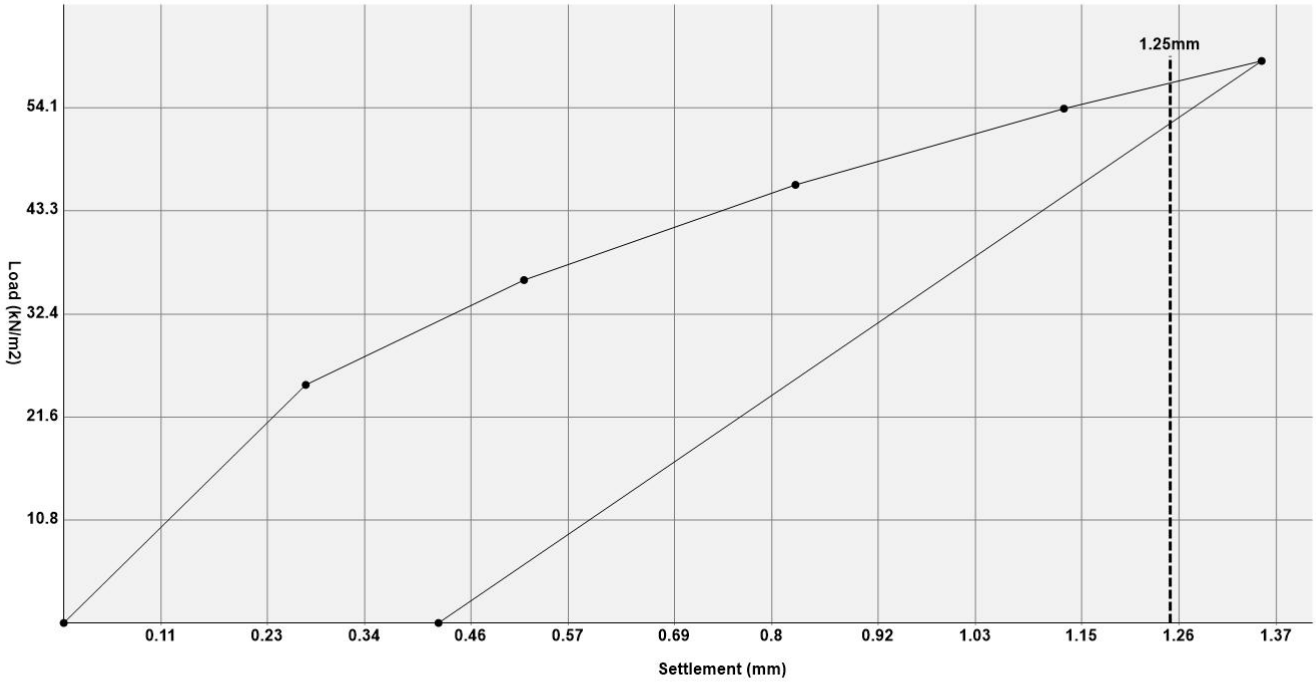
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 10
		^ **Test Location:**	E39 Site Won, Layer1
Lab Ref.:	170720-03	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	17/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
25	0.27
36	0.52
46	0.83
54	1.13
59	1.35
0	0.42



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **28466 kN/m2/m**
Equivalent CBR = **3.2 %**

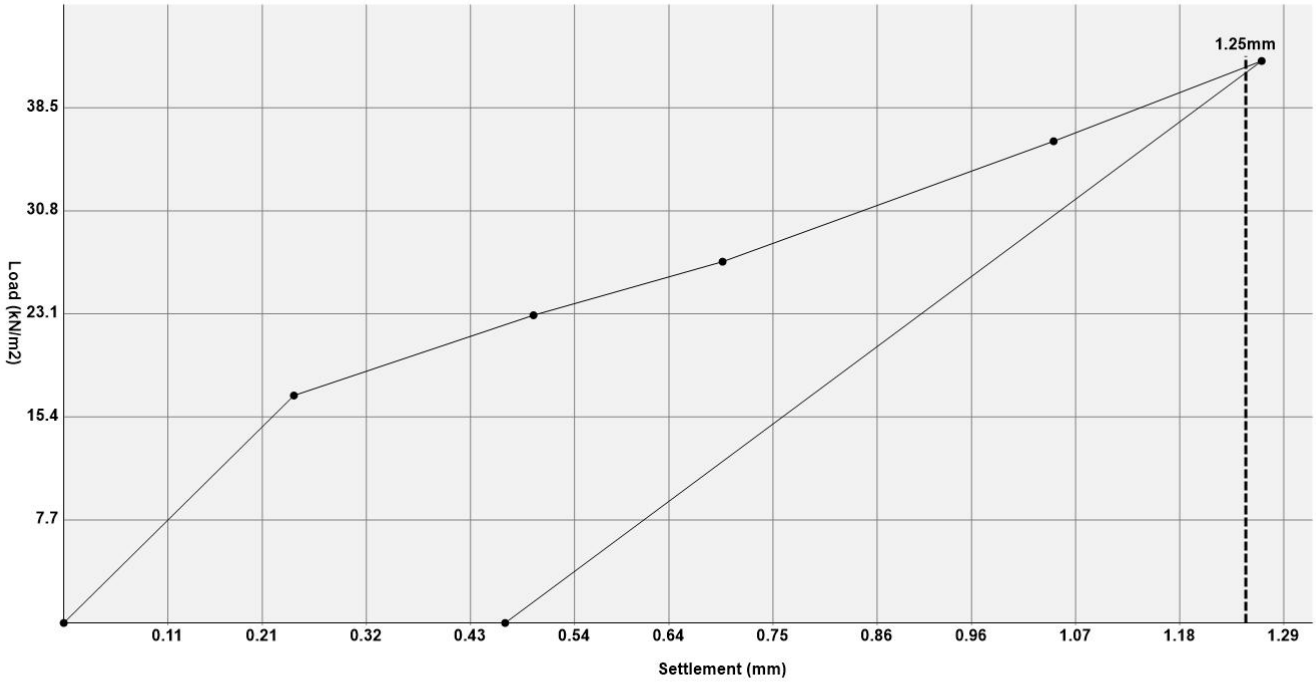
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 11
		^ **Test Location:**	E33 Site Won, Layer1
Lab Ref.:	170720-03	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	17/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
17	0.24
23	0.50
27	0.70
36	1.05
42	1.27
0	0.47



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **20975 kN/m2/m**
Equivalent CBR = **1.9 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Job №:	170720-03	Client Ref:	IV.131.20	Date:	17/07/20
Weather:	fine				
Client:	Ivy House Environmental Ltd.			Tech Name:	PO
Site:	Mitchell Road, Rockingham, Corby			Max DD/OMC Source:	Client
MDD:	1820	PD:	2.69	OMC:	
Density offset:		Moisture offset:			
Test depth mm:	300	Time: 15 sec			
Material:	Brown gravelly, sandy CLAY	New MS	642	% Difference	1.19 %
New DS	1660	% Difference	0.15 %		

№	Wet density kg/m³	Dry Density kg/m³	Compaction %	MC %	Air Voids %	Plot and Grid	Level	Test No.	SRD
N	2125	1885	103.6	12.8	5.6	E32	L1	1	NO
S	2236	1979	108.8	13.0	0.4			AOD	
E	2256	2004	110.1	12.6	0.0	Site Won		E	
W	2168	1947	107.0	11.3	5.3			N	
Mean	2196	1954	107.4	12.4	2.8				
N	2136	1854	101.9	15.2	2.7	E38	L1	2	NO
S	2167	1884	103.5	15.0	1.4			AOD	
E	2180	1925	105.7	13.3	2.6	Site Won		E	
W	2190	1884	103.5	16.2	0.9			N	
Mean	2168	1887	103.7	14.9	1.9				
N	2189	1921	105.6	13.9	1.5	E34	L1	3	NO
S	2139	1884	103.5	13.6	4.2			AOD	
E	2129	1886	103.6	12.9	5.3	Site Won		E	
W	2097	1823	100.2	15.0	4.6			N	
Mean	2139	1879	103.2	13.9	3.9				
N	2051	1814	99.6	13.1	8.6	E40	L1	4	NO
S	2235	2110	115.9	5.9	8.8			AOD	
E	2037	1829	100.5	11.4	10.9	Site Won		E	
W	1940	1729	95.0	12.2	14.4			N	
Mean	2066	1871	102.8	10.7	10.7				
N	2081	1836	100.9	13.3	7.0	E46	L1	5	NO
S	2131	1889	103.8	12.8	5.3			AOD	
E	2154	1922	105.6	12.0	6.5	Site Won		E	
W	2118	1872	102.9	13.2	5.5			N	
Mean	2121	1880	103.3	12.8	6.1				
N	2081	1832	100.8	13.6	6.7	E45	L1	6	NO
S	1978	1721	94.6	14.9	10.1			AOD	
E	2048	1781	97.9	14.9	6.9	Site Won		E	
W	2056	1787	98.2	15.1	6.4			N	
Mean	2041	1780	97.9	14.6	7.5				
N	2115	1920	105.5	10.1	8.9	E51	L1	7	NO
S	2049	1820	99.0	13.7	8.1			AOD	
E	2093	1886	103.6	11.0	9.0	Site Won		E	
W	2083	1870	102.7	11.4	8.9			N	
Mean	2085	1874	102.7	11.6	8.7				
N	1961	1704	93.6	15.1	10.7	E39	L1	8	NO
S	2020	1798	98.8	12.4	10.7			AOD	
E	2099	1871	102.8	12.2	7.4	Site Won		E	
W	2006	1766	97.0	13.6	10.1			N	
Mean	2022	1785	98.1	13.3	9.7				

Kiwa CMT

Job Nº:	170720-03	Client Ref:	IV.131.20	Date:	17/07/20	Weather:	fine				
Client:	Ivy House Environmental Ltd.			Tech Name:		PO					
Site:	Mitchell Road, Rockingham, Corby			Max DD/OMC Source:		Client					
				MDD:	1820	PD:	2.69	OMC:			
				Density offset:				Moisture offset:			
				Test depth mm:		300		Time: 15 sec			
Material:	Brown gravelly, sandy CLAY			New MS	642			% Difference	1.19	%	
				New DS	1660			% Difference	0.15	%	

Nº	Wet density kg/m³	Dry Density kg/m³	Compaction %	MC %	Air Voids %	Plot and Grid	Level	Test No.	SRD
N	2017	1804	99.1	11.8	11.4	E33	L1	9	NO
S	2014	1779	97.7	13.3	10.1			AOD	
E	2009	1764	96.9	13.9	9.7	Site Won		E	
W	2017	1763	96.8	14.4				N	
Mean	2014	1778	97.6	13.4	10.4				

Kiwa CMT

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www.kiwa.co.uk/cmt

Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
Derbyshire
DE72 3RX

Date: 22nd July 2020

Lab Ref: 180720-02

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just before Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 18th July 2020 in order to carry out 6 Plate bearings for equivalent CBR% tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

To carry out Nuclear Density Testing in accordance with **Documented In-House Method** SO35.

Results:

The individual result sheets may be viewed on pages 2 to 8 of this report.

Kiwa CMT Testing

Author: D. Spencer
Administrator

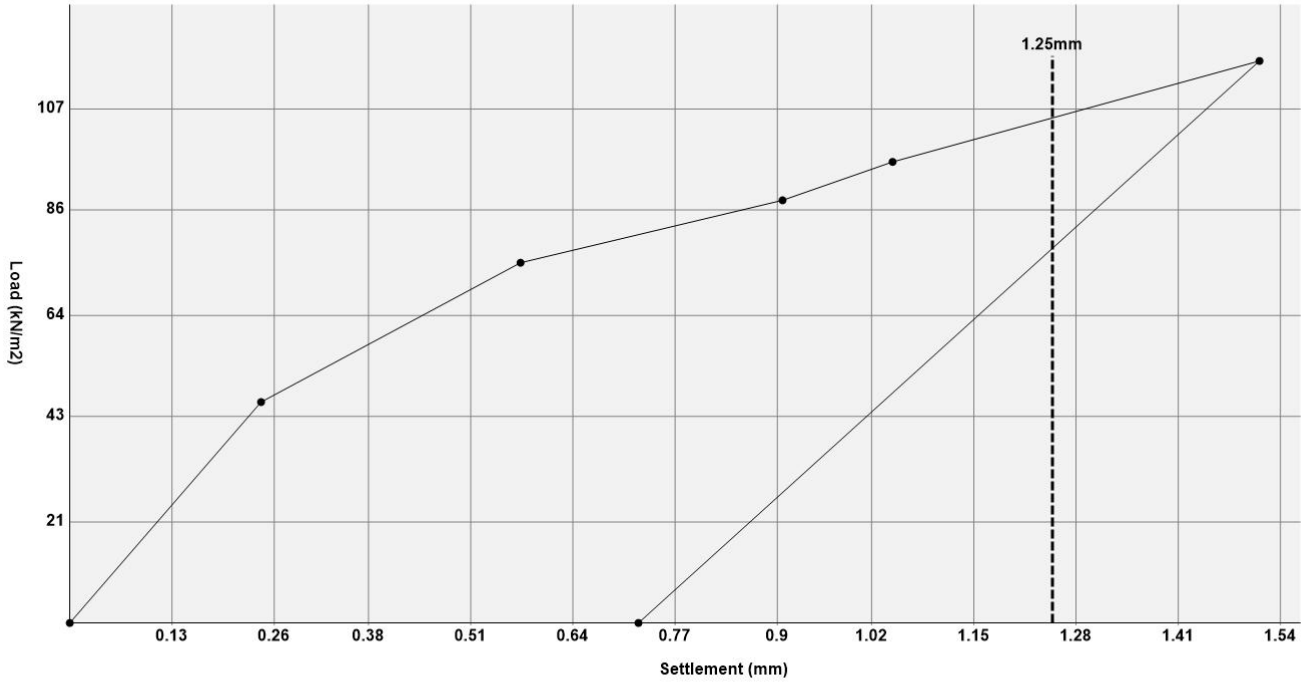
Checked and Approved by: R. Cartlidge
Departmental Manager

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 1
		^ **Test Location:**	E35 Layer2
Lab Ref.:	180720-02	**Layer:**	Laid
Kentledge:	14t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	18/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
46	0.24
75	0.57
88	0.91
96	1.05
117	1.51
0	0.72



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **52438 kN/m2/m**
Equivalent CBR = **9.2 %**

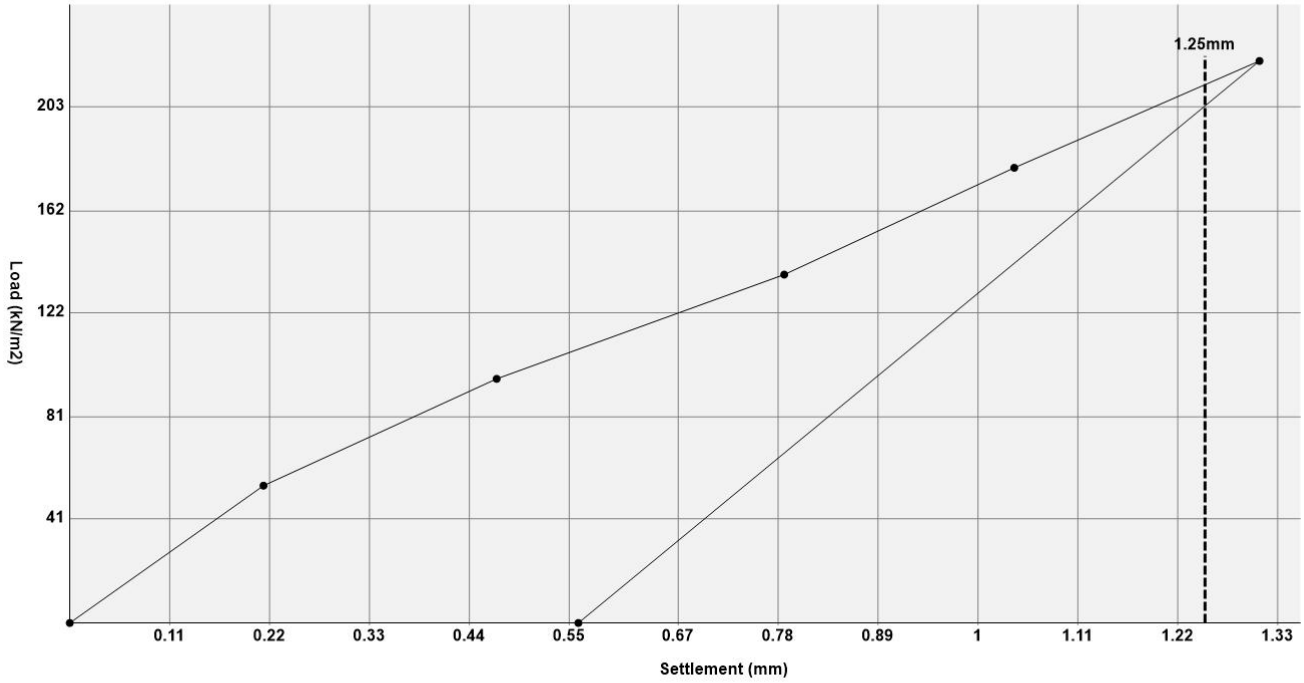
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 2
		^ **Test Location:**	E41 Layer2
Lab Ref.:	180720-02	**Layer:**	Laid
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	18/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
54	0.21
96	0.47
137	0.79
179	1.04
221	1.31
0	0.56



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **105874 kN/m2/m**
Equivalent CBR = **31.1 %**

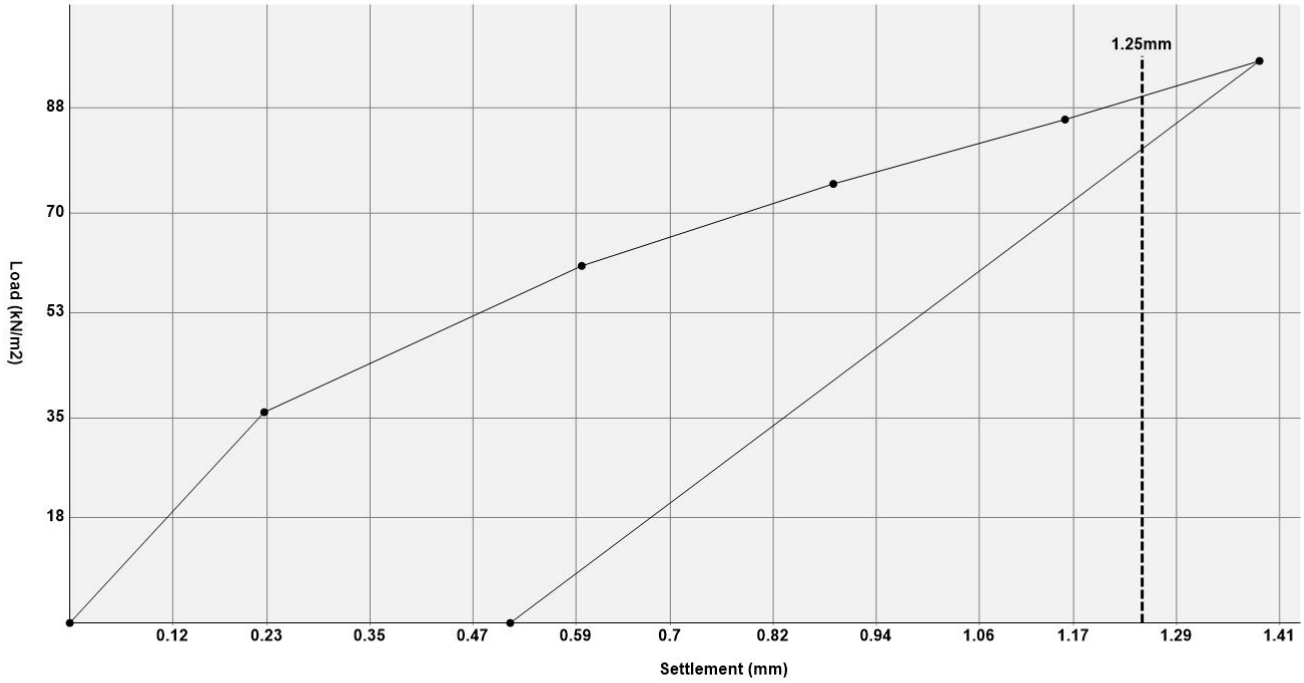
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 3
		^ **Test Location:**	E47 Layer2
Lab Ref.:	180720-02	**Layer:**	Laid
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	18/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
36	0.23
61	0.60
75	0.89
86	1.16
96	1.39
0	0.51



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **44947 kN/m2/m**
Equivalent CBR = **7.1 %**

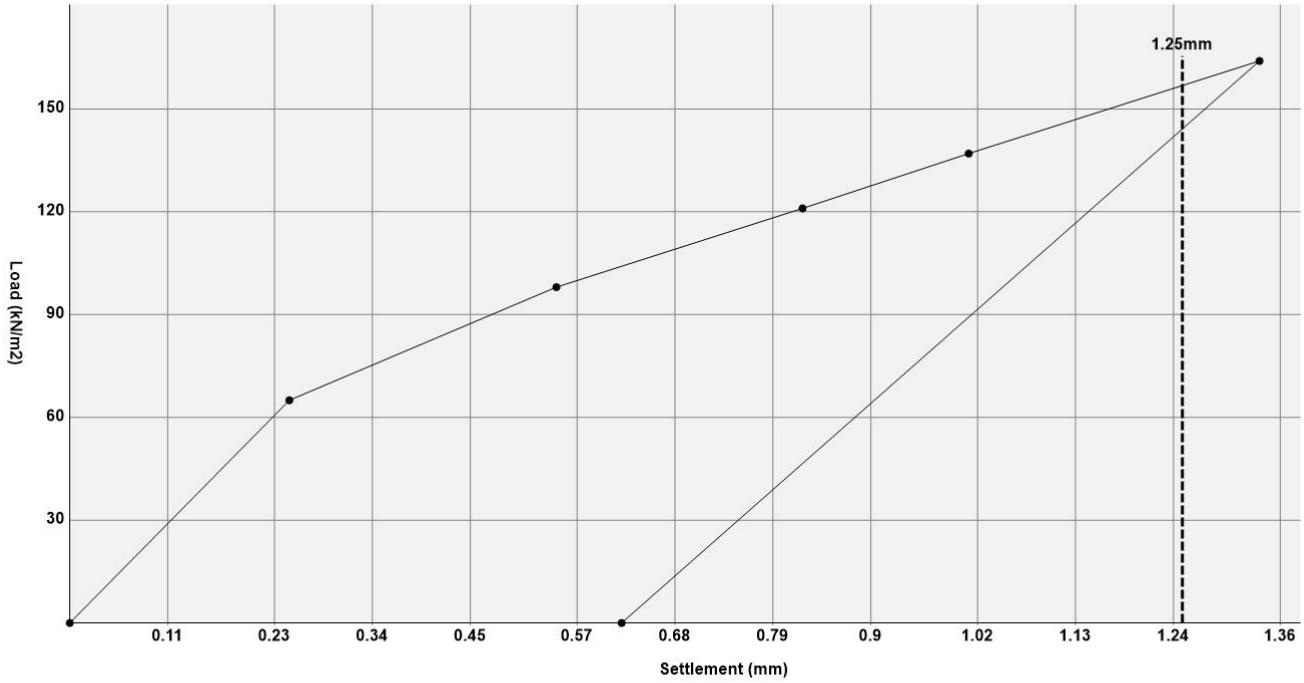
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 4
		^ **Test Location:**	E54 Layer1
Lab Ref.:	180720-02	**Layer:**	Laid
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	18/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.25
98	0.55
121	0.82
137	1.01
164	1.34
0	0.62



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **78407 kN/m2/m**
Equivalent CBR = **18.5 %**

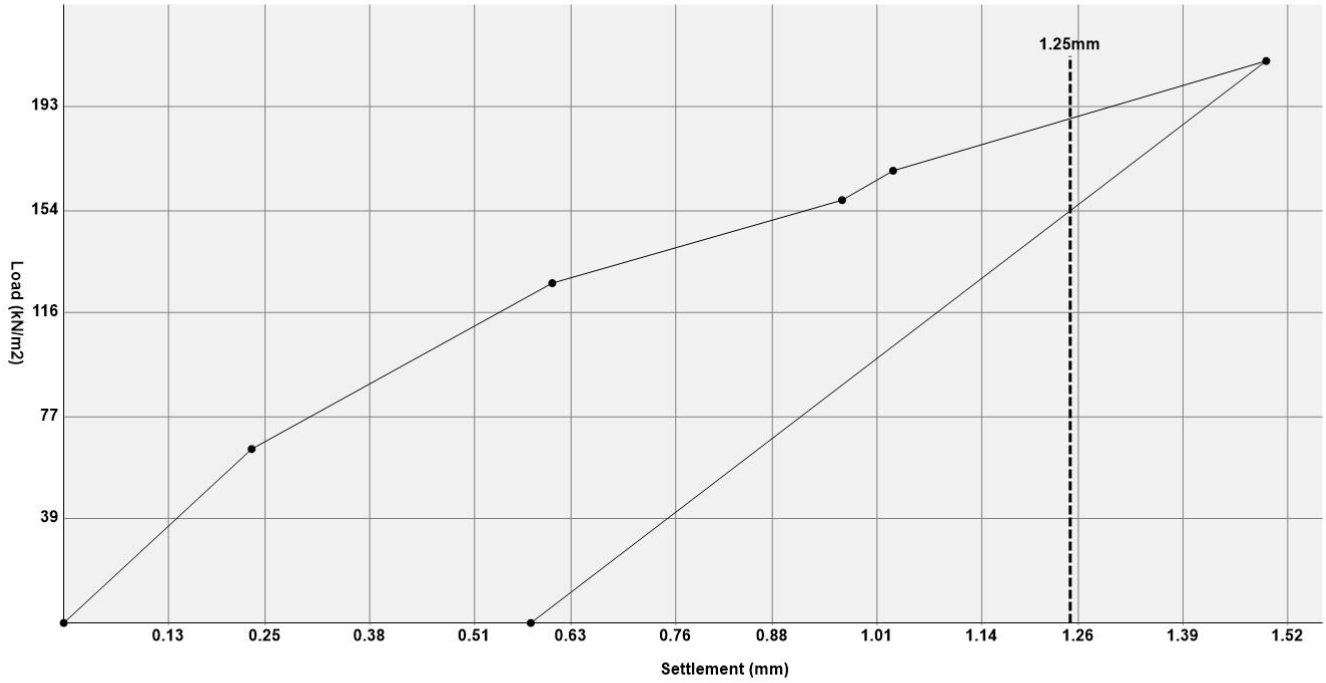
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 5
		^ **Test Location:**	E53 Layer1
Lab Ref.:	180720-02	**Layer:**	Laid
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	18/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.23
127	0.61
158	0.97
169	1.03
210	1.49
0	0.58



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **93889 kN/m2/m**
Equivalent CBR = **25.3 %**

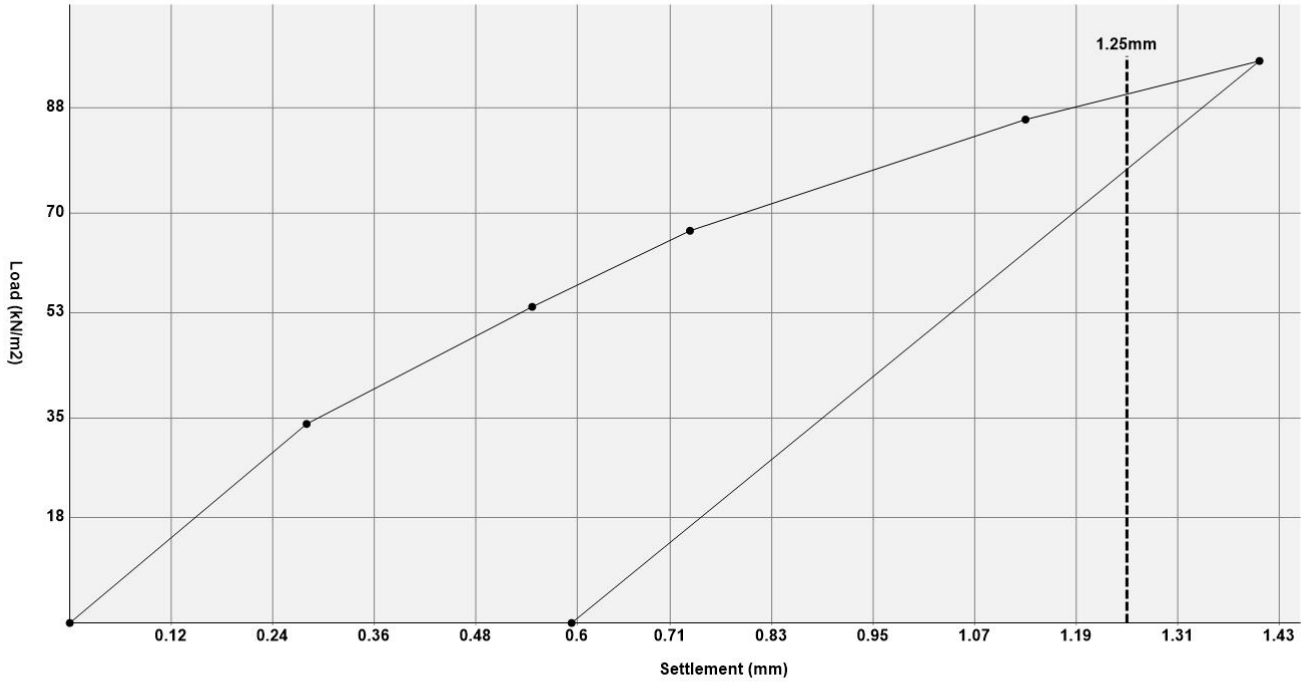
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 6
		^ **Test Location:**	E52 Layer1
Lab Ref.:	180720-02	**Layer:**	Laid
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	18/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.28
54	0.55
67	0.73
86	1.13
96	1.41
0	0.59



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **44947 kN/m2/m**
Equivalent CBR = **7.1 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Job Nº:	180720-02	Client Ref: IV.131.20	Date: 18/07/20	Weather: fine	
Client:	IVY HOUSE ENVIROMENTAL		Tech Name:	PO	
Site:	Mitchell Road, Corby		Max DD/OMC Source:	CLIENT	
			MDD: 1820	PD: 2.68	OMC:
			Density offset:	Moisture offset:	
			Test depth mm: 300	Time: 15 sec	
Material:	Brown gravelly, sandy CLAY		New MS 650	% Difference 0.61 %	
			New DS 1653	% Difference 0.18 %	

Nº	Wet density kg/m³	Dry Density kg/m³	Compaction %	MC %	Air Voids %	Plot and Grid	Level	Test No.	SRD
N	2124	1911	105.0	11.1	7.4	E35	2	1	NO
S	2152	1928	105.9	11.6	5.7			AOD	
E	2126	1940	106.6	11.4	5.6			E	
W	2098	1854	101.9	13.2	6.4			N	
Mean	2125	1908	104.9	11.8	6.3				
N	2020	1837	100.9	10.0	13.2	E41	2	2	NO
S	2088	1875	103.0	11.4	8,7			AOD	
E	2199	2017	110.8	9.0	6.6			E	
W	2149	1963	107.9	9.5	8.2			N	
Mean	2114	1923	105.7	10.0	9.3				
N	2129	1850	101.7	15.1	3.1	E47	2	3	NO
S	2149	1928	105.9	11.5	5.9			AOD	
E	2121	1895	104.1	12.0	6.6			E	
W	2110	1867	102.6	13.0	6.0			N	
Mean	2127	1885	103.6	12.9	5.4				
N	2075	1851	101.7	12.1	8.6	E54	1	4	NO
S	2040	1808	99.3	12.9	9.3			AOD	
E	2106	1894	104.1	11.2	8.2			E	
W	2057	1842	101.2	11.6	9.8			N	
Mean	2070	1849	101.6	12.0	9.0				
N	2169	1976	108.6	9.8	6.9	E53	1	5	NO
S	2122	1943	106.8	9.2	9.7			AOD	
E	2119	1933	106.2	9.6	9.3			E	
W	2109	1886	103.6	11.8	7.3			N	
Mean	2130	1935	106.3	10.1	8.3				
N	2090	1913	105.1	9.2	10.9	E52	1	6	NO
S	2095	1898	104.3	10.3	9.5			AOD	
E	2145	1923	105.7	11.5	6.0			E	
W	2119	1925	105.8	10.0	8.8			N	
Mean	2112	1915	105.2	10.3	8.8				

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Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
Derbyshire
DE72 3RX

Date: 28th July 2020

Lab Ref: 220720-01

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just before Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 22nd July 2020 in order to carry out 10No. 450mm plate load tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

To carry out Nuclear Density Testing in accordance with **Documented In-House Method** SO35.

Results:

The individual result sheets may be viewed on pages 2 to 12 of this report.

Kiwa CMT Testing

Author: D. Spencer
Administrator

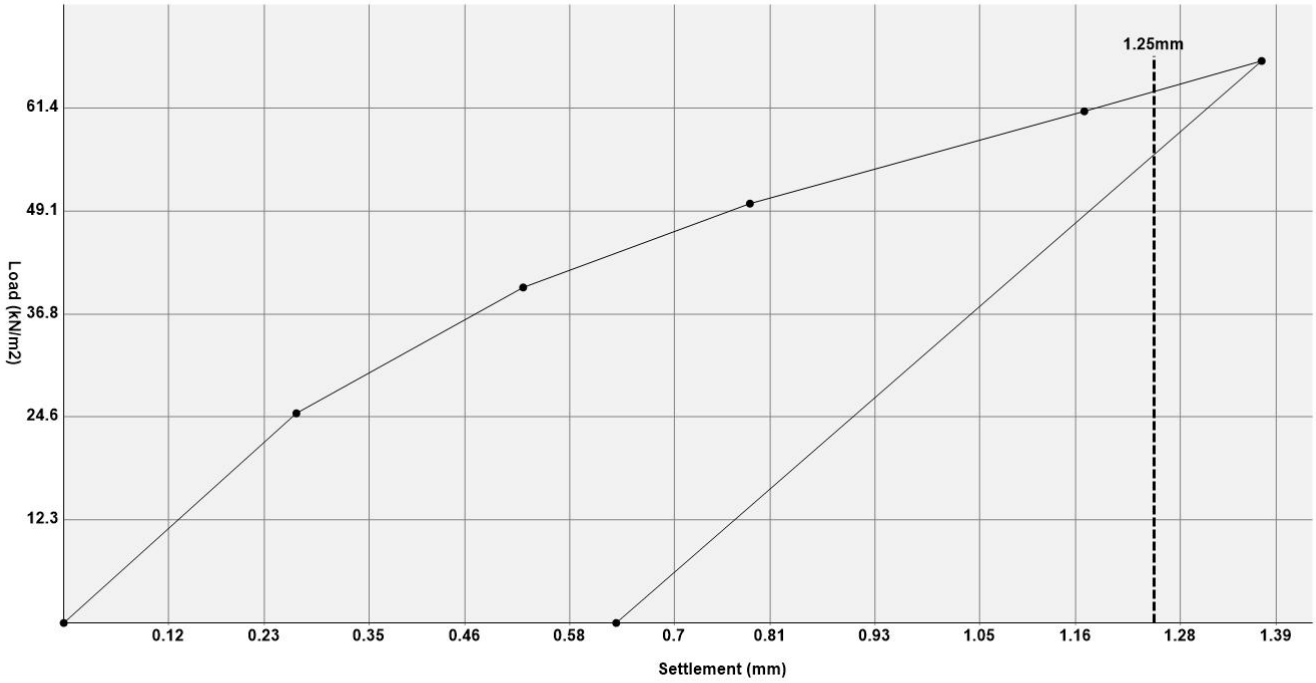
Checked and Approved by: Richard Cartlidge
Department Manager

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 1 (B9)
		^ **Test Location:**	B9 Type1, Final Layer
Lab Ref.:	220720-01	**Layer:**	Sub Base
Kentledge:	13t Roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	22/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
25	0.27
40	0.53
50	0.79
61	1.17
67	1.37
0	0.63



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **31463 kN/m2/m**
Equivalent CBR = **3.8 %**

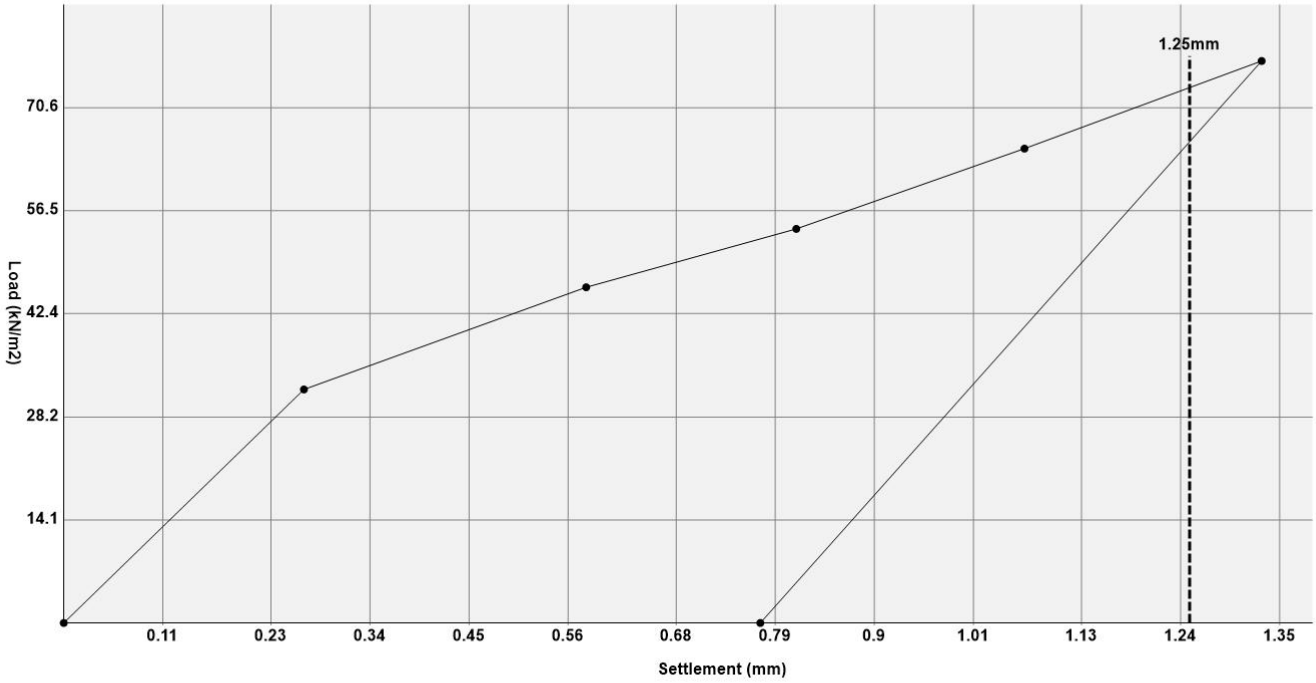
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 2 (B9)
		^ **Test Location:**	B9 Type1, Final Layer (retest)
Lab Ref.:	220720-01	**Layer:**	Sub Base
Kentledge:	13t Roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	22/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
32	0.27
46	0.58
54	0.81
65	1.07
77	1.33
0	0.77



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **36457 kN/m2/m**
Equivalent CBR = **4.9 %**

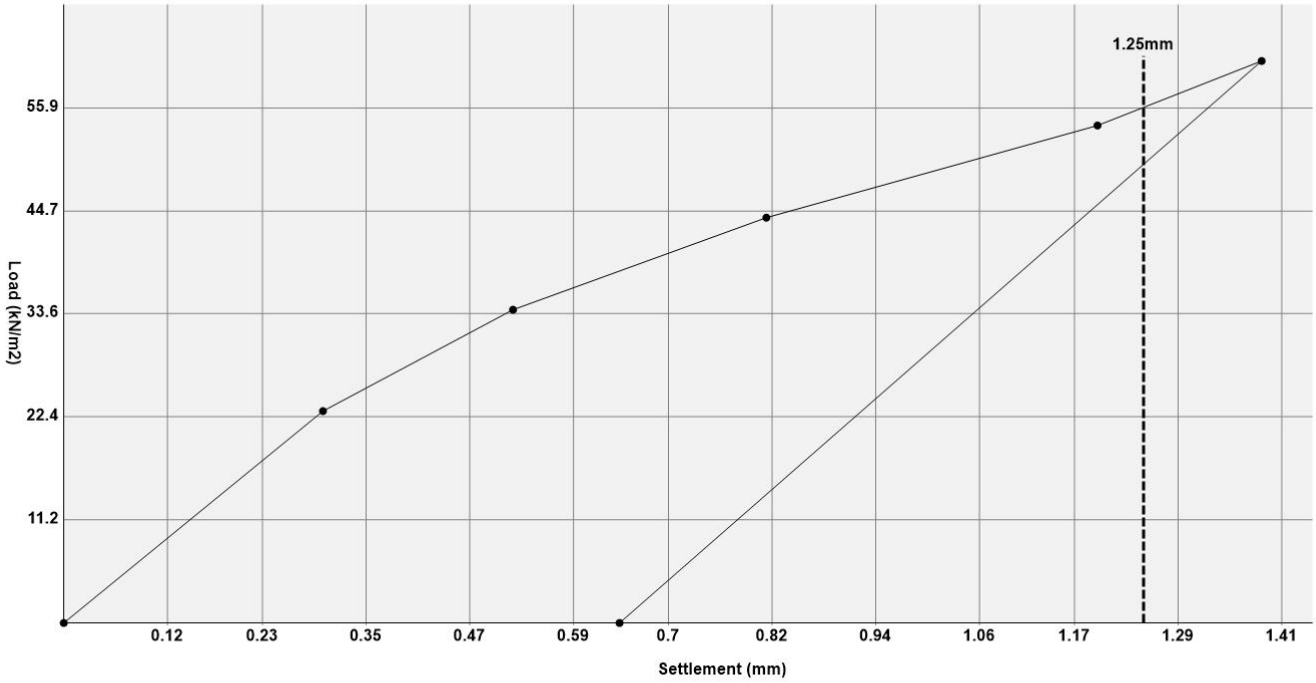
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 3 (B10)
		^ **Test Location:**	B10 Type1, Final Layer
Lab Ref.:	220720-01	**Layer:**	Sub Base
Kentledge:	13t Roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	22/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
23	0.30
34	0.52
44	0.81
54	1.20
61	1.39
0	0.64



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **27967 kN/m2/m**
Equivalent CBR = **3.1 %**

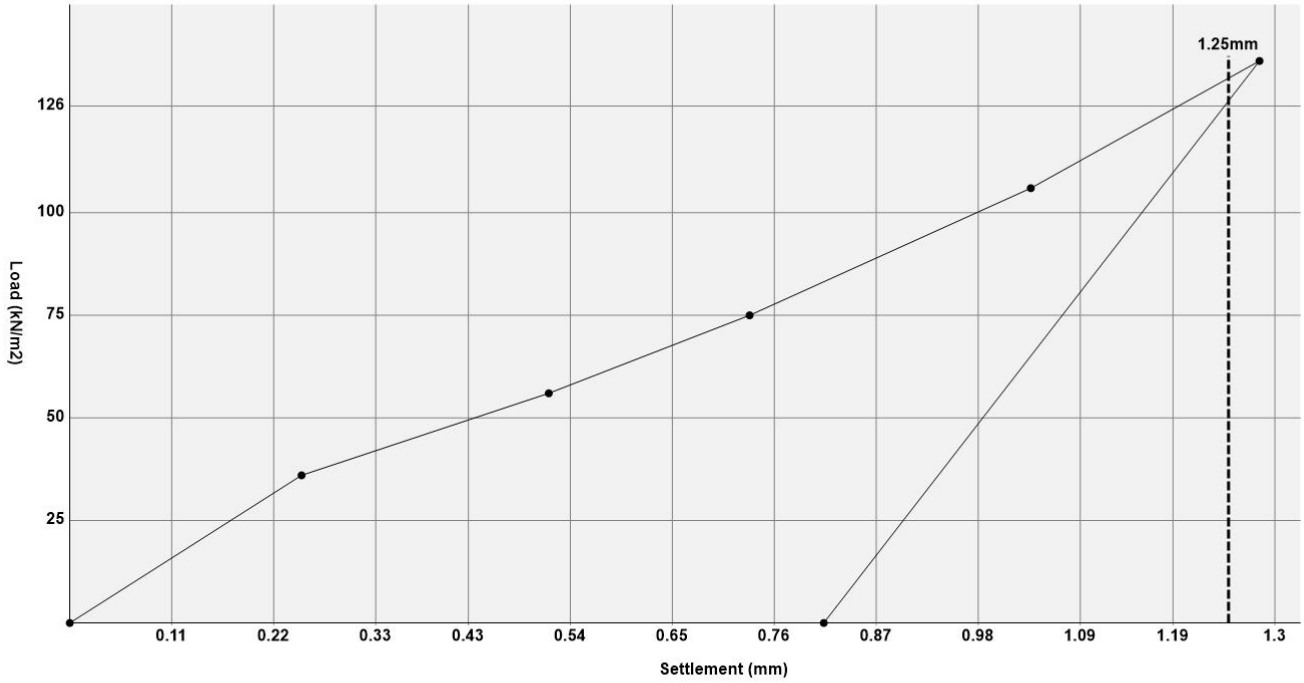
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 4 (B4)
		^ **Test Location:**	B4 Type1, Final Layer
Lab Ref.:	220720-01	**Layer:**	Sub Base
Kentledge:	13t Roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	22/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
36	0.25
56	0.52
75	0.73
106	1.04
137	1.28
0	0.81



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **66421 kN/m2/m**
Equivalent CBR = **13.9 %**

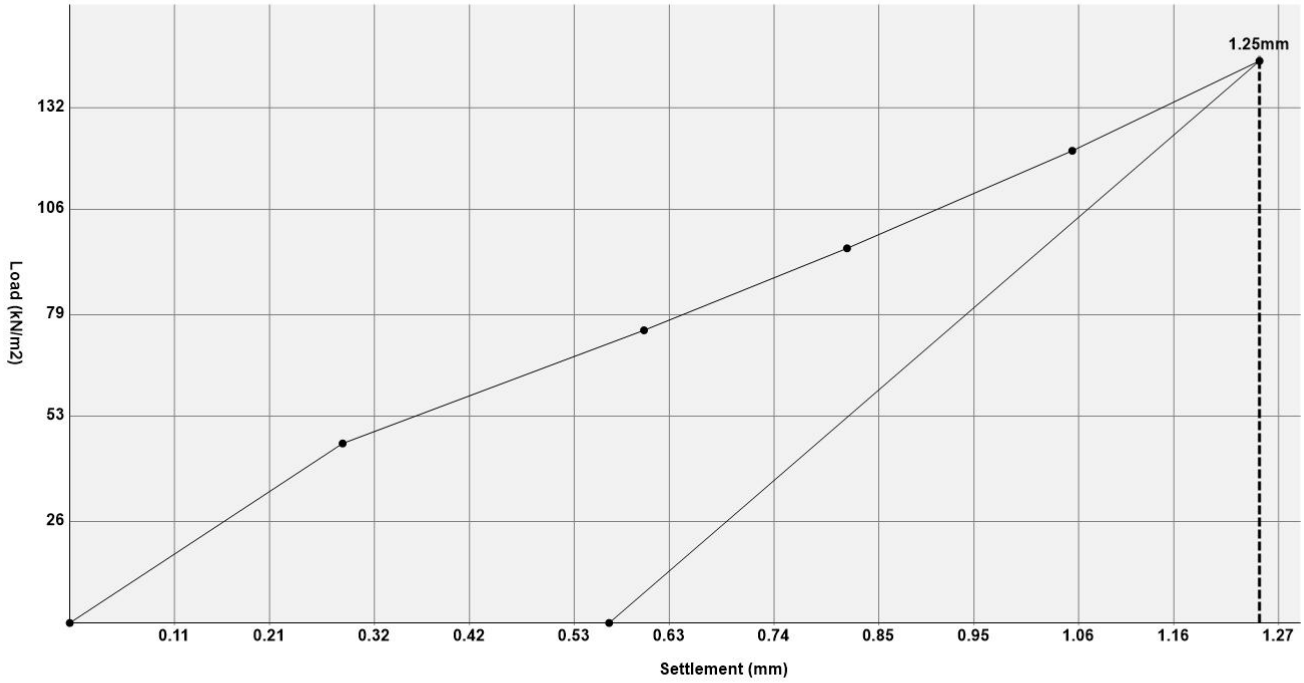
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 5 (E33, L1)
		^ **Test Location:**	E33 Layer1 retest
Lab Ref.:	220720-01	**Layer:**	Laid
Kentledge:	13t Roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	22/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
46	0.29
75	0.60
96	0.82
121	1.05
144	1.25
0	0.57



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **71915 kN/m2/m**
Equivalent CBR = **15.9 %**

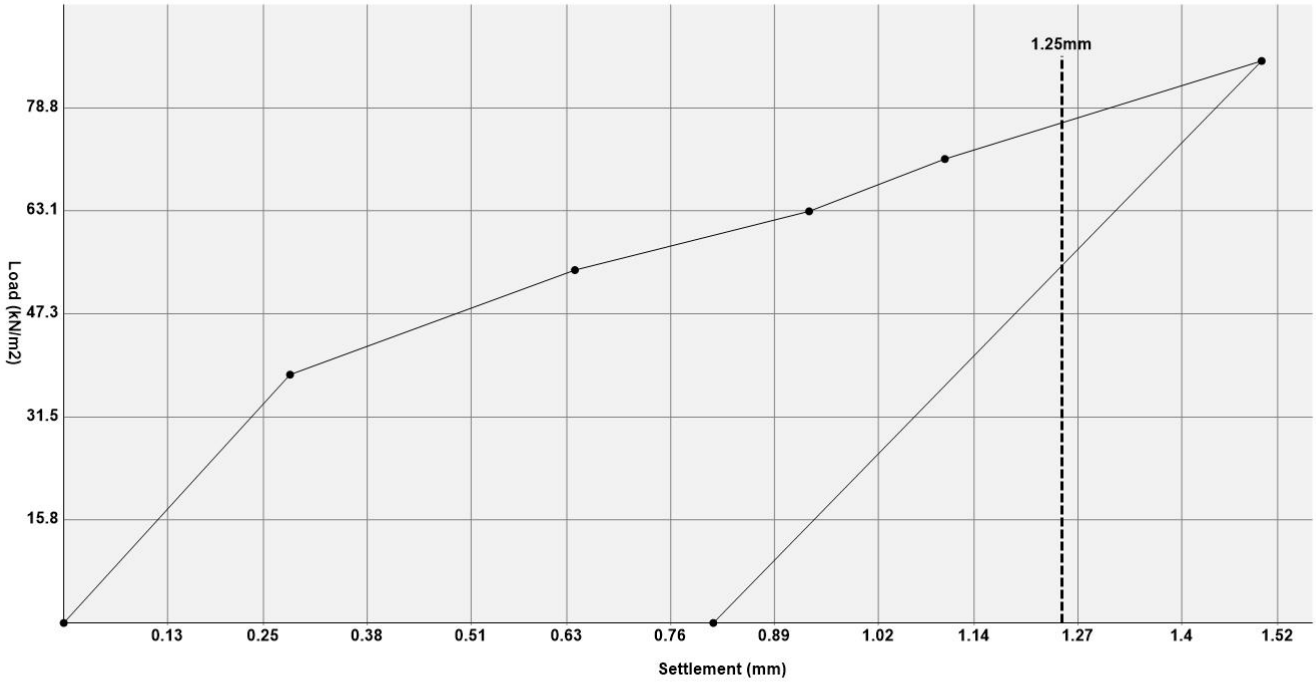
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 6 (E45, L1)
		^ **Test Location:**	E45 Layer1 retest
Lab Ref.:	220720-01	**Layer:**	Laid
Kentledge:	13t Roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	22/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
38	0.28
54	0.64
63	0.93
71	1.10
86	1.50
0	0.81



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **38454 kN/m2/m**
Equivalent CBR = **5.4 %**

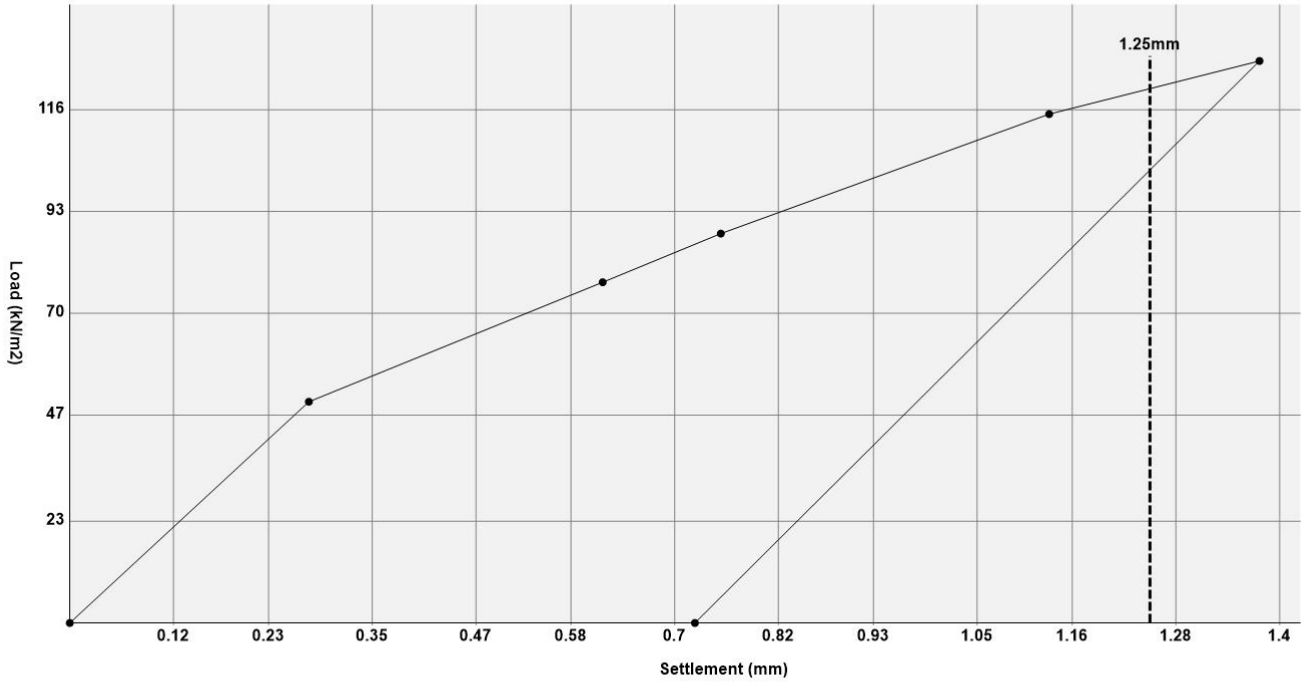
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 7 (E32, L2)
		^ **Test Location:**	E32 Layer2
Lab Ref.:	220720-01	**Layer:**	Laid
Kentledge:	13t Roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	22/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
50	0.28
77	0.62
88	0.75
115	1.13
127	1.38
0	0.72



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **60428 kN/m2/m**
Equivalent CBR = **11.8 %**

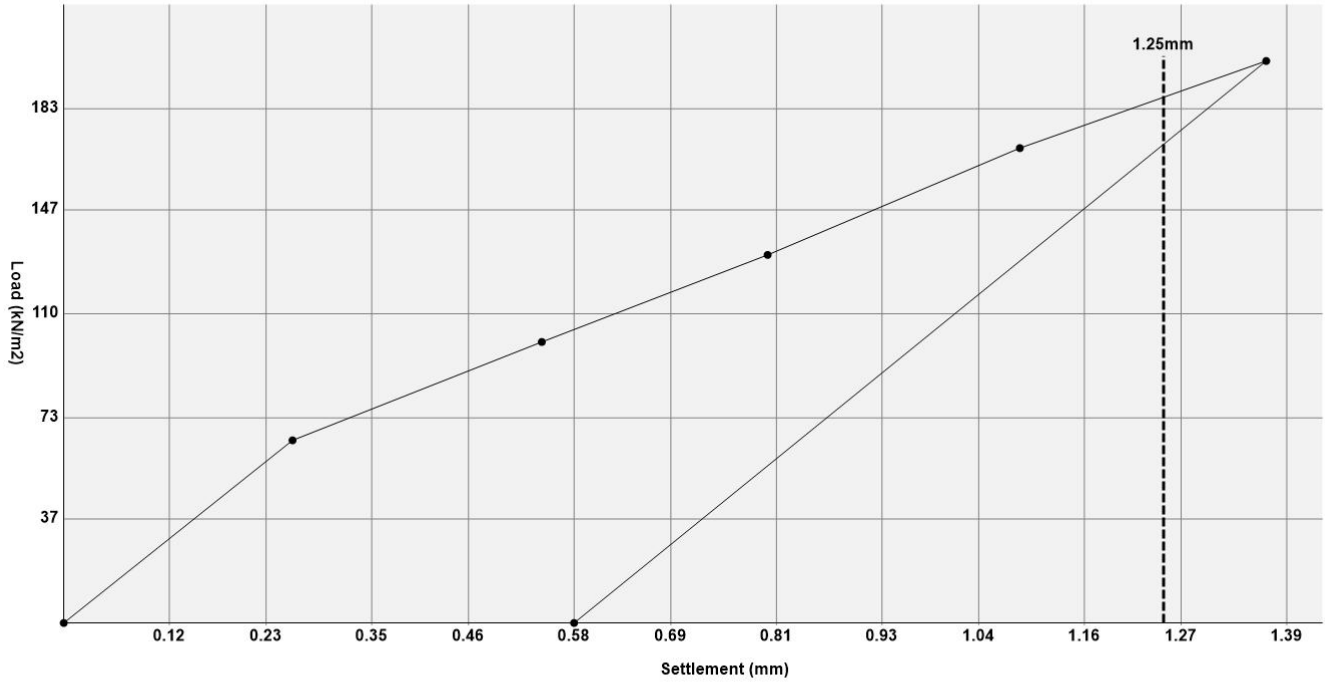
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 8 (E38, L2)
		^ **Test Location:**	E38 Layer2
Lab Ref.:	220720-01	**Layer:**	Laid
Kentledge:	13t Roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	22/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.26
100	0.54
131	0.80
169	1.09
200	1.37
0	0.58



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **93389 kN/m2/m**
Equivalent CBR = **25.1 %**

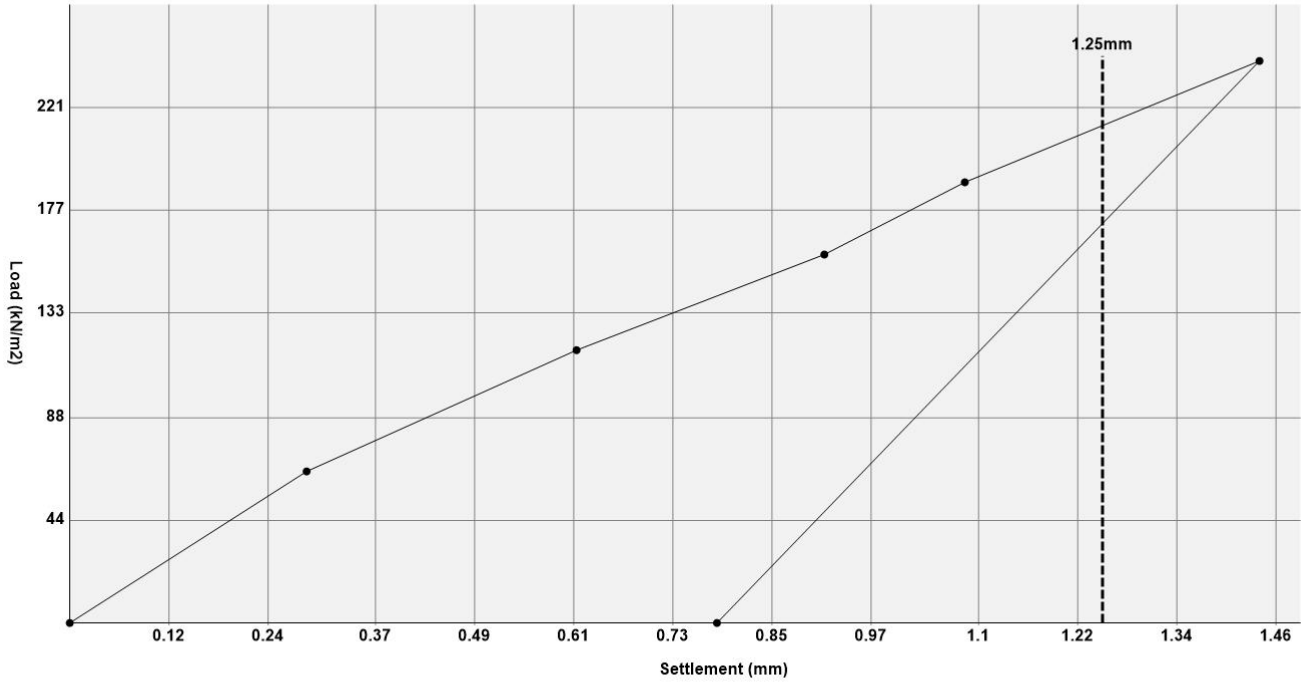
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 9 (E37, Form)
		^ **Test Location:**	E37 Formation
Lab Ref.:	220720-01	**Layer:**	Formation
Kentledge:	13t Roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	22/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.29
117	0.61
158	0.91
189	1.08
241	1.44
0	0.78



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **106374 kN/m2/m**
Equivalent CBR = **31.4 %**

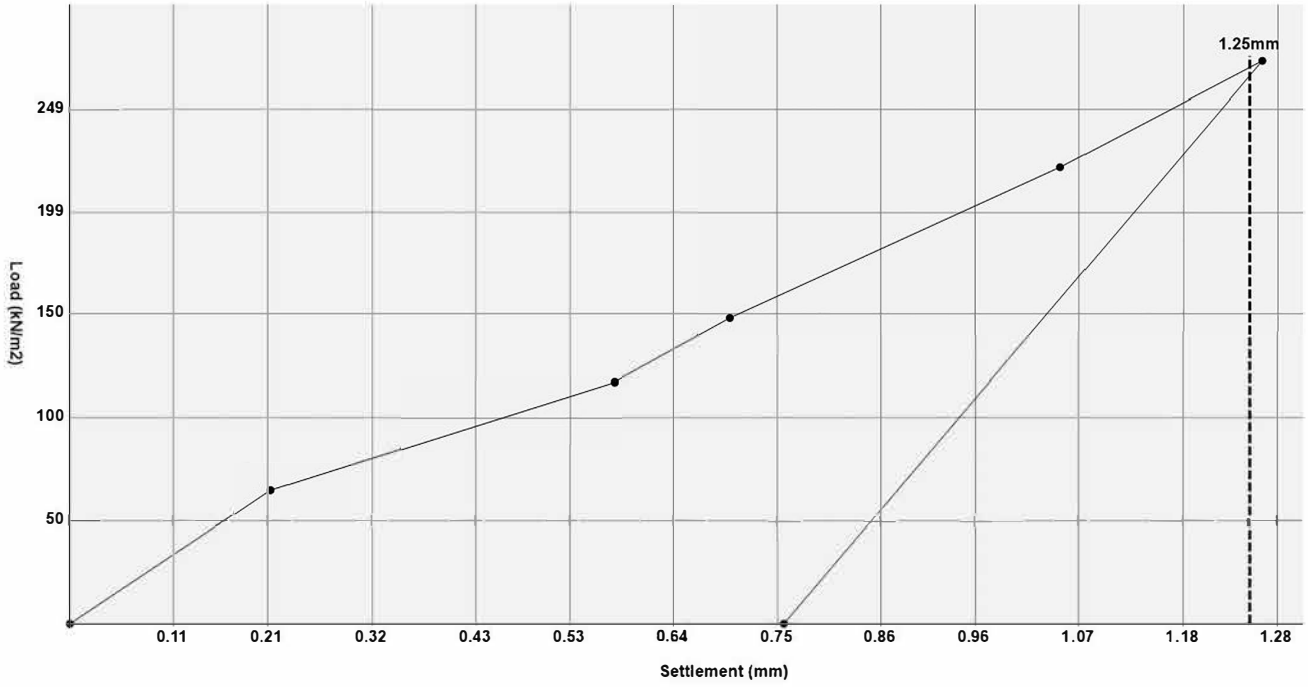
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 10 (E31, Form)
		^ **Test Location:**	E31 Formation
Lab Ref.:	220720-01	**Layer:**	Formation
Kentledge:	13t Roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	22/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.21
117	0.58
148	0.70
221	1.05
272	1.26
0	0.76



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **134341 kN/m2/m**
Equivalent CBR = **47 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Job Nº:	220720-01	Client Ref:	IV.131.20	Date:	22/07/20	Weather:	fine				
Client:	Ivy House Environmental Ltd.			Tech Name:		PO					
Site:	Mitchell Road, Rockingham, Corby			Max DD/OMC Source:		Client					
				MDD:	1820	PD:	2.69	OMC:			
				Density offset:				Moisture offset:			
				Test depth mm:		300		Time: 15 sec			
Material:	Brown gravelly, sandy CLAY			New MS	646			% Difference	0.07	%	
				New DS	1649			% Difference	0.03	%	

Nº	Wet density kg/m³	Dry Density kg/m³	Compaction %	MC %	Air Voids %	Plot and Grid	Level	Test No.	SRD
N	2155	1975	108.5	9.1	8.3	E33	1	1	NO
S	2046	1850	101.6	10.6	11.3			AOD	
E	2095	1919	105.5	9.1	10.9			E	
W	2137	1953	107.3	9.4	8.7			N	
Mean	2108	1924	105.7	9.6	9.8				
N	2070	1897	104.2	9.2	11.9	E45	1	2	NO
S	2090	1903	104.6	9.8	10.3			AOD	
E	2140	1963	107.9	9.0	9.1			E	
W	2081	1903	104.6	9.4	11.2			N	
Mean	2095	1917	105.3	9.4	10.6				
N	2041	1846	101.4	10.6	11.6	E32	2	3	NO
S	2038	1819	100.0	12.0	10.2			AOD	
E	2107	1894	104.0	11.2	8.1			E	
W	2051	1853	101.8	10.7	11.1			N	
Mean	2059	1853	101.8	11.1	10.3				
N	2177	1979	108.7	10.0	6.4	E38	2	4	NO
S	2053	1852	101.8	9.9	12.6			AOD	
E	2030	1847	101.5	9.9	12.8			E	
W	2062	1861	102.2	10.8	10.5			N	
Mean	2081	1885	103.6	10.2	10.6				

Kiwa CMT

Kiwa CMT Testing
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E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Ltd
Scotland Farm
Far Lane
Ockbrook, Derby
Derbyshire
DE72 3RX

Date: 27/07/2020

Lab Ref: 270720-04

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just befor Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 27/07/2020 in order to carry out 7No. 450 plate load testing tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

Results:

The individual result sheets may be viewed on pages 2 to 8 of this report.

Kiwa CMT Testing

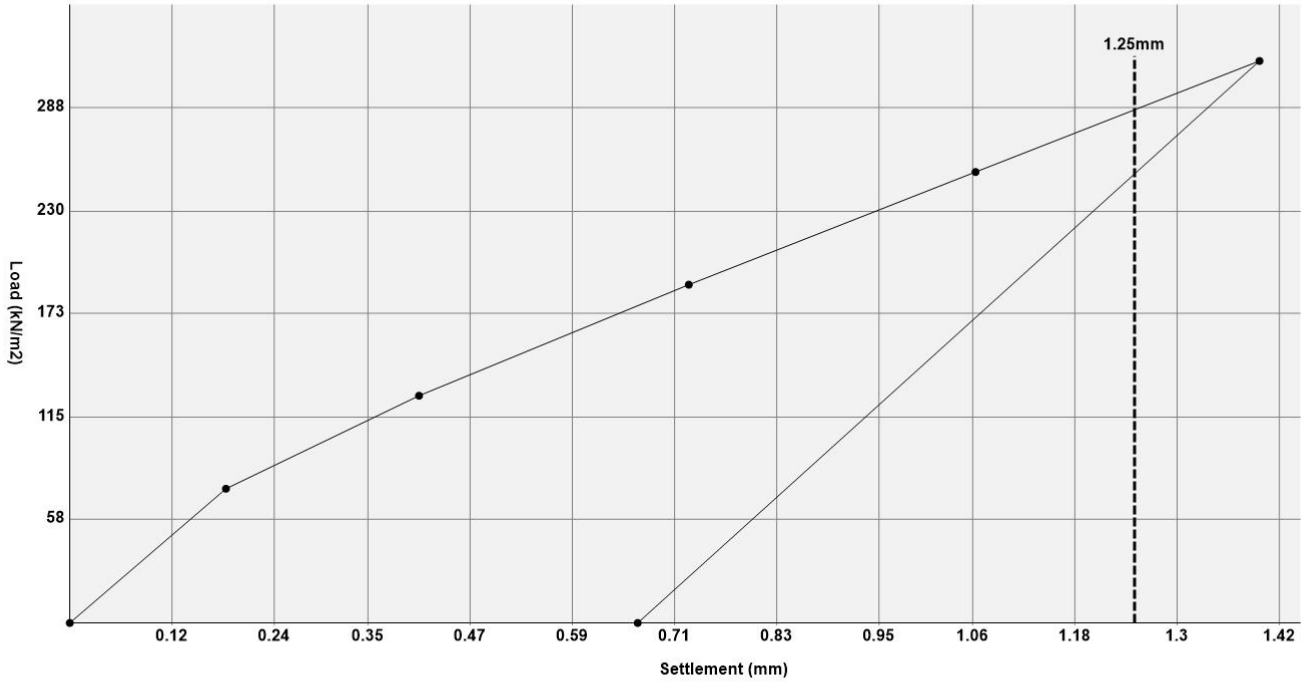
Checked and Authorised by: R Cartlidge
Manager Geotechnical Department

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 2 (E20, Form
		^ **Test Location:**	E20 Formation
Lab Ref.:	270720-04	**Layer:**	Formation
Kentledge:	22t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
75	0.18
127	0.41
189	0.73
252	1.06
314	1.40
0	0.67



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **143330 kN/m2/m**
Equivalent CBR = **52.6 %**

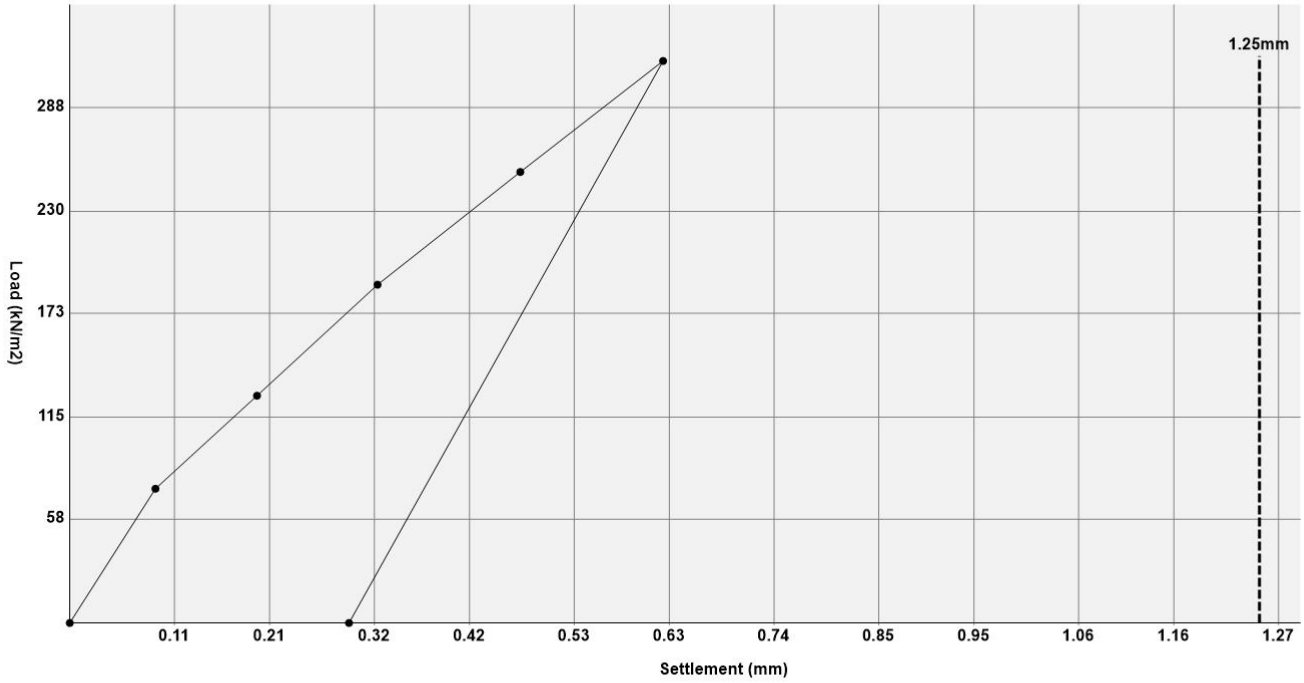
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 3 (E25, Form)
		^ **Test Location:**	E25 Formation
Lab Ref.:	270720-04	**Layer:**	Formation
Kentledge:	22t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
75	0.09
127	0.20
189	0.32
252	0.47
314	0.62
0	0.29



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

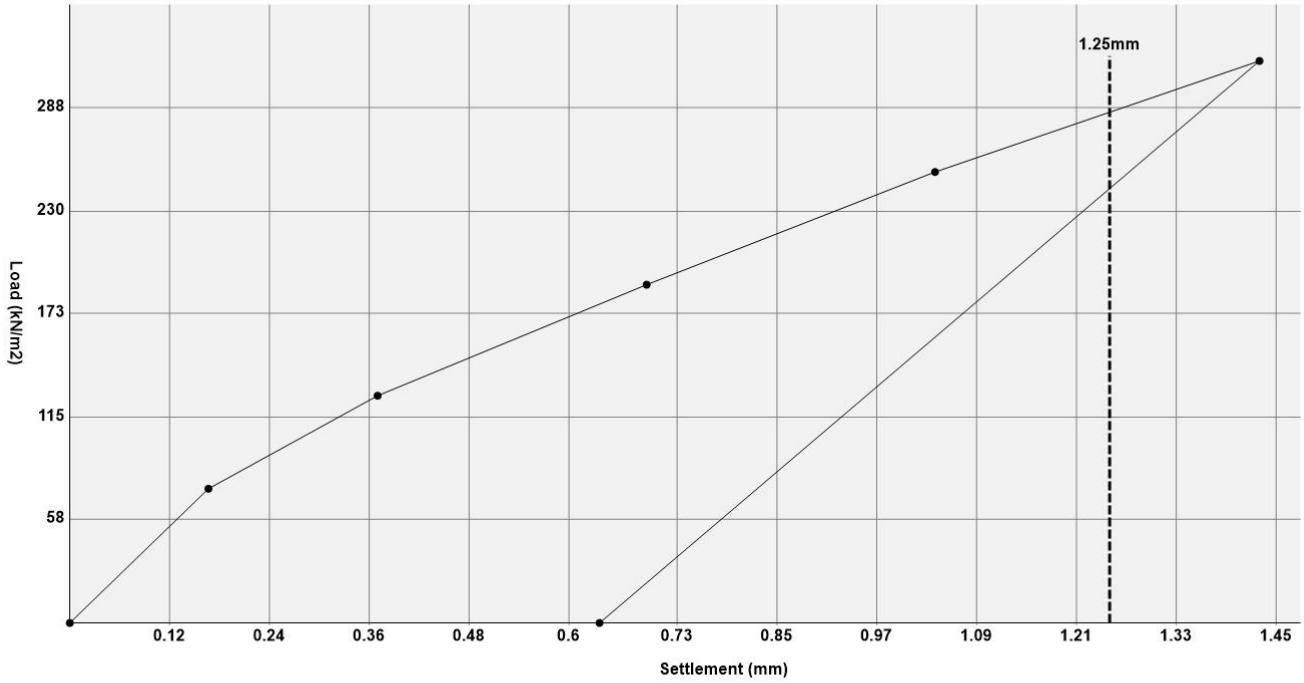
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 4 (E19, Form)
		^ **Test Location:**	E19 Formation
Lab Ref.:	270720-04	**Layer:**	Formation
Kentledge:	22t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
75	0.17
127	0.37
189	0.69
252	1.04
314	1.43
0	0.64



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **142331 kN/m2/m**
Equivalent CBR = **52 %**

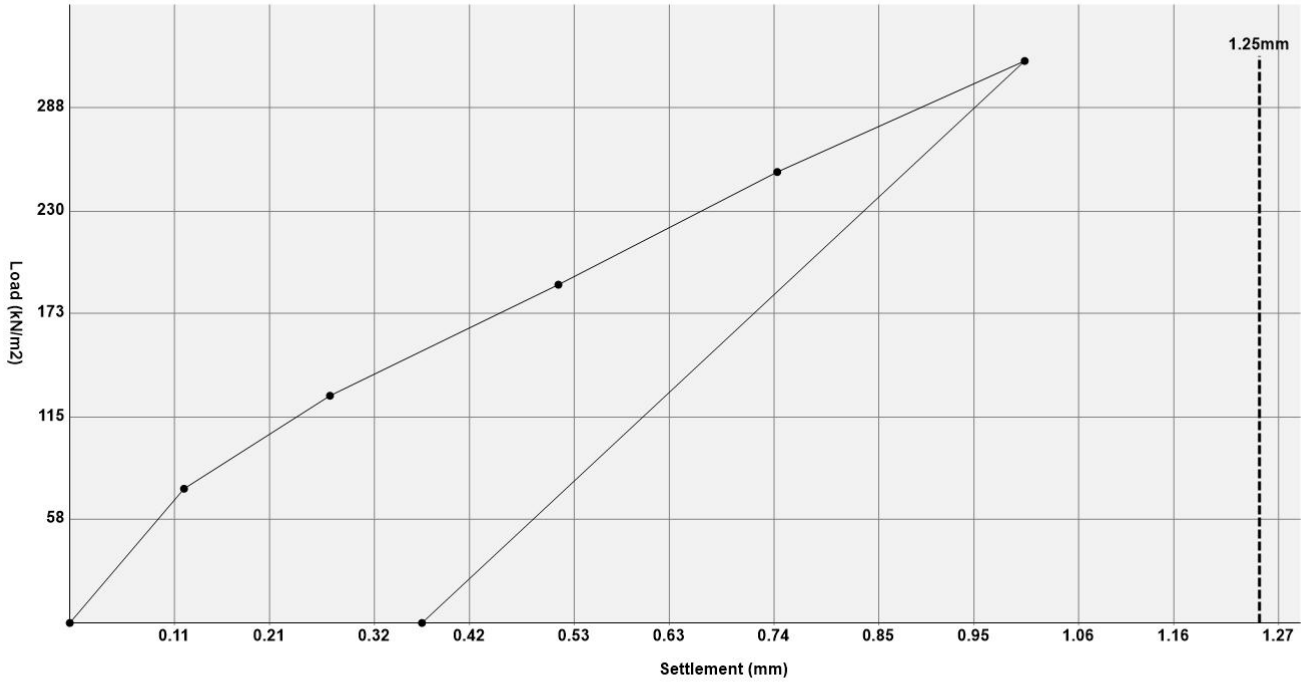
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 5 (E13, Form)
		^ **Test Location:**	E13 Formation
Lab Ref.:	270720-04	**Layer:**	Formation
Kentledge:	22t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
75	0.12
127	0.27
189	0.51
252	0.74
314	1.00
0	0.37



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

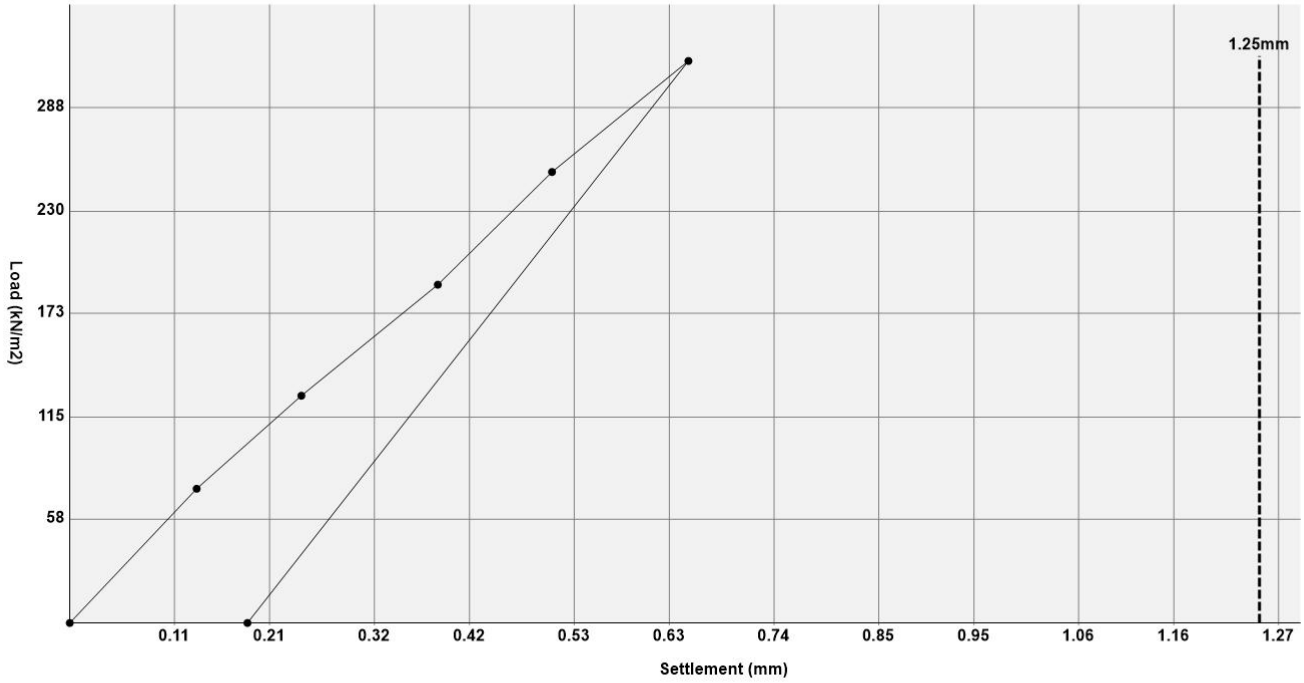
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 6 (E27, Form)
		^ **Test Location:**	E27 Formation
Lab Ref.:	270720-04	**Layer:**	Formation
Kentledge:	22t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
75	0.13
127	0.24
189	0.39
252	0.51
314	0.65
0	0.19



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

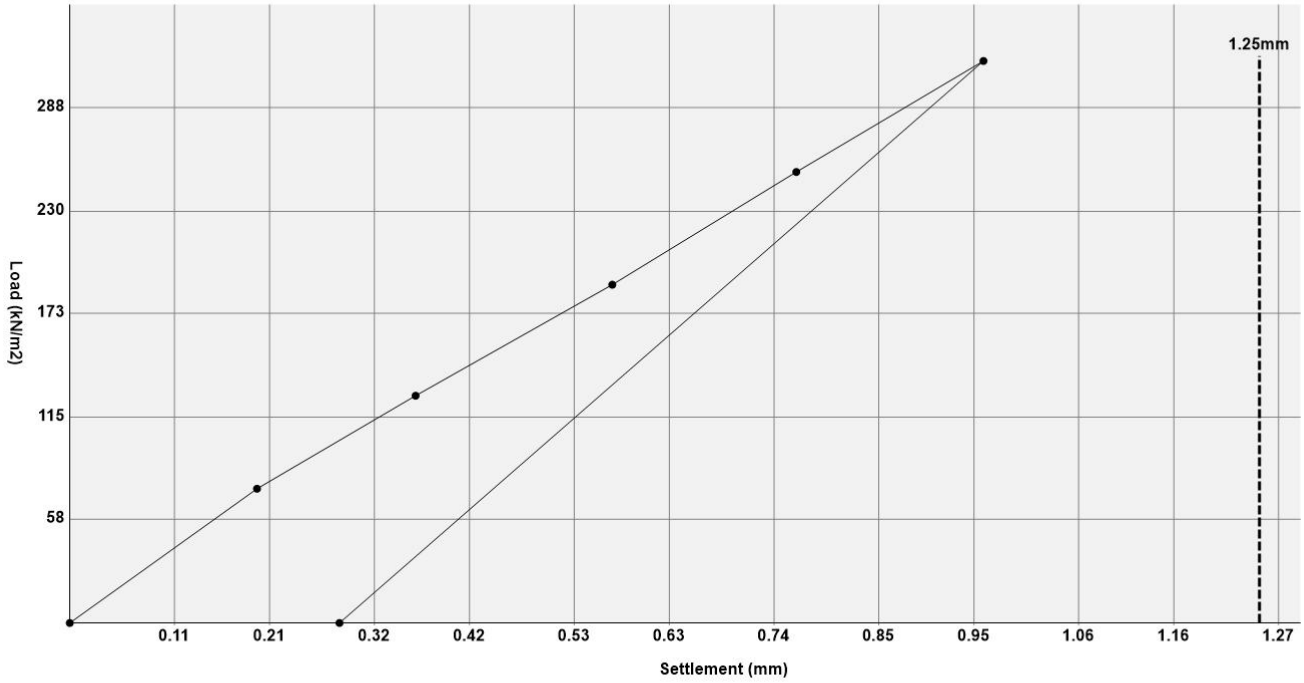
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 7 (E28, Form)
		^ **Test Location:**	E28 Formation
Lab Ref.:	270720-04	**Layer:**	Formation
Kentledge:	22t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
75	0.20
127	0.36
189	0.57
252	0.76
314	0.96
0	0.28



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

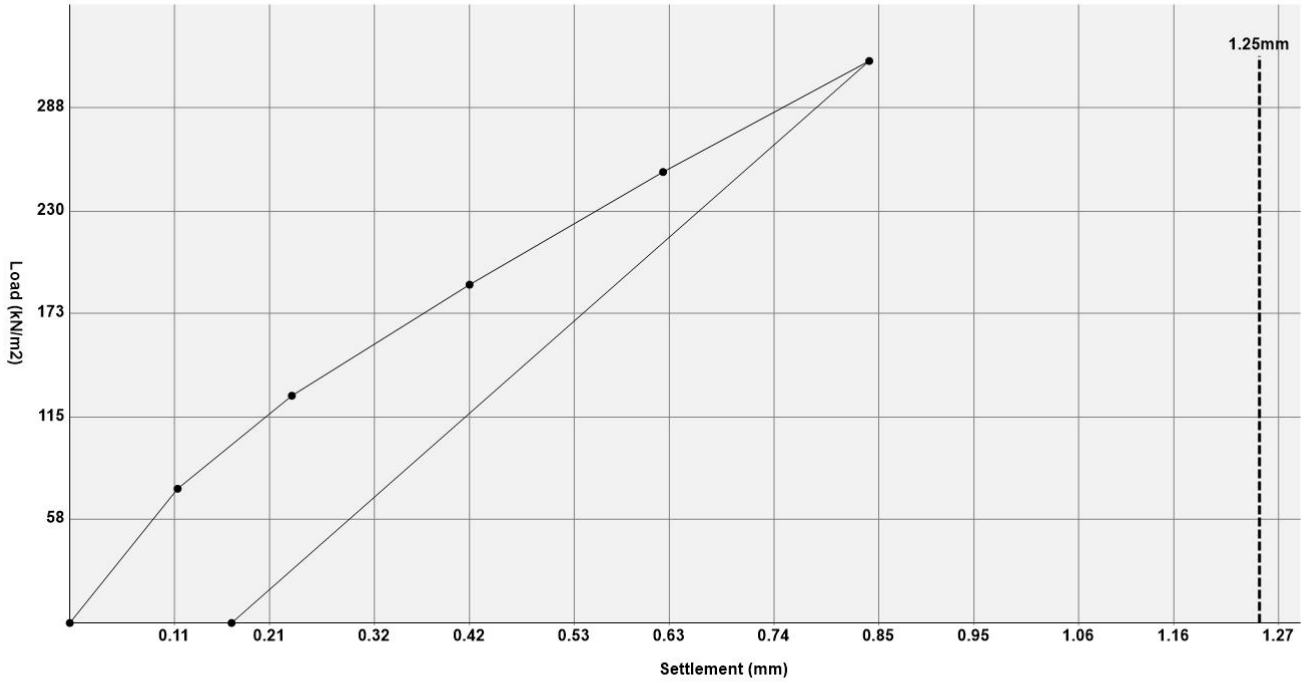
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR1 (E26, Form)
		^ **Test Location:**	E26, Formation
Lab Ref.:	270720-04	**Layer:**	Formation
Kentledge:	22t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Wet	**Date of Test:**	27/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
75	0.11
127	0.23
189	0.42
252	0.62
314	0.84
0	0.17



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Kiwa CMT Testing
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DE1 3QB

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www.kiwa.co.uk/cmt

Client: Ivy House Environmental Ltd
Scotland Farm
Far Lane
Ockbrook, Derby
Derbyshire
DE72 3RX

Date: 03/07/2020

Lab Ref: 020720-02

Originator: Scott

Order Ref: TBC

Site: Mitchell Road
Corby
Just befor Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 02/07/2020 in order to carry out 16 NDG and 600 plate load testing tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

Results:

The individual result sheets and location plan may be viewed on pages 2 to 17 of this report.

Kiwa CMT Testing

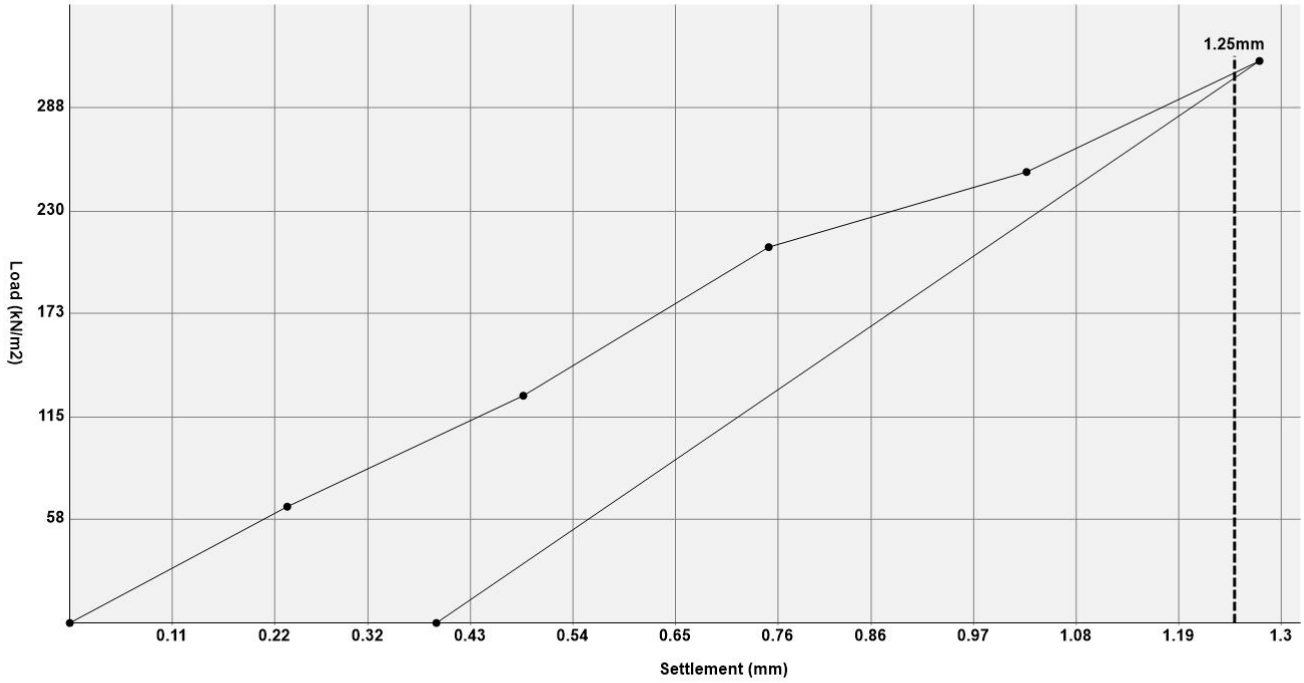
Checked and Authorised by: J. Eckford
Senior Geotechnical Technician

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 1
		^ **Test Location:**	- grid E64
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.23
127	0.49
210	0.75
252	1.03
314	1.28
0	0.39



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **153318 kN/m2/m**
Equivalent CBR = **59.2 %**

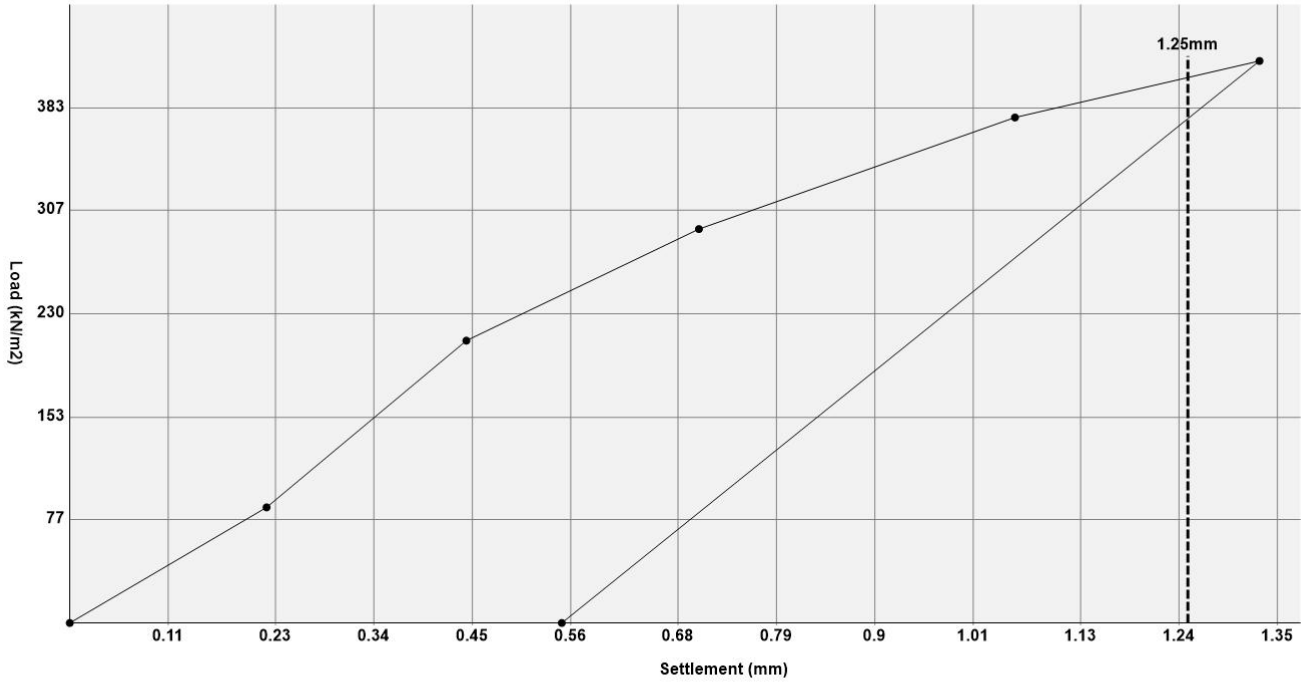
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 2
		^ **Test Location:**	-GRID E65
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
86	0.22
210	0.44
293	0.70
376	1.06
418	1.33
0	0.55



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **202759 kN/m2/m**
Equivalent CBR = **96 %**

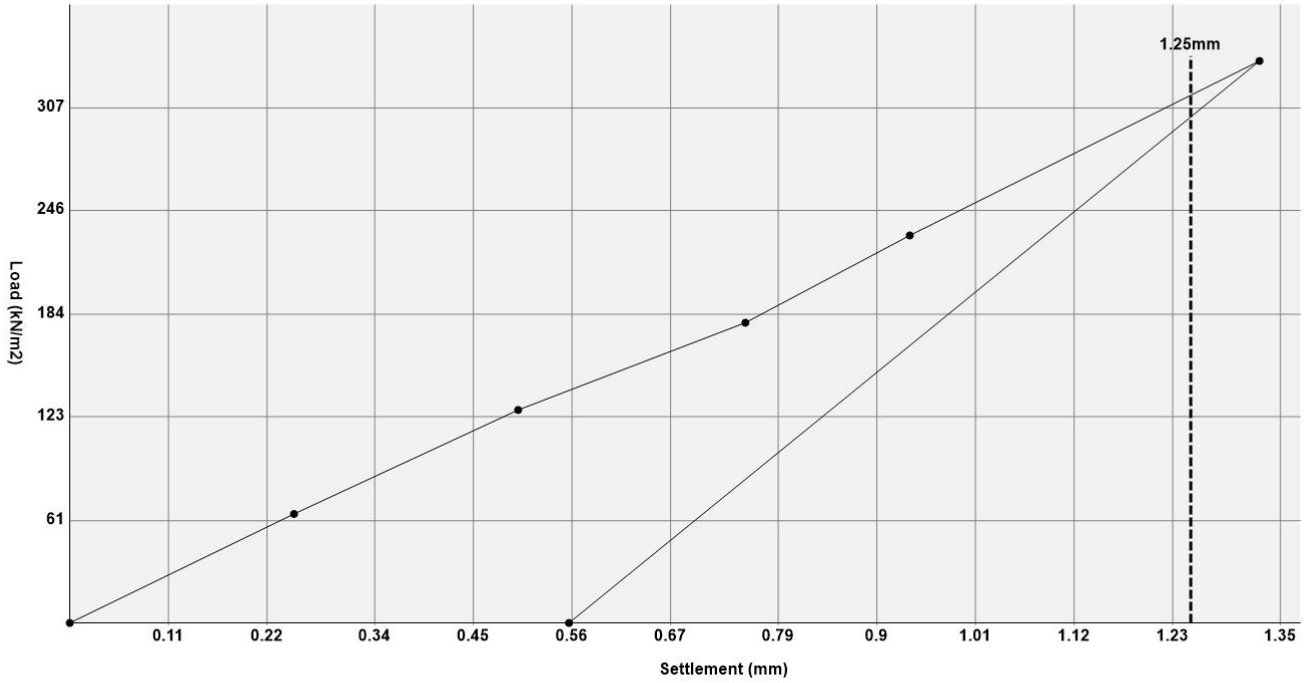
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 3
		^ **Test Location:**	-GRID E66
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.25
127	0.50
179	0.75
231	0.94
335	1.33
0	0.56



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **157313 kN/m2/m**
Equivalent CBR = **61.8 %**

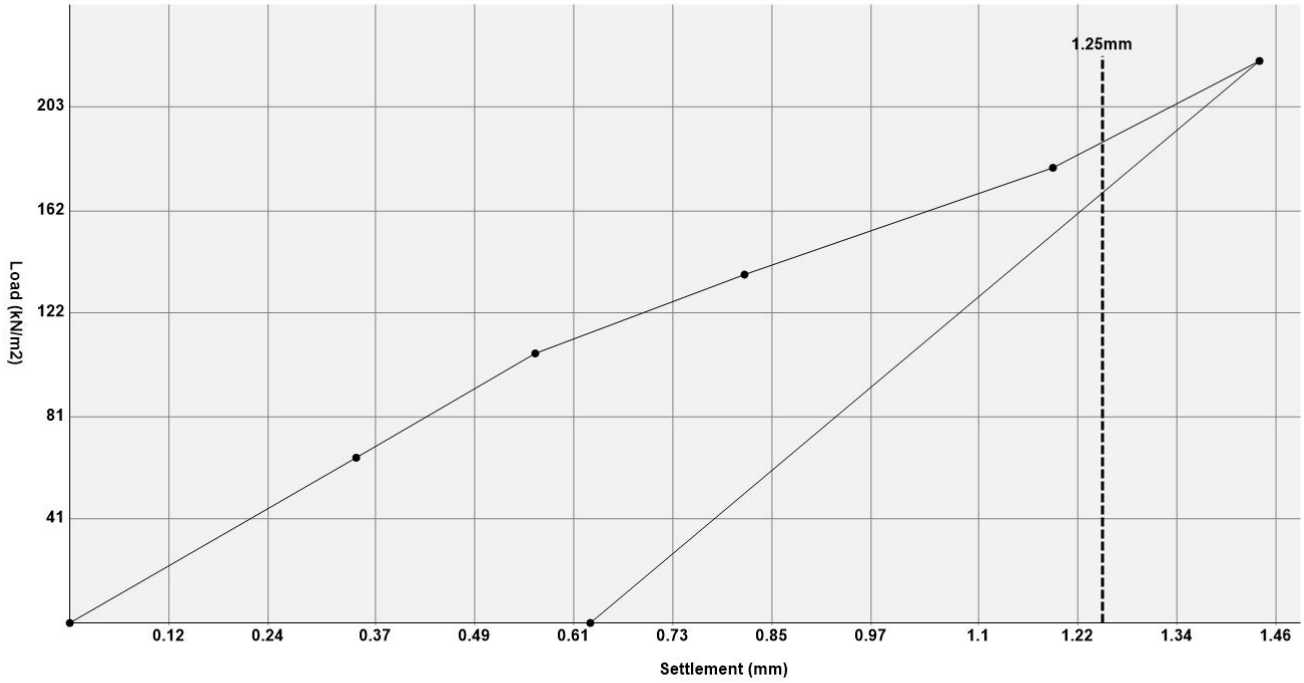
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 4
		^ **Test Location:**	-GRID E67
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.35
106	0.56
137	0.82
179	1.19
221	1.44
0	0.63



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **94388 kN/m2/m**
Equivalent CBR = **25.5 %**

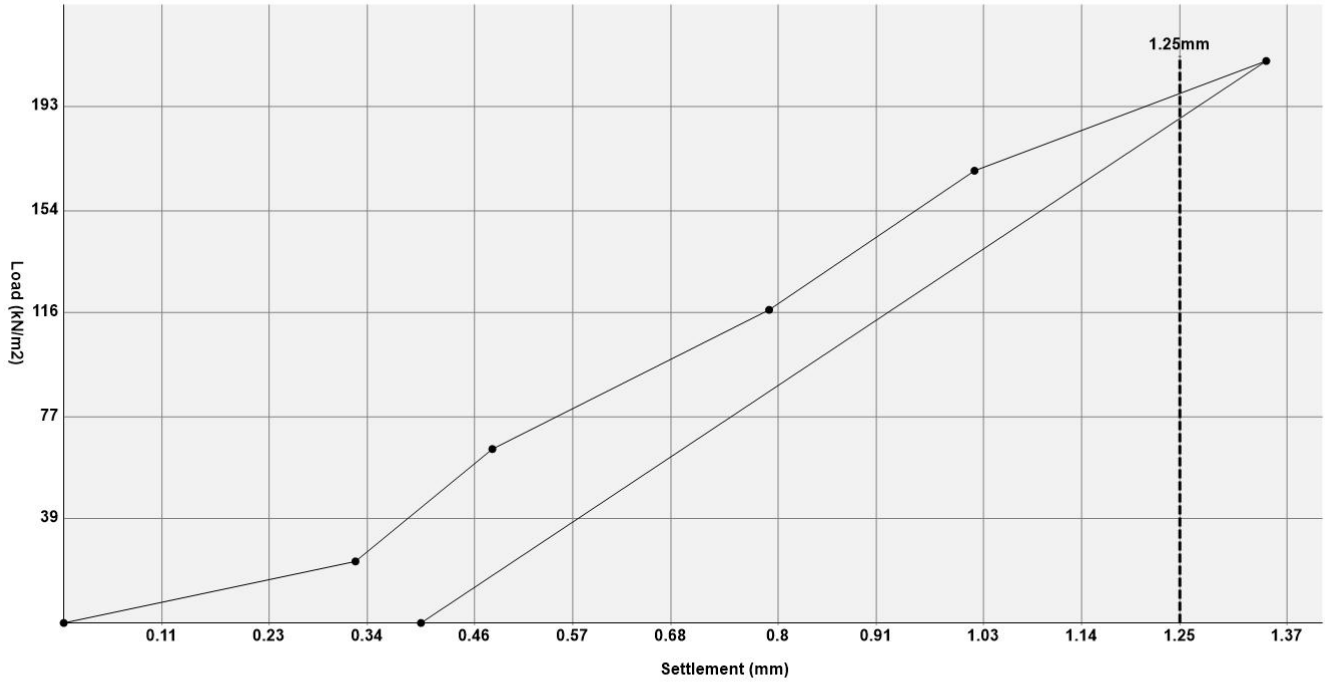
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 5
		^ **Test Location:**	- GRID E 68
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
23	0.33
65	0.48
117	0.79
169	1.02
210	1.35
0	0.40



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **98883 kN/m2/m**
Equivalent CBR = **27.7 %**

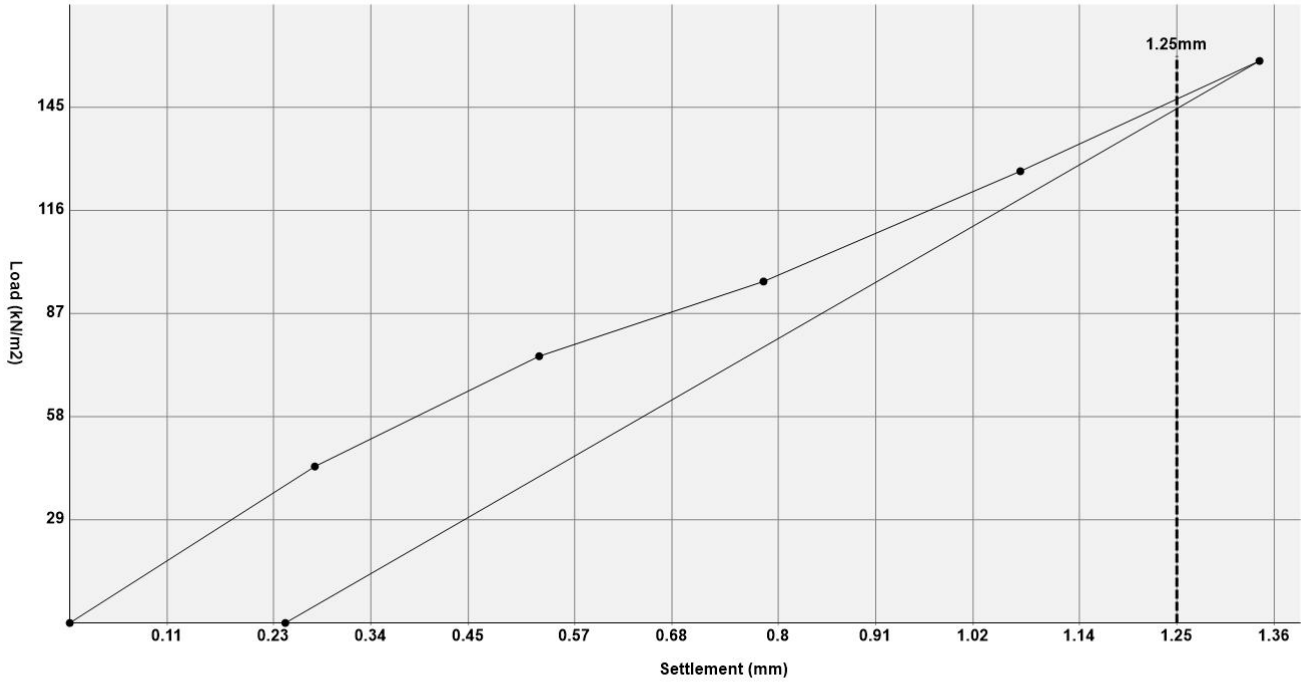
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 6
		^ **Test Location:**	- GRID E 69
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
44	0.28
75	0.53
96	0.78
127	1.07
158	1.34
0	0.24



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **73413 kN/m2/m**
Equivalent CBR = **16.5 %**

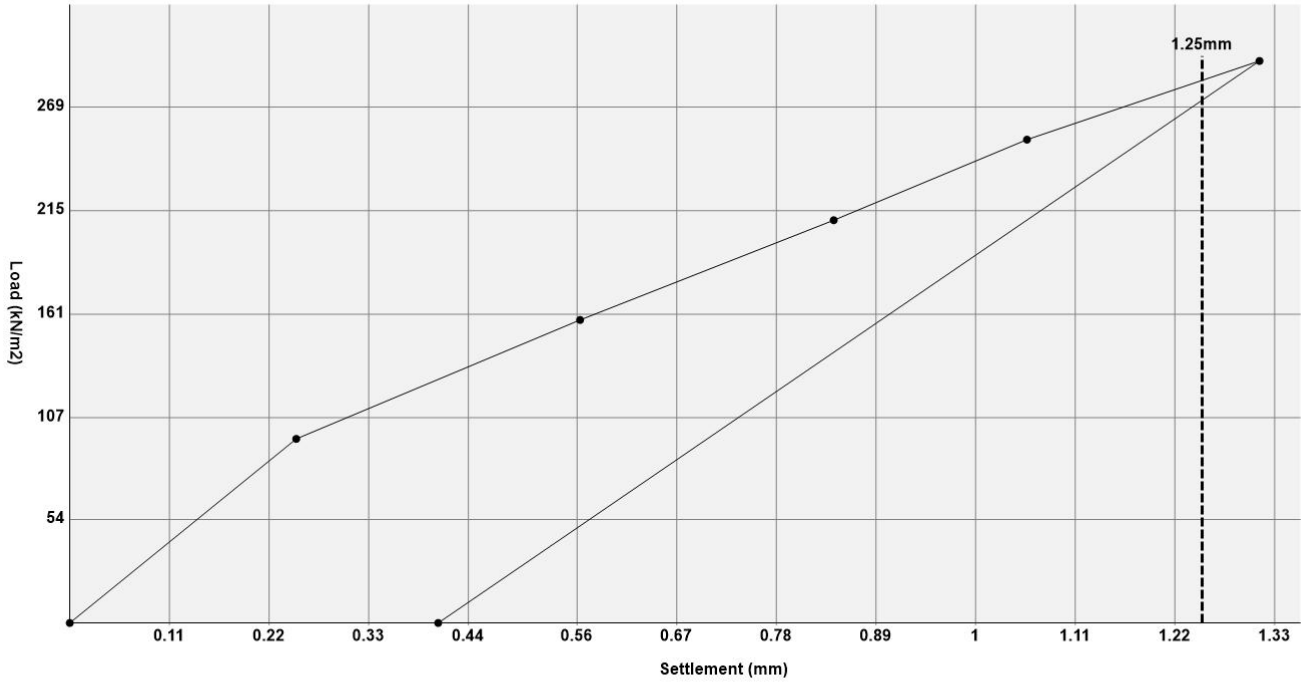
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 7
		^ **Test Location:**	GRID E 61
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
96	0.25
158	0.56
210	0.84
252	1.06
293	1.31
0	0.41



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **141332 kN/m2/m**
Equivalent CBR = **51.4 %**

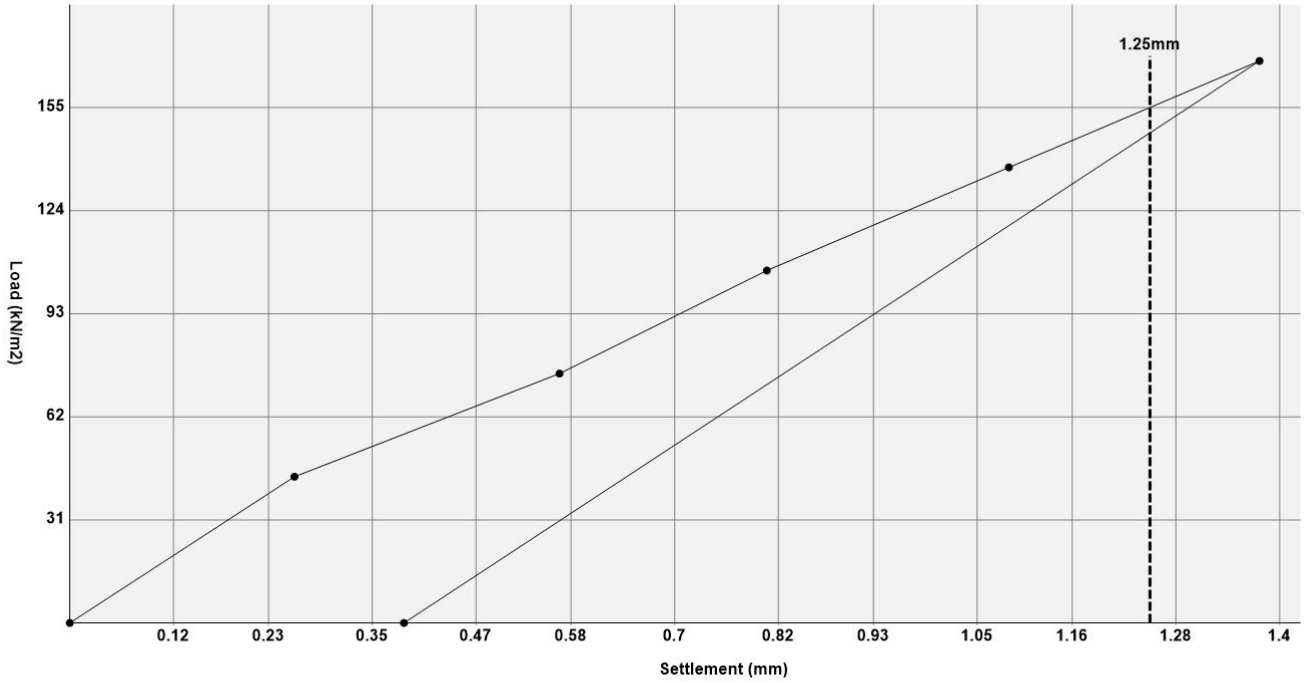
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 8
		^ **Test Location:**	- GRID E 60
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
44	0.26
75	0.57
106	0.81
137	1.09
169	1.38
0	0.39



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **77408 kN/m2/m**
Equivalent CBR = **18.1 %**

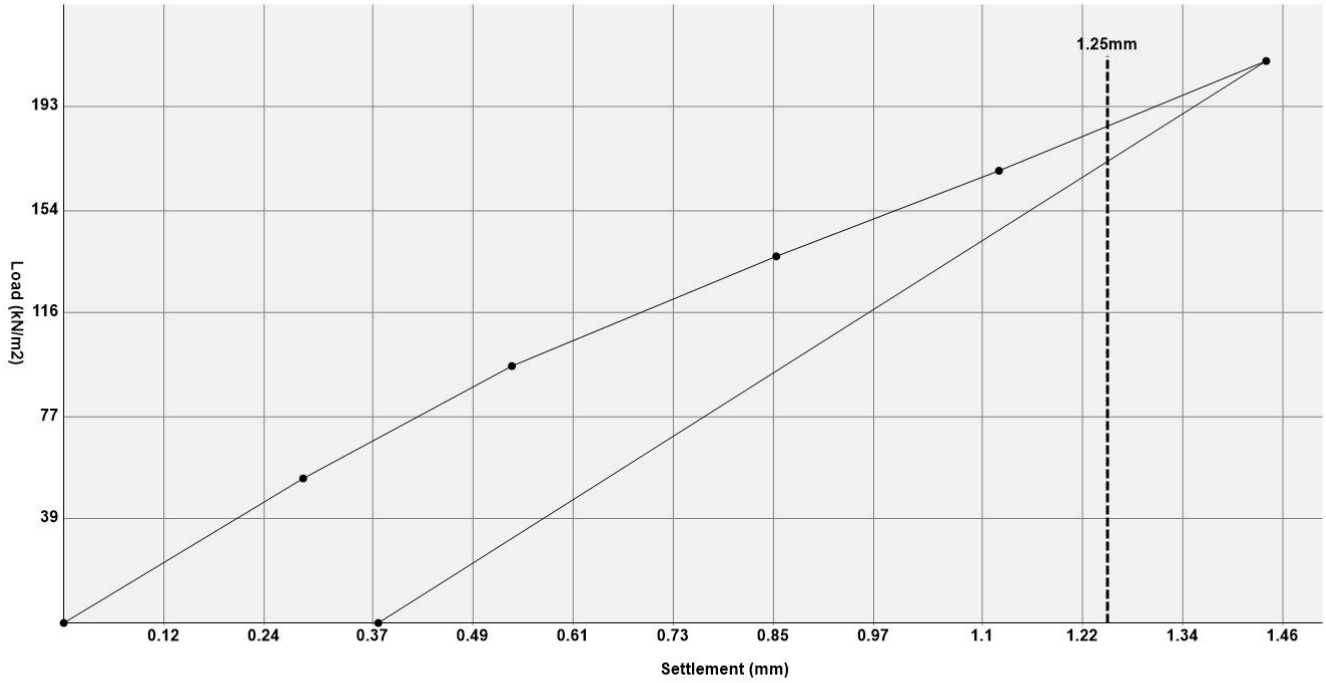
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 9
		^ **Test Location:**	-GRID E59
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
54	0.29
96	0.54
137	0.85
169	1.12
210	1.44
0	0.38



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **92890 kN/m2/m**
Equivalent CBR = **24.8 %**

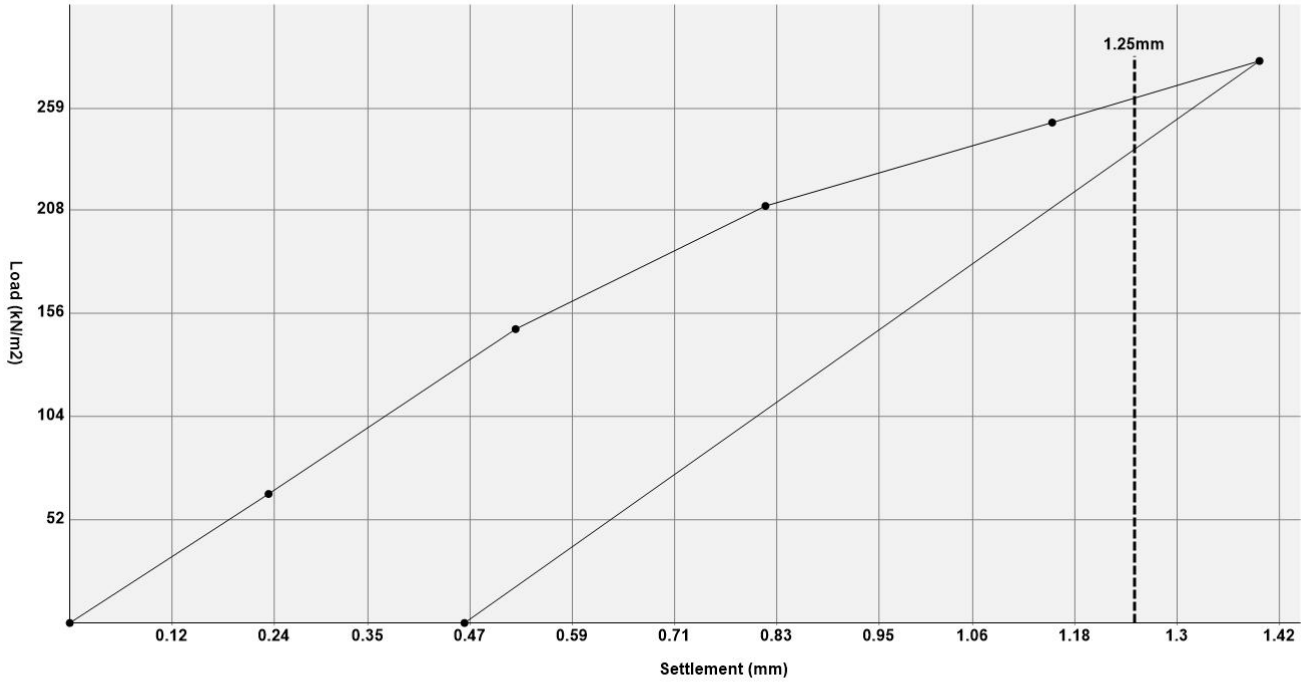
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 10
		^ **Test Location:**	- GRID E 58
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.23
148	0.52
210	0.82
252	1.15
283	1.40
0	0.46



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **131844 kN/m2/m**
Equivalent CBR = **45.5 %**

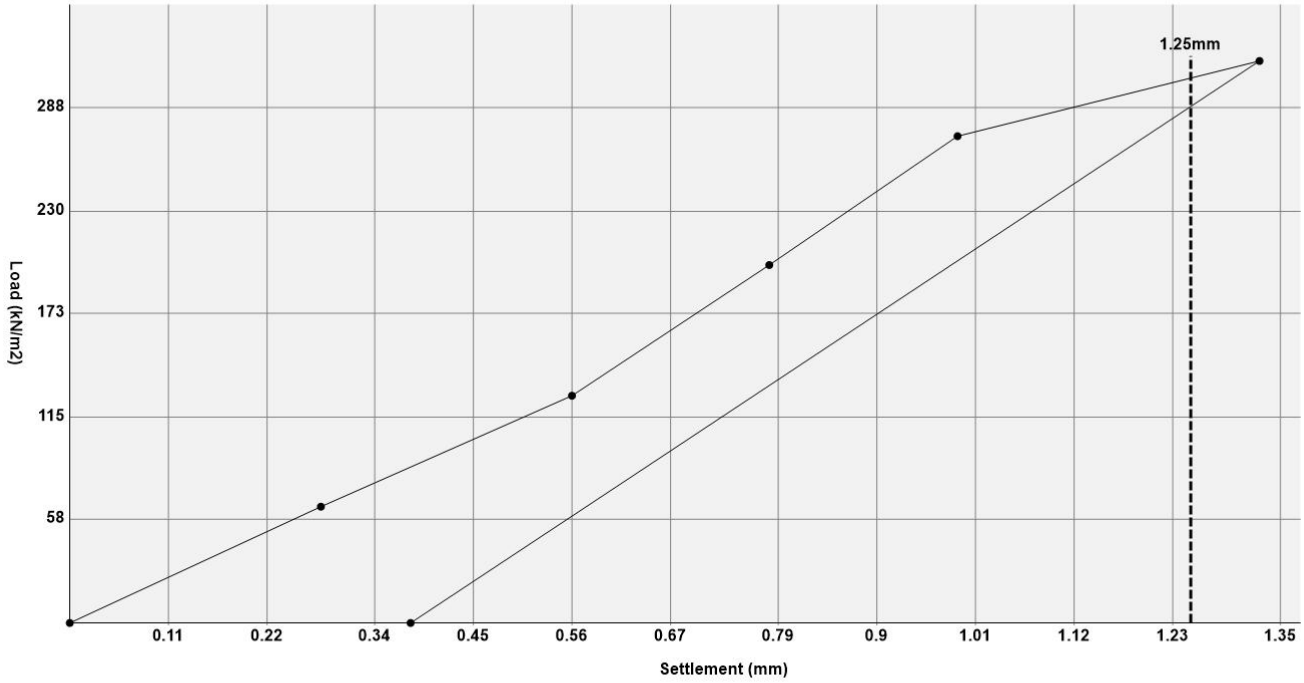
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 11
		^ **Test Location:**	-GRID E 57
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.28
127	0.56
200	0.78
272	0.99
314	1.33
0	0.38



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **151820 kN/m2/m**
Equivalent CBR = **58.2 %**

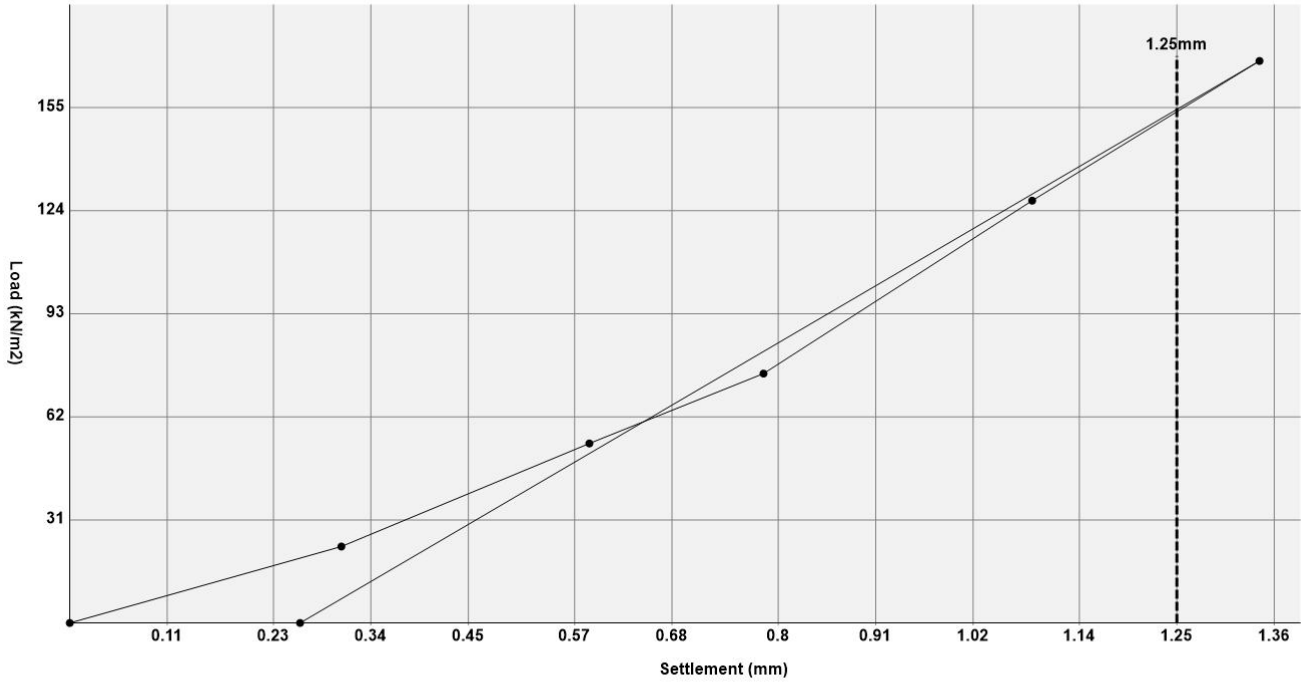
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 12
		^ **Test Location:**	- grid E35
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
23	0.31
54	0.59
75	0.78
127	1.09
169	1.34
0	0.26



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **76909 kN/m2/m**
Equivalent CBR = **17.9 %**

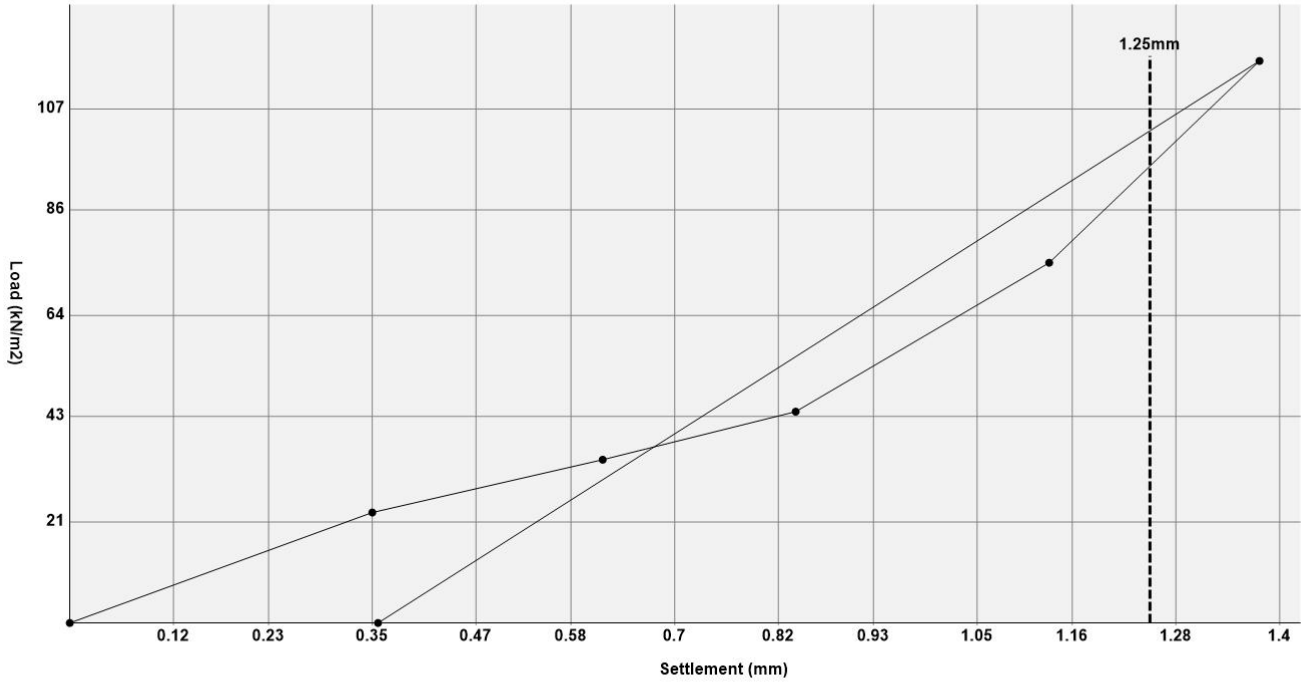
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 13
		^ **Test Location:**	- GRID E 34
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
23	0.35
34	0.62
44	0.84
75	1.13
117	1.38
0	0.36



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **47444 kN/m2/m**
Equivalent CBR = **7.7 %**

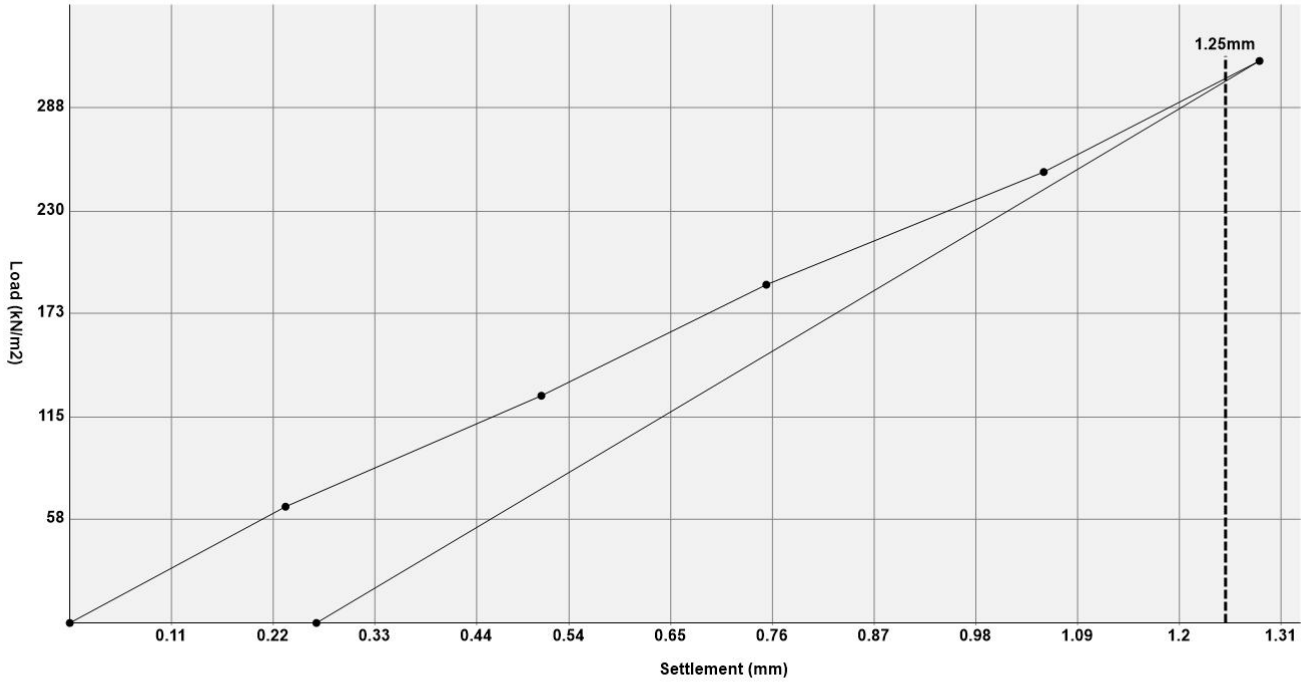
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 14
		^ **Test Location:**	- GRID E33
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.23
127	0.51
189	0.75
252	1.05
314	1.29
0	0.27



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **151820 kN/m2/m**
Equivalent CBR = **58.2 %**

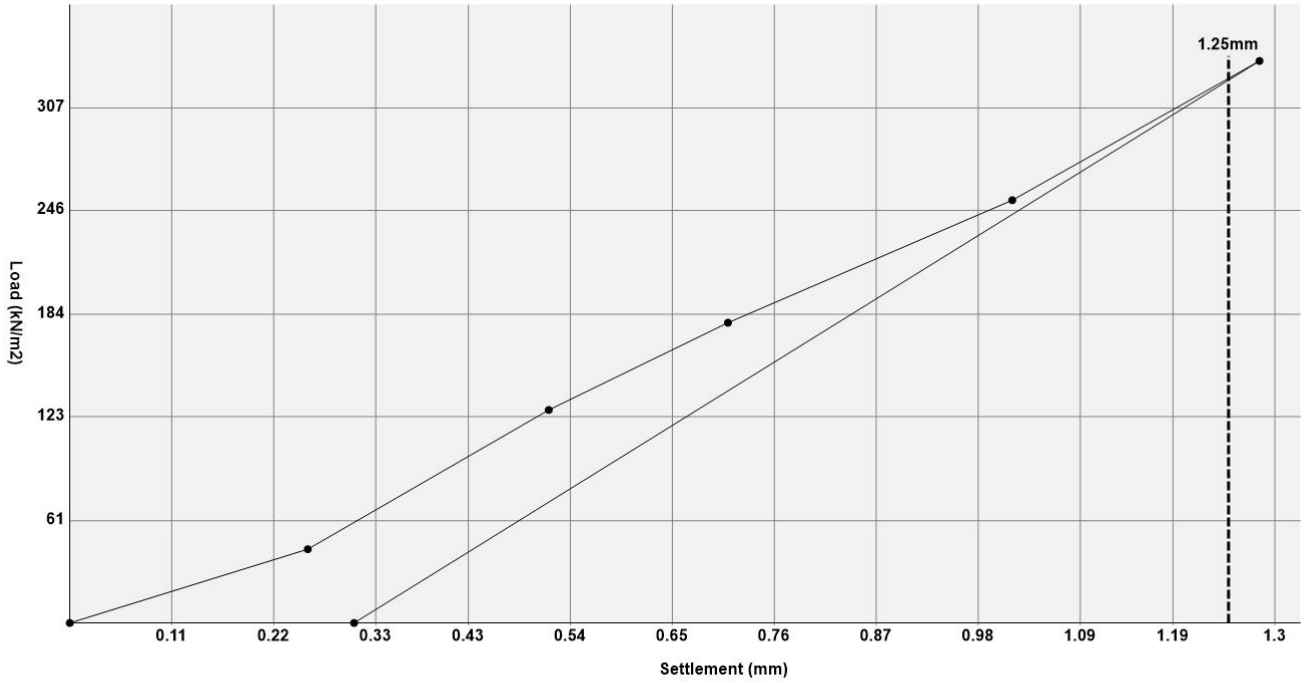
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 15
		^ **Test Location:**	- GRID E 39
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
44	0.26
127	0.52
179	0.71
252	1.02
335	1.28
0	0.31



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **162307 kN/m2/m**
Equivalent CBR = **65.3 %**

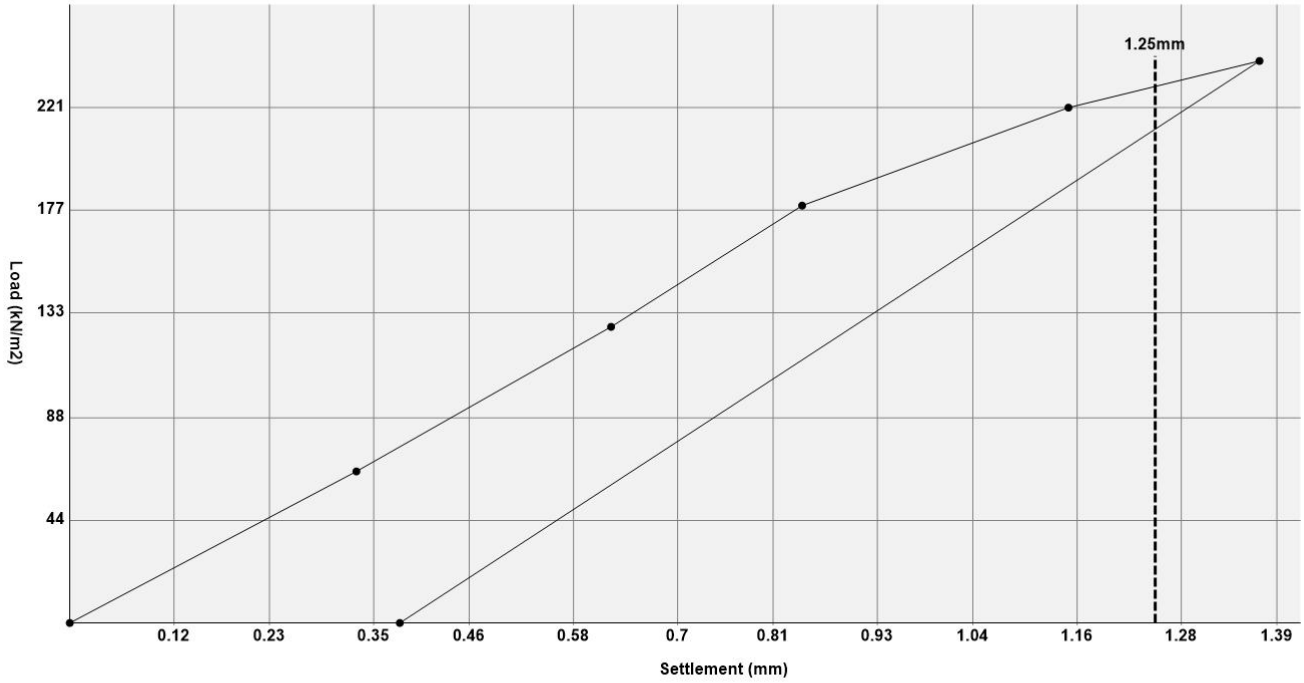
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 16
		^ **Test Location:**	- GRID E40
Lab Ref.:	020720-02	**Layer:**	Formation
Kentledge:	14 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	02/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.33
127	0.62
179	0.84
221	1.15
241	1.37
0	0.38



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **114864 kN/m2/m**
Equivalent CBR = **35.9 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Job Nº:	020720-02	Client Ref: TBC	Date: 02/07/20	Weather:	
Client:	IVY HOUSE ENVIROMENTAL		Tech Name:	JOHN MACINTYRE	
Site:	MITCHEL RD CORBY NN17 5AF		Max DD/OMC Source:	CLIENT	
			MDD: 1740	PD: 268	OMC: 17%
			Density offset:	Moisture offset:	
			Test depth mm: 300	Time: 15 sec	
Material:	brown soil and clay with small aggregate		New MS 688	% Difference 0.1 %	
			New DS 1733	% Difference 0.2 %	

Nº	Wet density kg/m³	Dry Density kg/m³	Compaction %	MC %	Air Voids %	Plot and Grid	Level	Test No.	SRD
N	2159	1951	112.1	10.6	6.7	B4	300 MM	1	
S	2249	2035	118.0	9.5	4.1			AOD	
E	2094	1899	109.1	10.2	10.1			E	
W	2076	1805	108.3	10.2	10.2			N	
Mean	2145	1923	111.9	10.1	7.8				
N	2003	1760	101.8	13.8	10.3	B3	300 MM	2	
S	1951	1721	98.4	14.0	12.5			AOD	
E	2090	1891	108.1	10.5	9.8			E	
W	2040	1780	102.3	14.7	7.6			N	
Mean	2021	1788	102.7	13.3	10.1				
N	2126	1879	108.4	13.2	5.4	B2	300 MM	3	
S	2076	1881	108.1	10.4	10.5			AOD	
E	2063	1828	105.1	12.8	8.6			E	
W	2069	1900	109.2	10.3	9.8			N	
Mean	2084	1872	107.7	11.7	8.6				
N	1996	1824	104.8	9.5	14.9	B1	300 MM	4	
S	1910	1738	99.9	9.9	18.2			AOD	
E	2010	1807	103.9	11.2	12.5			E	
W	1997	1816	104.4	10.2	14.3			N	
Mean	1978	1796	103.3	10.2	15.0				

Kiwa CMT

Kiwa CMT Testing
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Derby
DE1 3QB

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F +44 (0)1332 602607
E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
Derbyshire
DE72 3RX

Date: 15th July 2020

Lab Ref: 140720-03

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just before Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 14th July 2020 in order to carry out 13 Plate bearings for equivalent CBR% tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

To carry out Nuclear Density Testing in accordance with **Documented In-House Method** SO35.

Results:

The individual result sheets may be viewed on pages 2 to 14 of this report.

Kiwa CMT Testing

Author: J. Eckford
Senior Geotechnical Technician

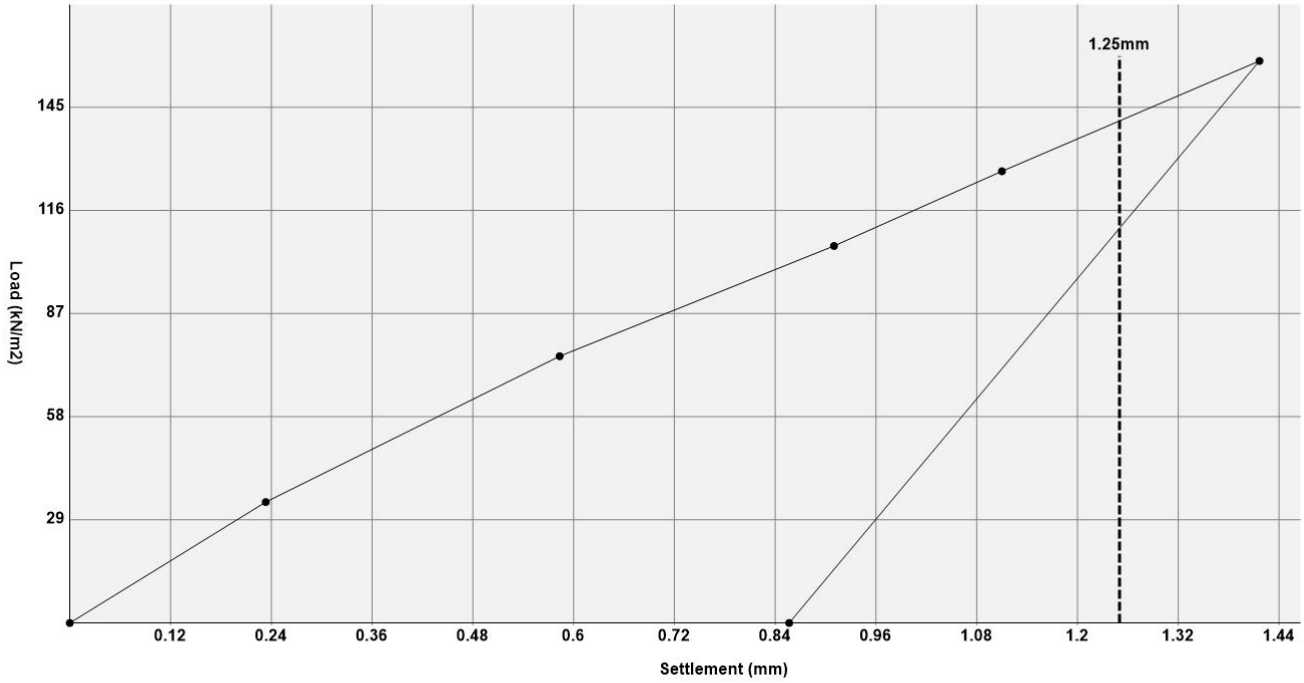
Checked and Approved by: Richard Cartlidge
Department Manager

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 1
		^ **Test Location:**	B1 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.23
75	0.58
106	0.91
127	1.11
158	1.42
0	0.86



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **70416 kN/m2/m**
Equivalent CBR = **15.4 %**

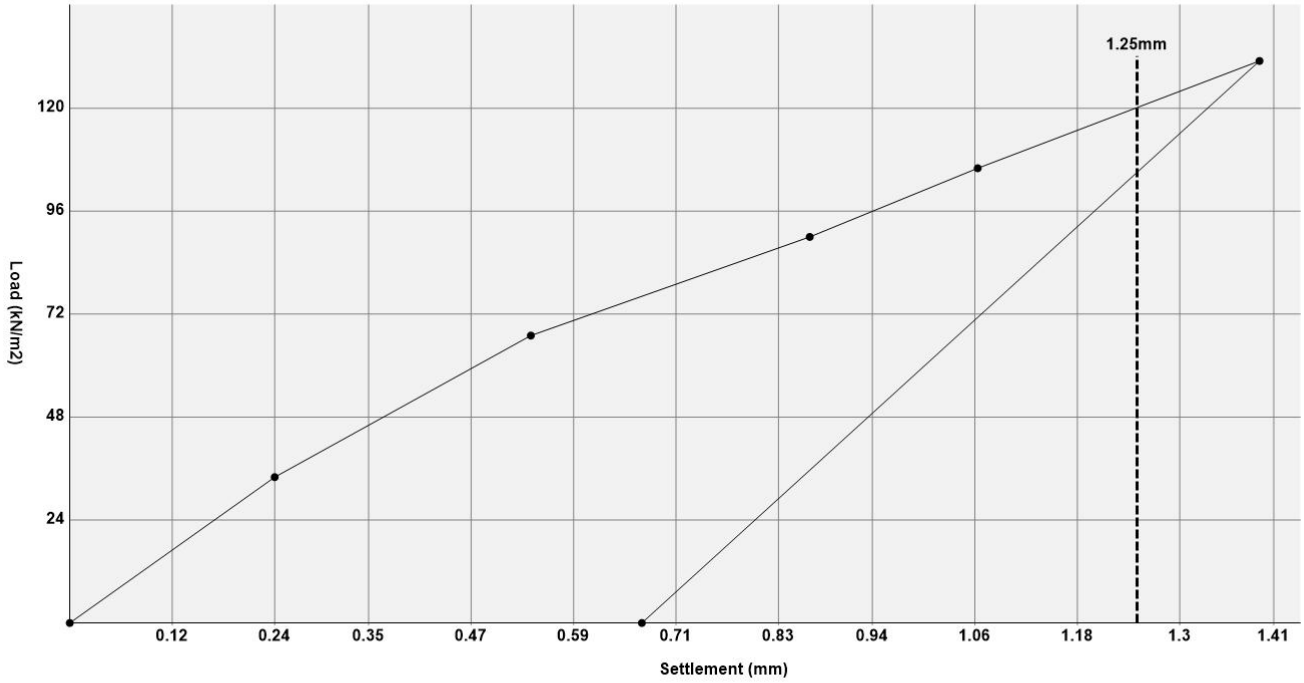
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 2
		^ **Test Location:**	B2 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.24
67	0.54
90	0.87
106	1.06
131	1.39
0	0.67



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **59929 kN/m2/m**
Equivalent CBR = **11.6 %**

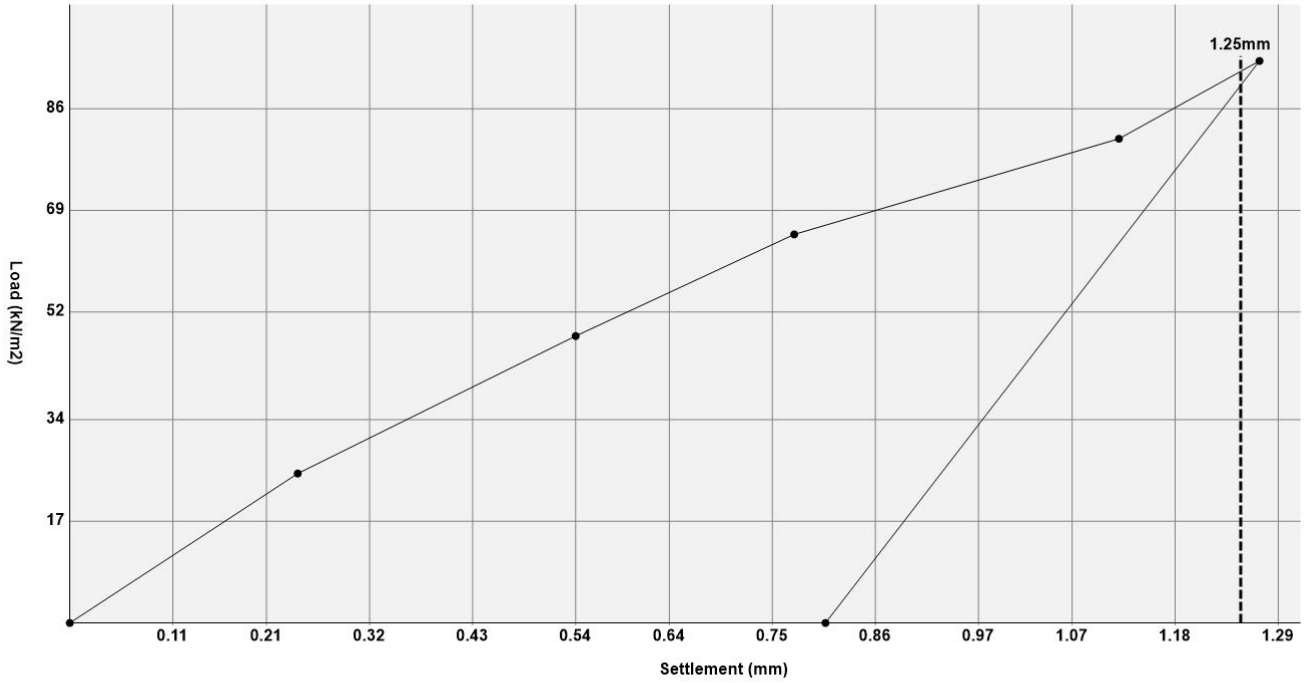
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 3
		^ **Test Location:**	B3 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
25	0.24
48	0.54
65	0.77
81	1.12
94	1.27
0	0.81



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **45945 kN/m2/m**
Equivalent CBR = **7.3 %**

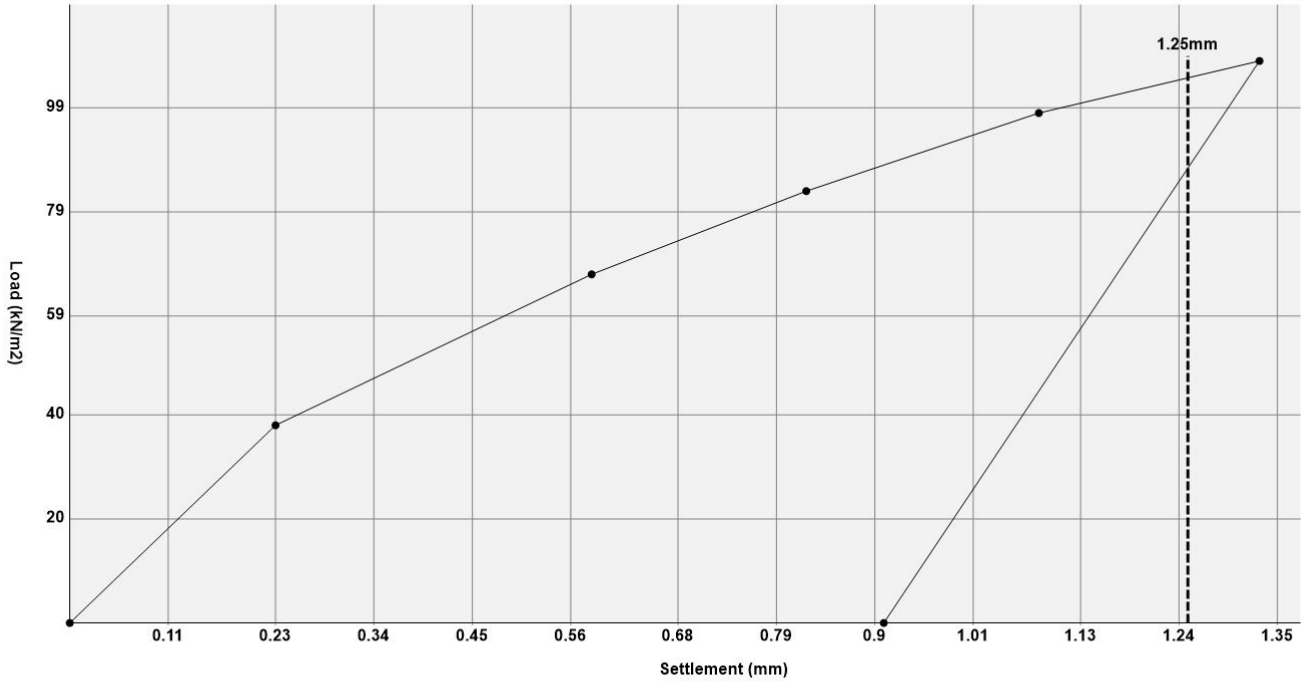
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 4
		^ **Test Location:**	B4 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
38	0.23
67	0.58
83	0.82
98	1.08
108	1.33
0	0.91



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **52438 kN/m2/m**
Equivalent CBR = **9.2 %**

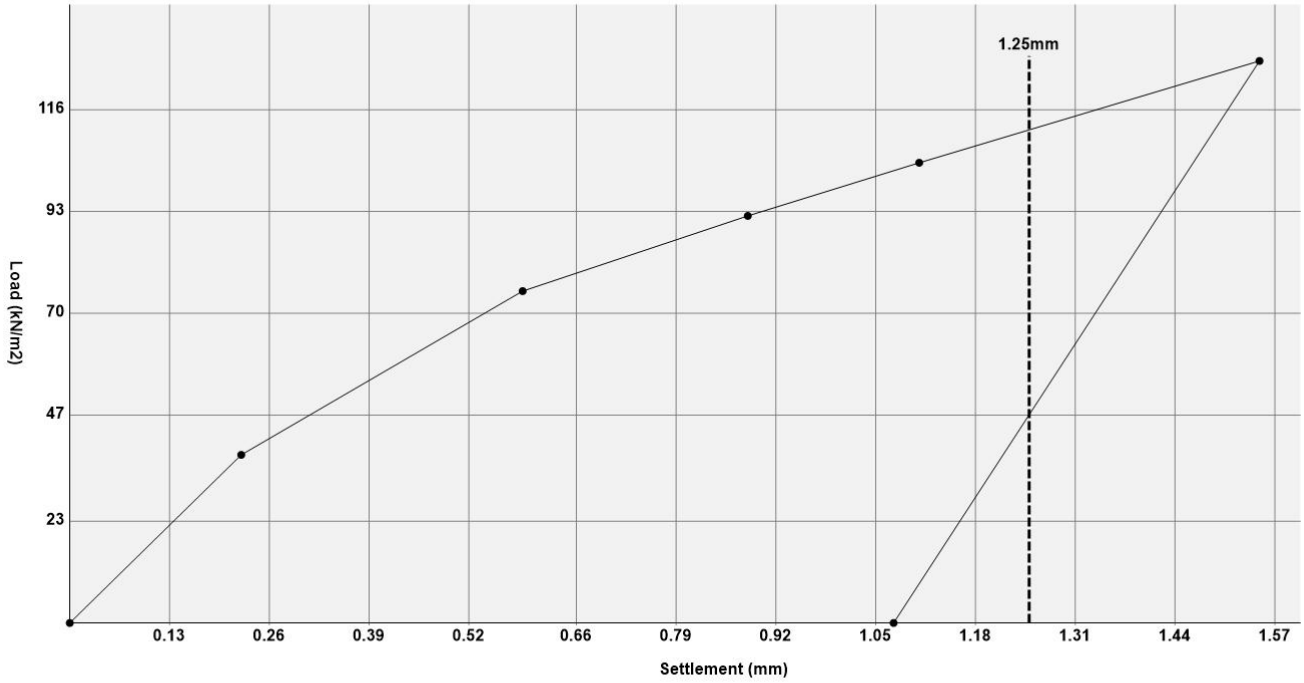
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 5
		^ **Test Location:**	B10 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
38	0.22
75	0.59
92	0.88
104	1.11
127	1.55
0	1.07



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **55434 kN/m2/m**
Equivalent CBR = **10.1 %**

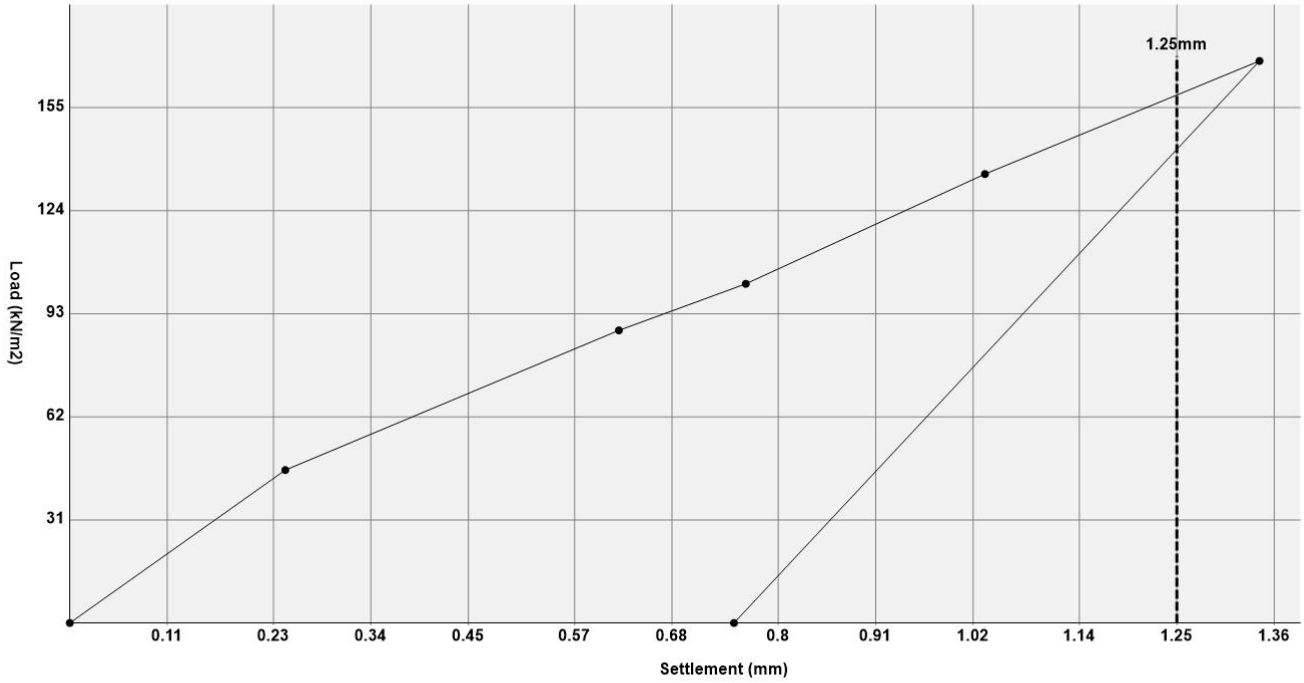
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 6
		^ **Test Location:**	B9 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
46	0.24
88	0.62
102	0.76
135	1.03
169	1.34
0	0.75



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **79406 kN/m2/m**
Equivalent CBR = **18.9 %**

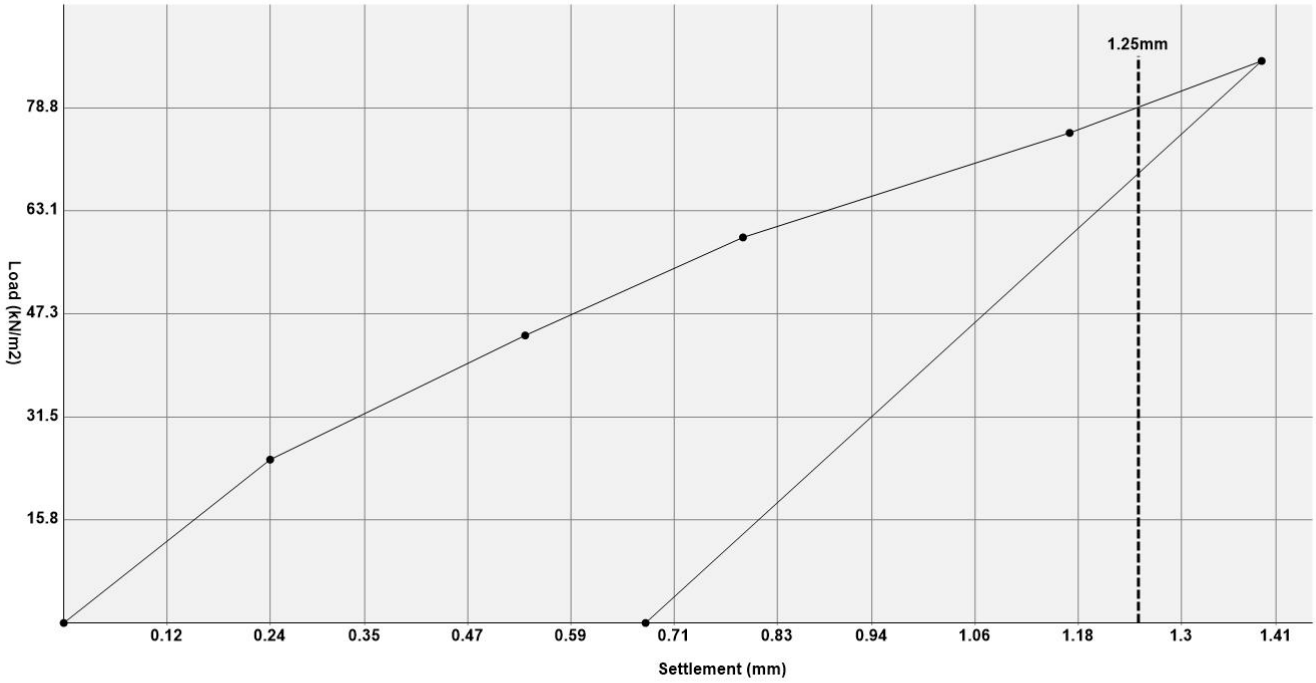
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 7
		^ **Test Location:**	B8 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
25	0.24
44	0.54
59	0.79
75	1.17
86	1.39
0	0.68



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **39453 kN/m2/m**
Equivalent CBR = **5.6 %**

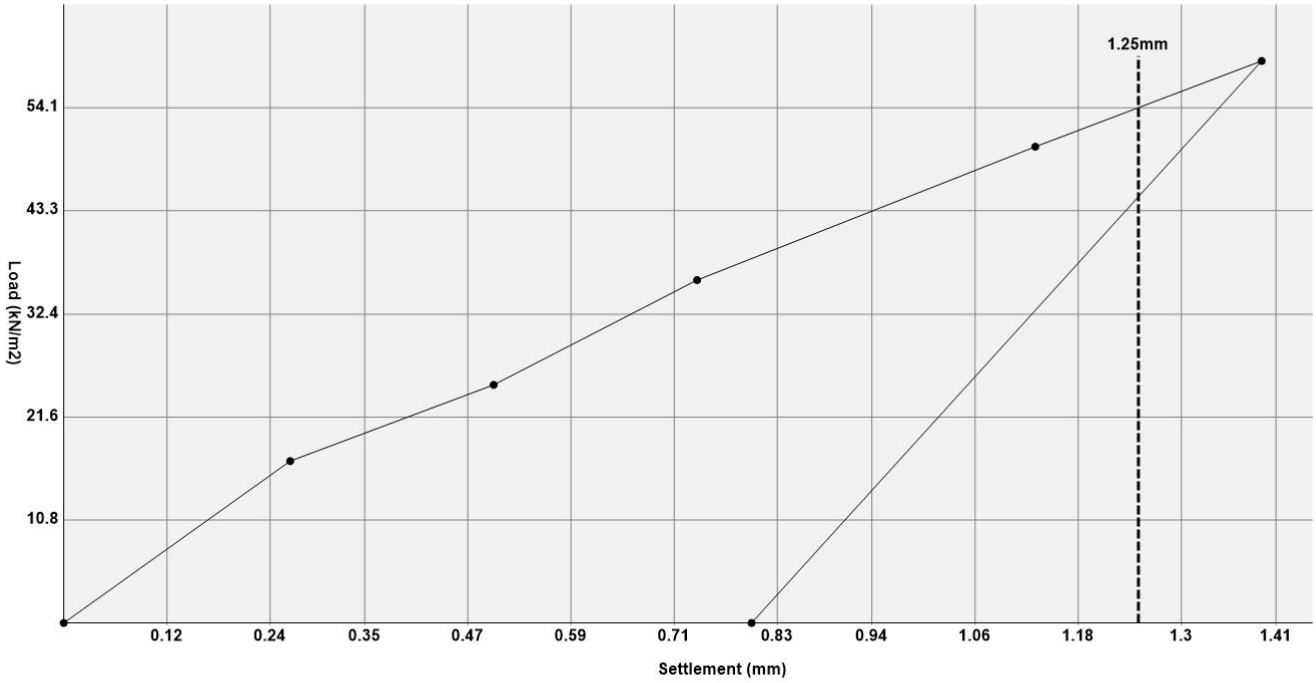
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 8
		^ **Test Location:**	B7 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
17	0.26
25	0.50
36	0.74
50	1.13
59	1.39
0	0.80



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **26968 kN/m2/m**
Equivalent CBR = **2.9 %**

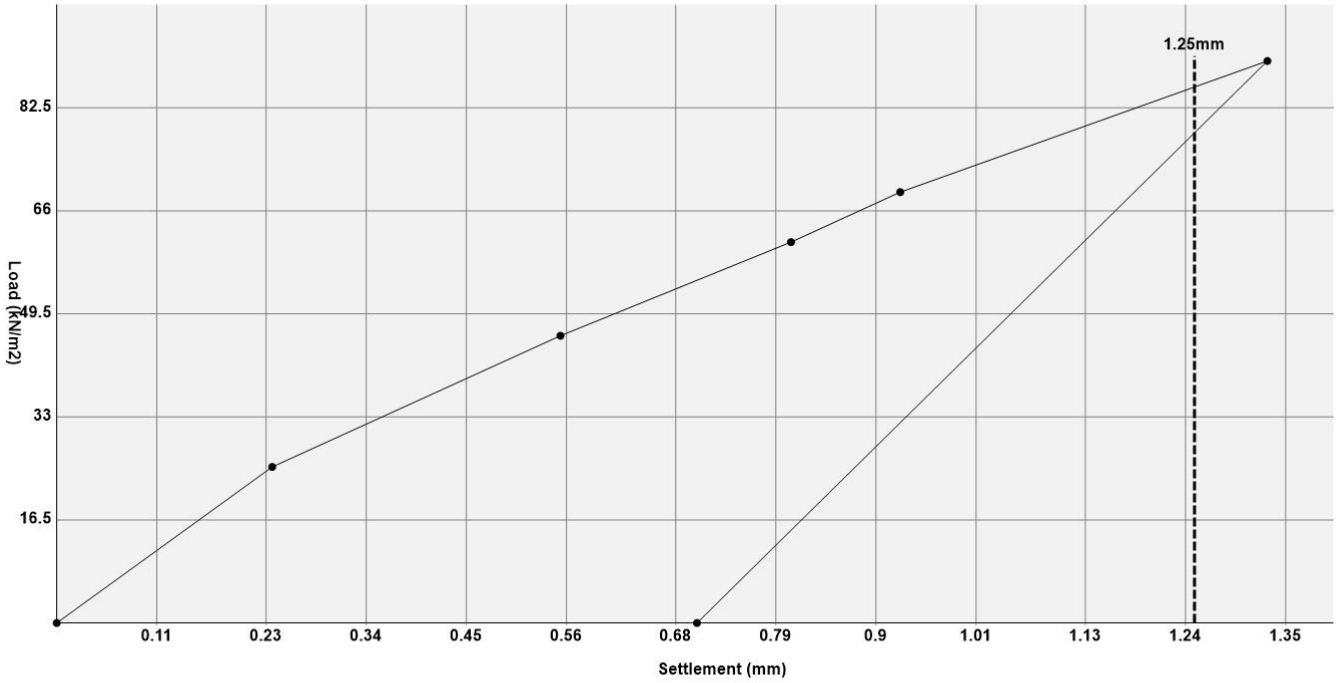
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 9
		^ **Test Location:**	B6 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
25	0.24
46	0.55
61	0.81
69	0.93
90	1.33
0	0.70



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **42949 kN/m2/m**
Equivalent CBR = **6.5 %**

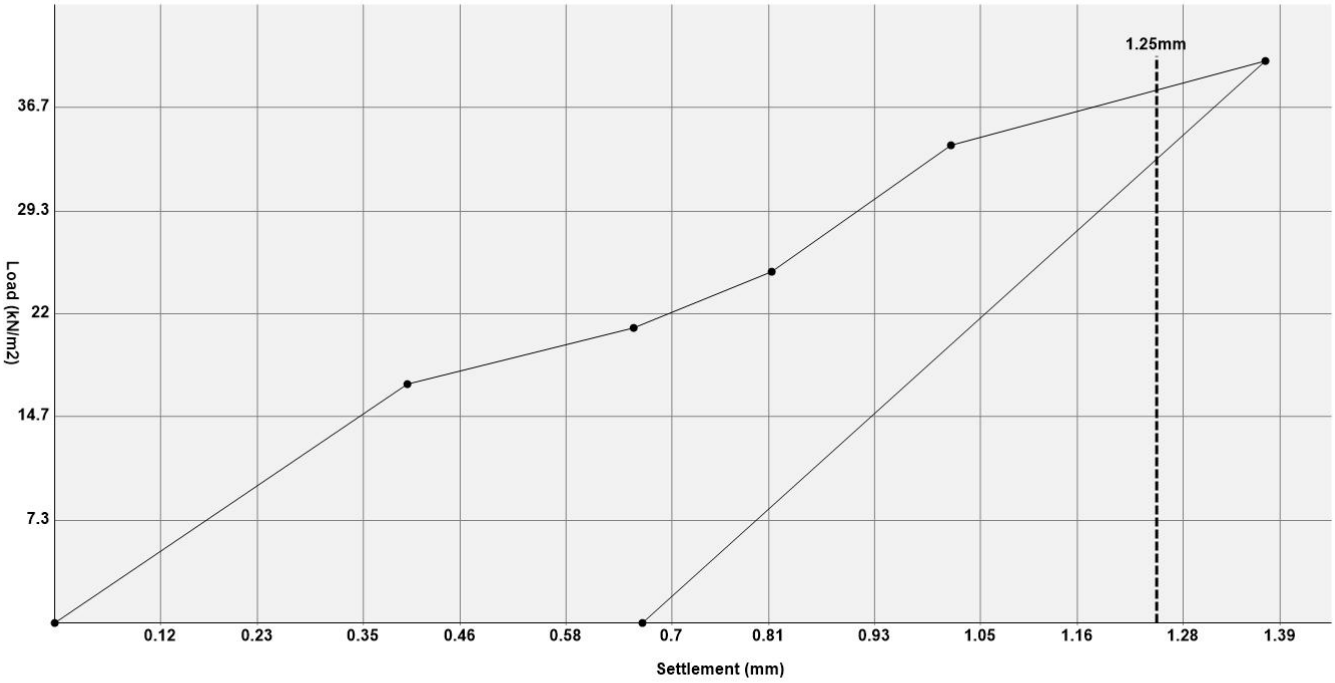
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 10
		^ **Test Location:**	B5 6F5 Final Layer
Lab Ref.:	140720-03	**Layer:**	Capping
Kentledge:	21t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
17	0.40
21	0.66
25	0.81
34	1.02
40	1.37
0	0.67



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **18977 kN/m2/m**
Equivalent CBR = **1.6 %**

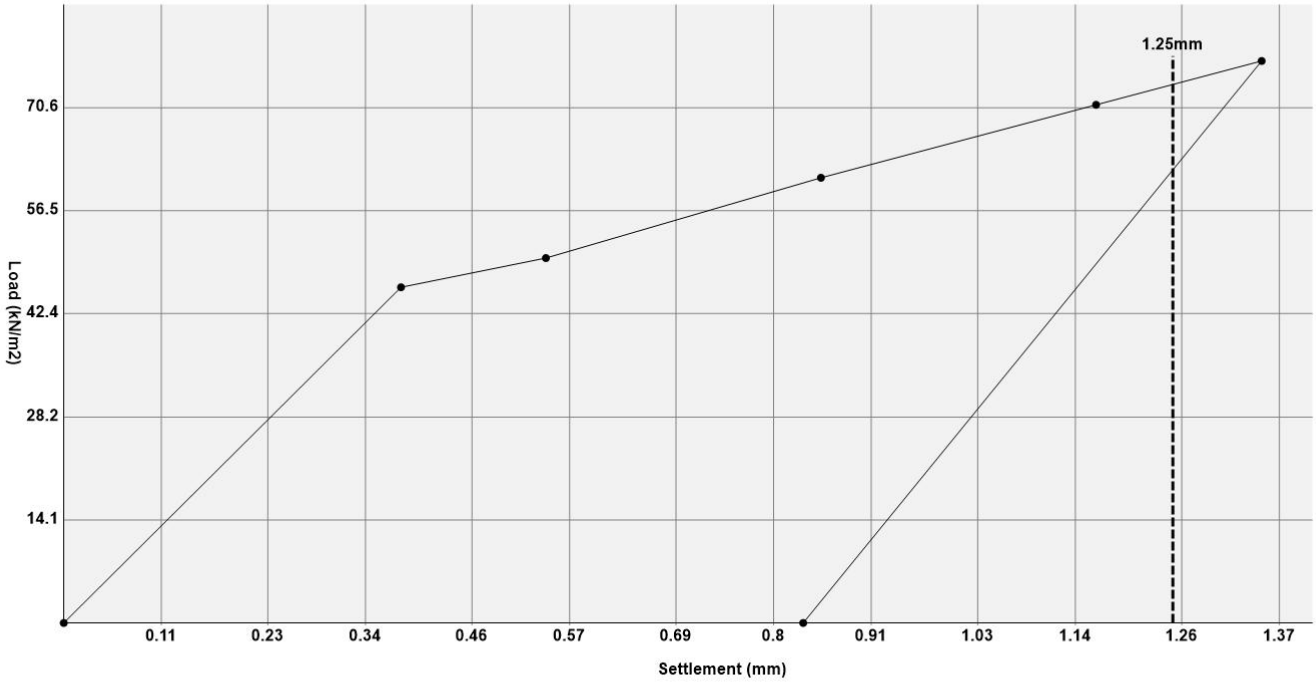
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 11
		^ **Test Location:**	E59 Layer2
Lab Ref.:	140720-03	**Layer:**	Laid
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
46	0.38
50	0.54
61	0.85
71	1.16
77	1.35
0	0.83



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **36956 kN/m2/m**
Equivalent CBR = **5 %**

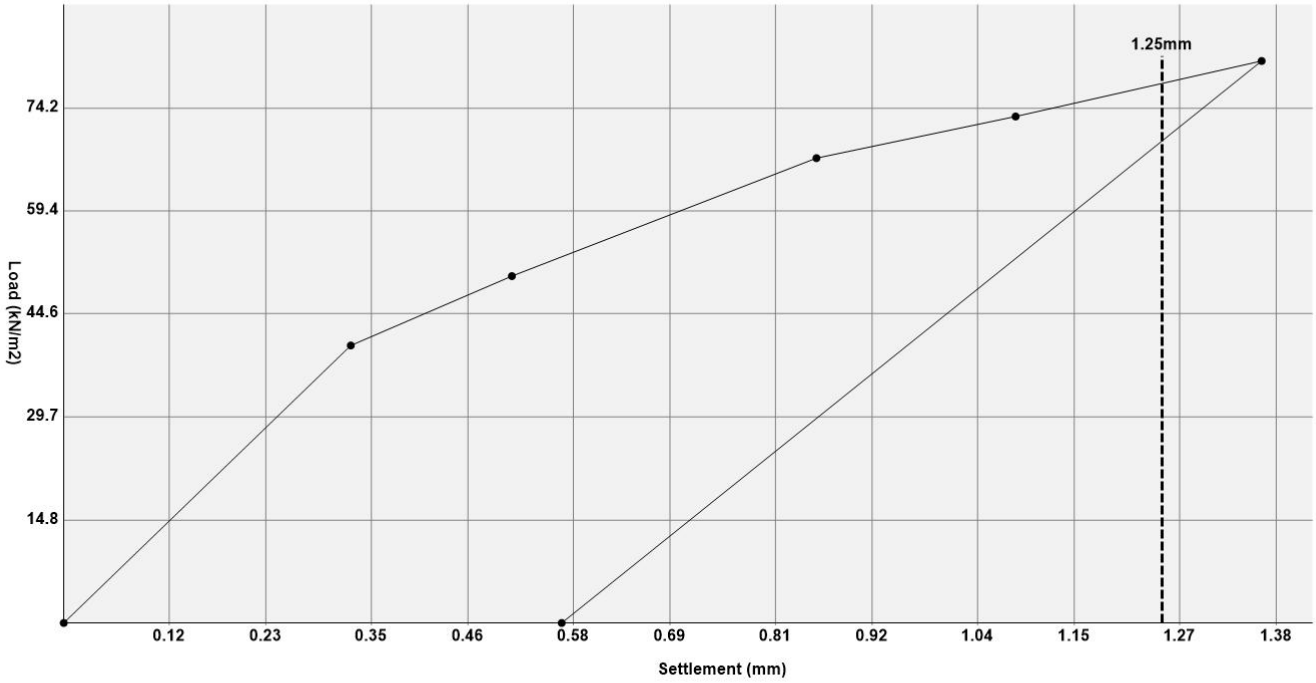
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 12
		^ **Test Location:**	E60 Layer2
Lab Ref.:	140720-03	**Layer:**	Laid
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
40	0.33
50	0.51
67	0.86
73	1.08
81	1.36
0	0.57



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **38954 kN/m2/m**
Equivalent CBR = **5.5 %**

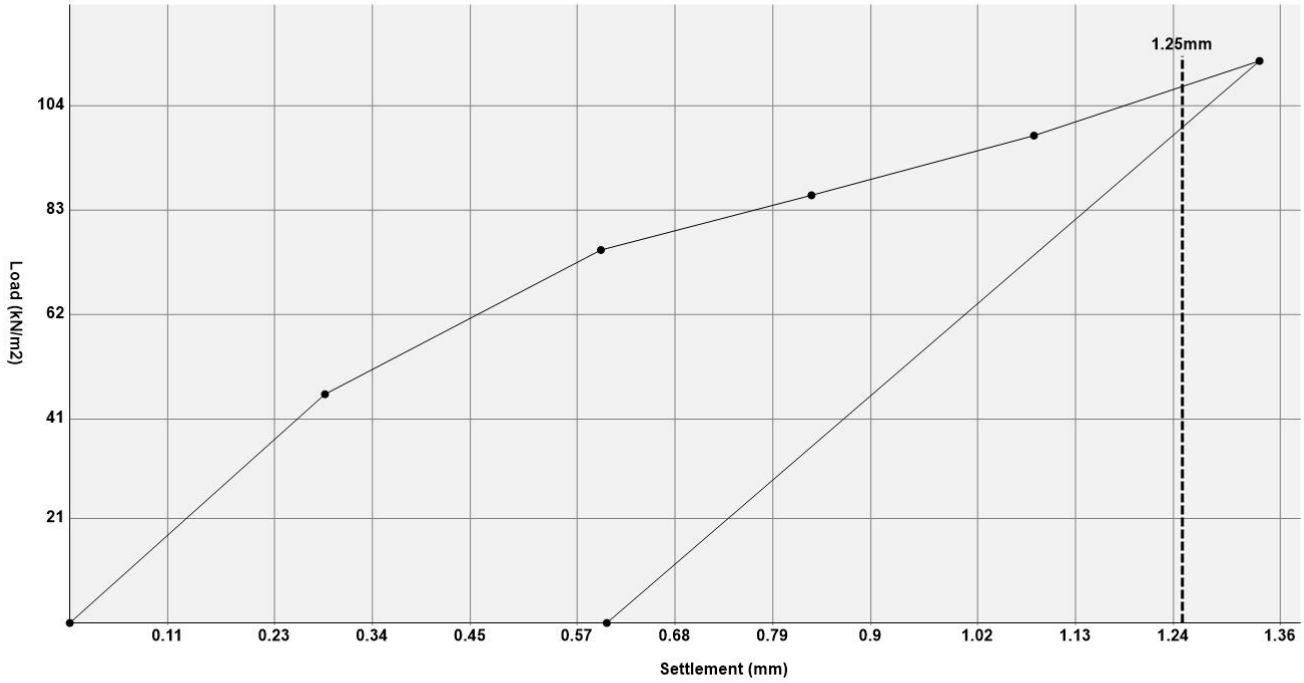
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 13
		^ **Test Location:**	E69 Formation
Lab Ref.:	140720-03	**Layer:**	Formation
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	14/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
46	0.29
75	0.60
86	0.83
98	1.08
113	1.34
0	0.60



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **53936 kN/m2/m**
Equivalent CBR = **9.7 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Job Nº:	140720-03	Client Ref:	IV.131.20	Date:	14/07/20	Weather:	fine				
Client:	Ivy House Environmental Ltd.			Tech Name:		PO					
Site:	Rockingham Logistics Hub, Corby			Max DD/OMC Source:		Client					
				MDD:	1820	PD:	2.69	OMC:			
				Density offset:				Moisture offset:			
				Test depth mm:		300		Time: 15 sec			
Material:	Brown gravelly, sandy CLAY			New MS	647			% Difference	0.46	%	
				New DS	1662			% Difference	0.03	%	

Nº	Wet density kg/m³	Dry Density kg/m³	Compaction %	MC %	Air Voids %	Plot and Grid	Level	Test No.	SRD
N	2149	1952	107.2	10.1	7.5	E59	L2	1	NO
S	2160	1921	105.5	12.4	4.4			AOD	
E	2041	1814	99.7	12.5	9.6			E	
W	2005	1804	99.1	11.2	12.6			N	
Mean	2089	1873	102.9	11.6	8.5				
N	2101	1871	102.8	12.3	7.2	E60	L2	2	NO
S	2138	1936	106.4	10.4	7.6			AOD	
E	2093	1888	103.8	10.8	9.1			E	
W	2206	1981	108.8	11.4	3.6			N	
Mean	2135	1919	105.5	11.2	6.9				

Kiwa CMT

Kiwa CMT Testing
Unit 5 Prime Park Way
Prime Enterprise Park
Derby
DE1 3QB

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E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Ltd
Scotland Farm
Far Lane
Ockbrook, Derby
Derbyshire
DE72 3RX

Date: 21/07/2020

Lab Ref: 200720-02

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just befor Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 20/07/2020 in order to carry out 10No. 450 plate load testing tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

Results:

The individual result sheets may be viewed on pages 2 to 11 of this report.

Kiwa CMT Testing

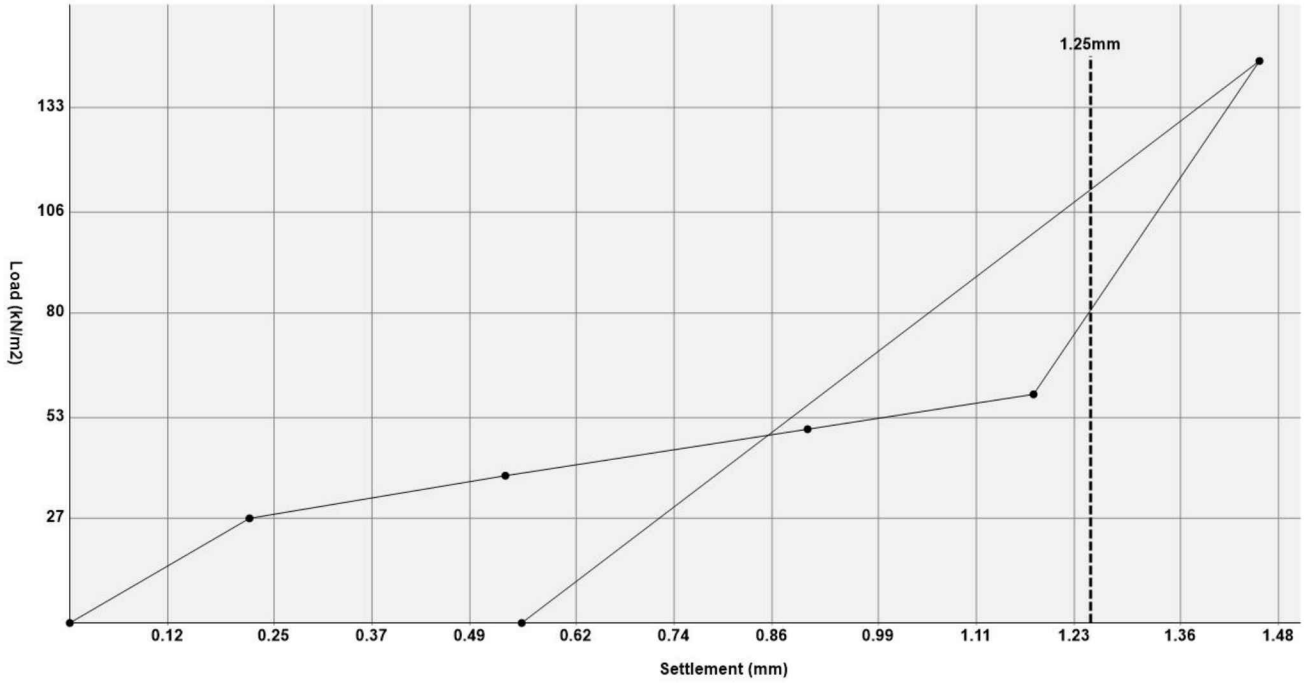
Checked and Authorised by: R Cartlidge
Manager Geotechnical Department

Kiwa CMT

300mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy Clay
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 1
		^ **Test Location:**	E33 Layer1, Retest
Lab Ref.:	200720-02	**Layer:**	Laid
Kentledge:	16t roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
27	0.22
38	0.53
50	0.90
59	1.18
145	1.46
0	0.55



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **28583 kN/m2/m**
Equivalent CBR = **3.2 %**

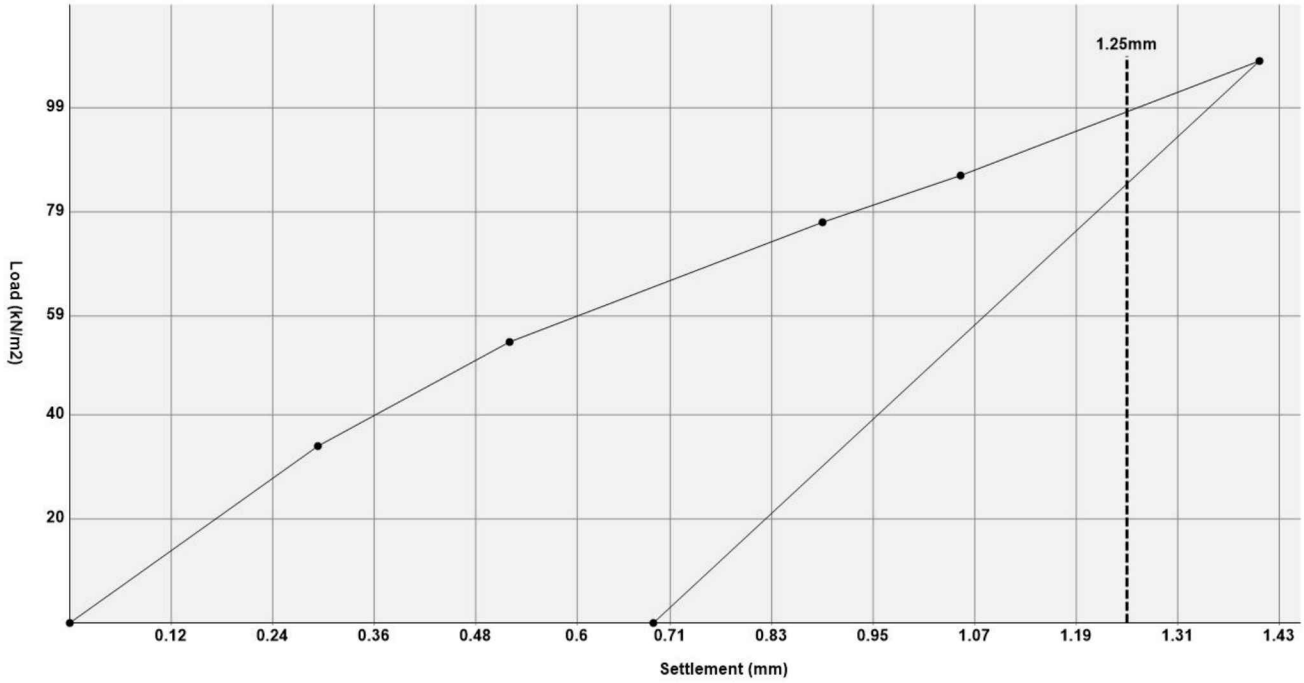
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy Clay
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 2
		^ **Test Location:**	E39 Layer1, Retest
Lab Ref.:	200720-02	**Layer:**	Laid
Kentledge:	16t roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.29
54	0.52
77	0.89
86	1.05
108	1.41
0	0.69



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **48942 kN/m2/m**
Equivalent CBR = **8.2 %**

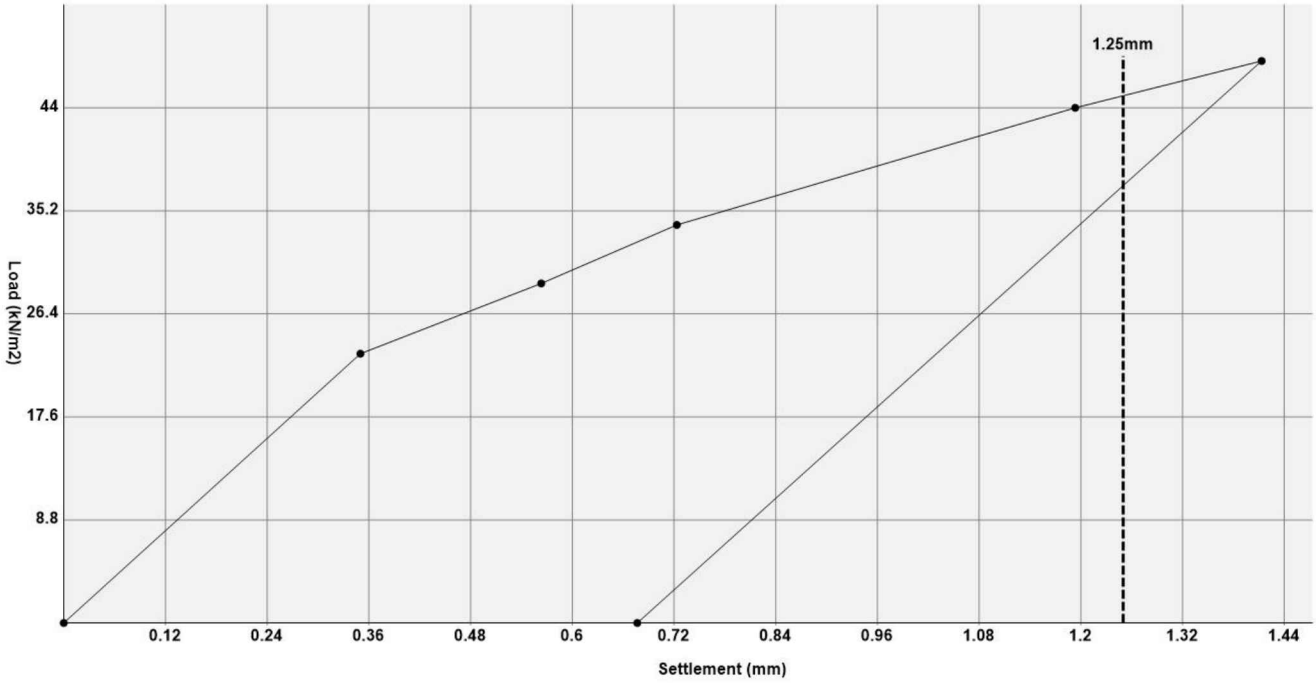
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy Clay
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 3
		^ **Test Location:**	E45 Layer1, Retest
Lab Ref.:	200720-02	**Layer:**	Laid
Kentledge:	16t roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
23	0.35
29	0.56
34	0.72
44	1.19
48	1.41
0	0.68



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **22473 kN/m2/m**
Equivalent CBR = **2.1 %**

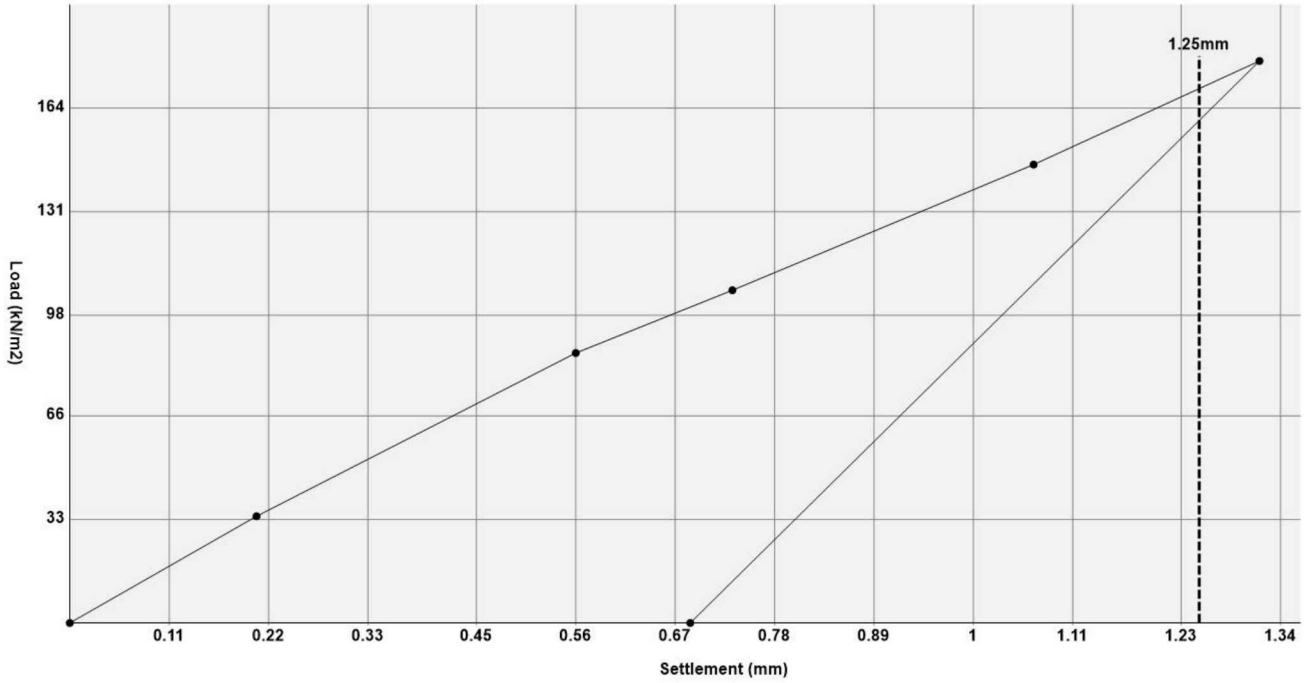
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 4
		^ **Test Location:**	B2 Type1, Final Layer
Lab Ref.:	200720-02	**Layer:**	Sub Base
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.21
86	0.56
106	0.73
146	1.07
179	1.32
0	0.69



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **84899 kN/m2/m**
Equivalent CBR = **21.2 %**

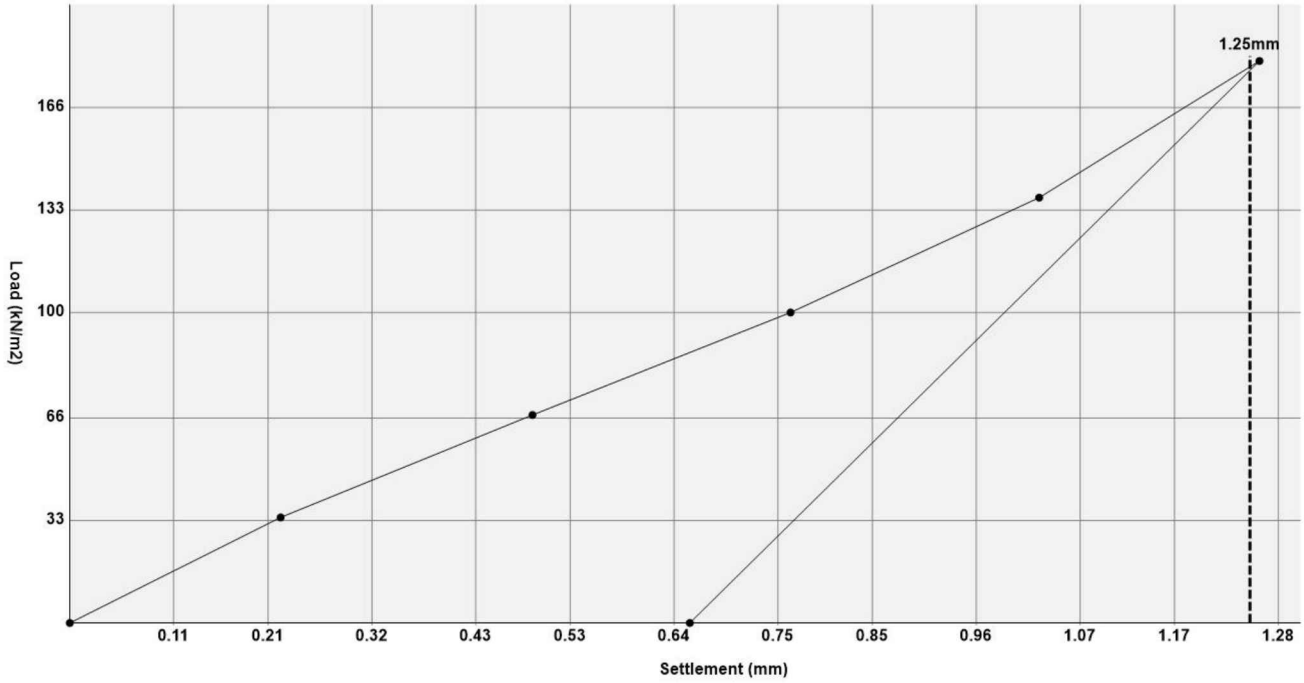
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 5
		^ **Test Location:**	B3 Type1, Final Layer
Lab Ref.:	200720-02	**Layer:**	Sub Base
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.22
67	0.49
100	0.76
137	1.03
181	1.26
0	0.66



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **89394 kN/m2/m**
Equivalent CBR = **23.2 %**

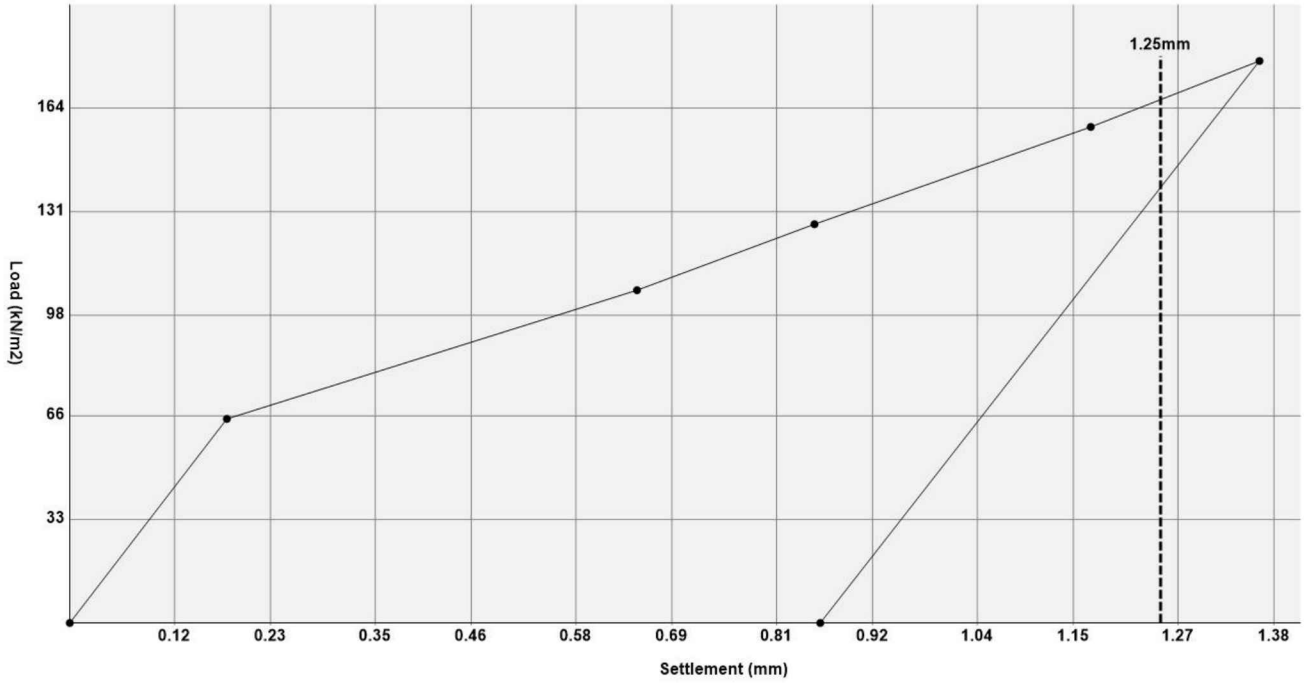
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 6
		^ **Test Location:**	B5 Type1, Final Layer
Lab Ref.:	200720-02	**Layer:**	Sub Base
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.18
106	0.65
127	0.85
158	1.17
179	1.36
0	0.86



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **83401 kN/m2/m**
Equivalent CBR = **20.6 %**

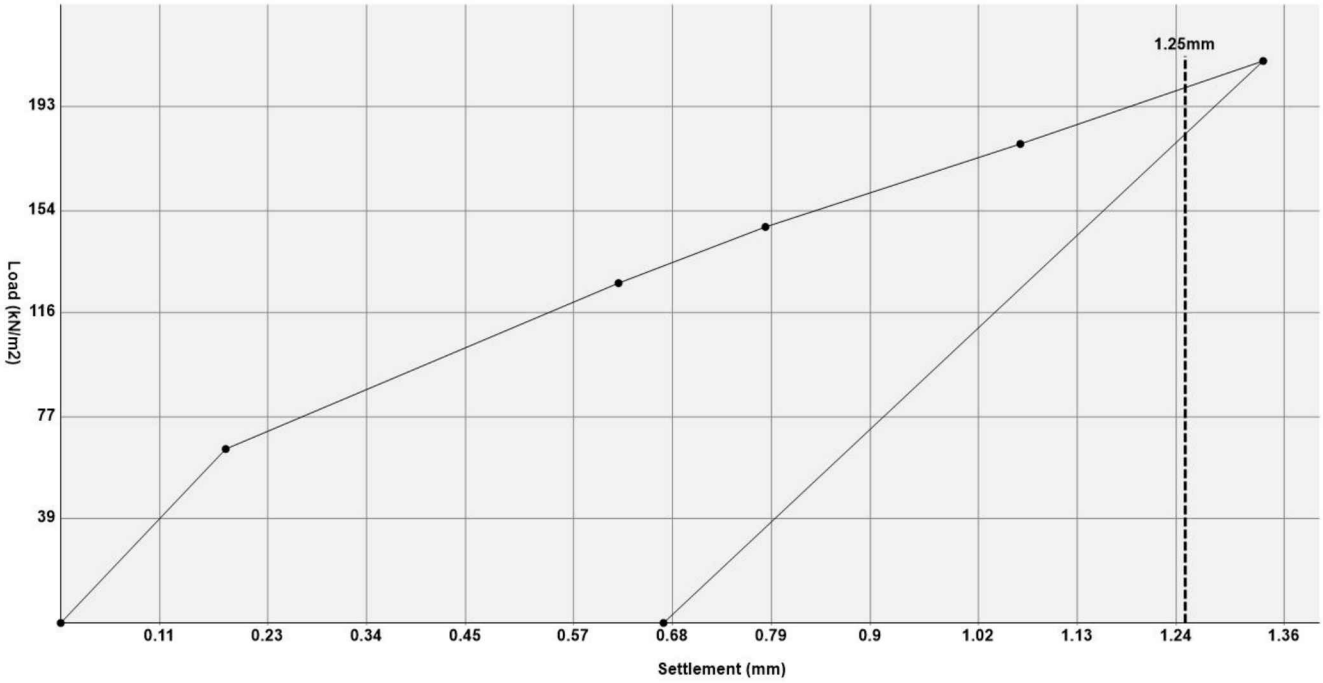
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 7
		^ **Test Location:**	B6 Type1, Final Layer
Lab Ref.:	200720-02	**Layer:**	Sub Base
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.18
127	0.62
148	0.78
179	1.07
210	1.34
0	0.67



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **99881 kN/m2/m**
Equivalent CBR = **28.1 %**

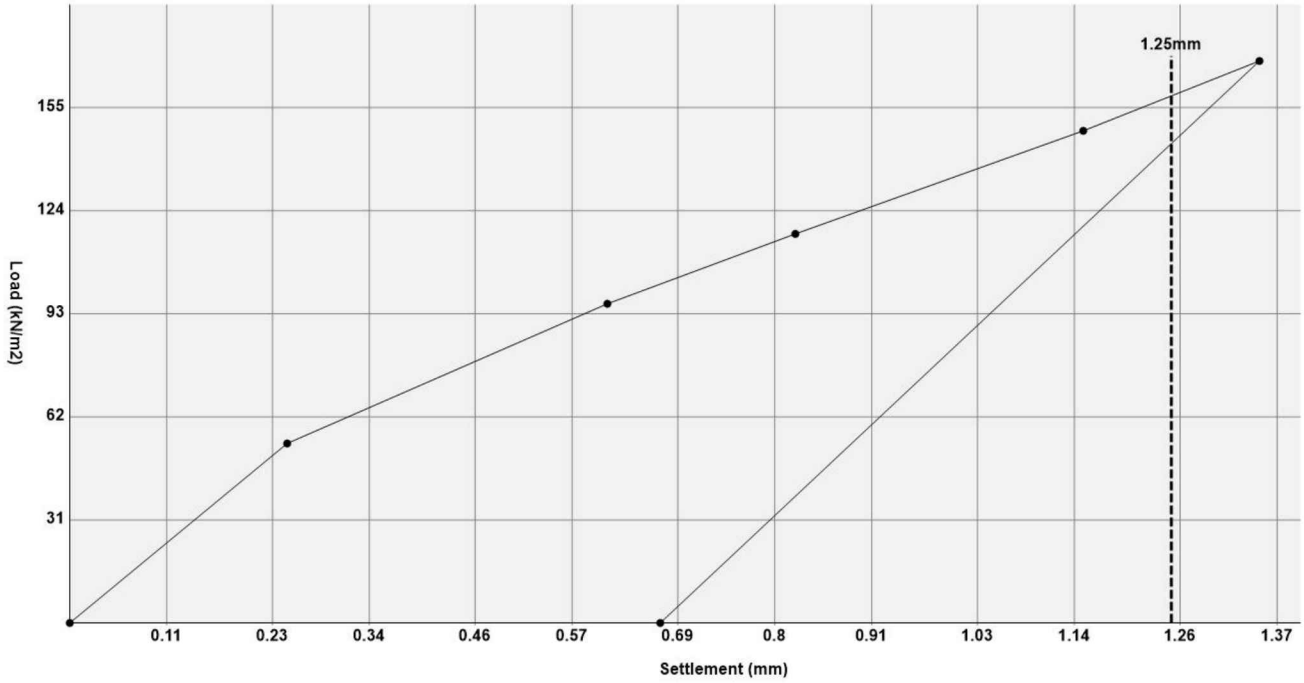
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 8
		^ **Test Location:**	B7 Type1, Final Layer
Lab Ref.:	200720-02	**Layer:**	Sub Base
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
54	0.25
96	0.61
117	0.82
148	1.15
169	1.35
0	0.67



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **78906 kN/m2/m**
Equivalent CBR = **18.7 %**

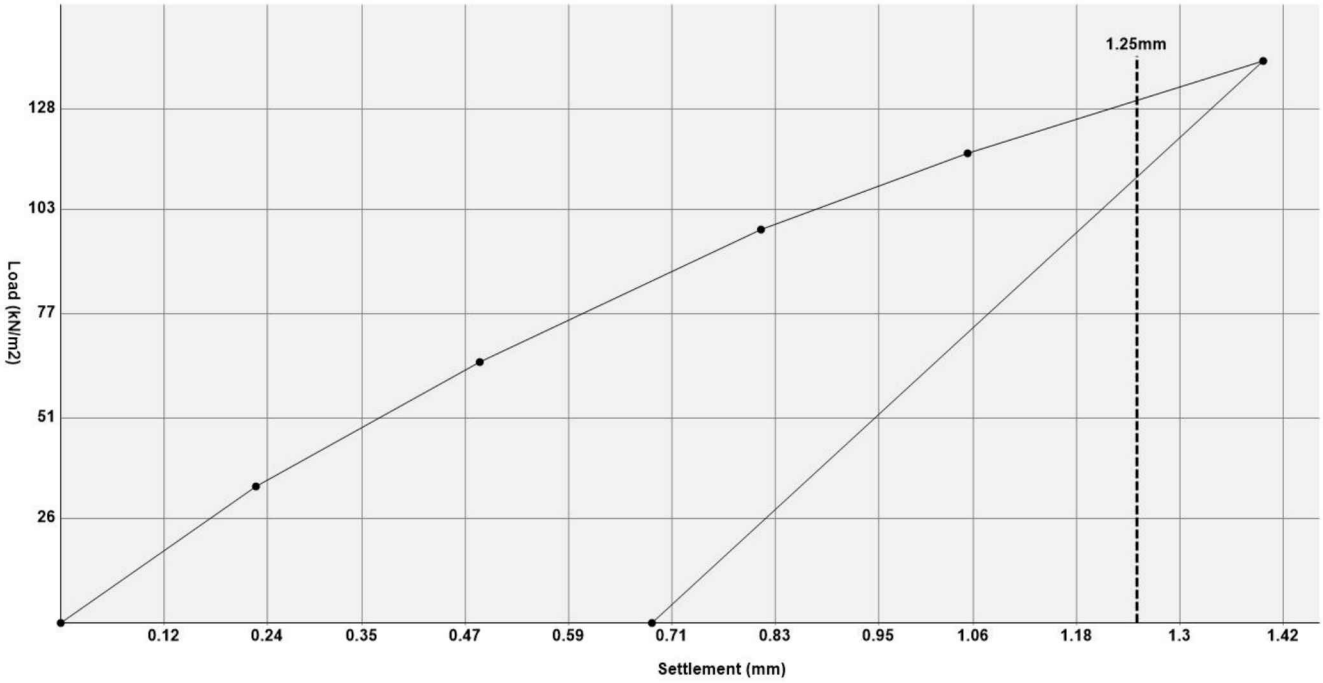
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 9
		^ **Test Location:**	B8 Type1, Final Layer
Lab Ref.:	200720-02	**Layer:**	Sub Base
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.23
65	0.49
98	0.81
117	1.05
140	1.40
0	0.69



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **64923 kN/m2/m**
Equivalent CBR = **13.3 %**

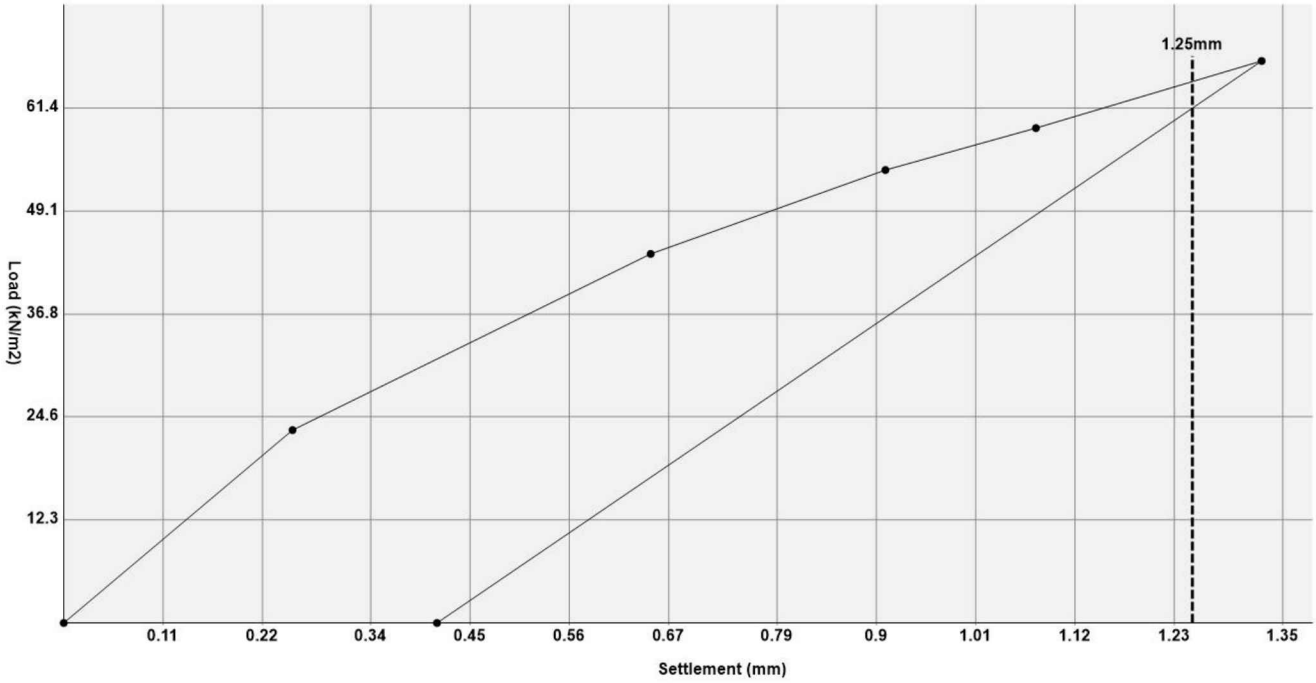
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 10
		^ **Test Location:**	B10 Type1, Final Layer
Lab Ref.:	200720-02	**Layer:**	Sub Base
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
23	0.25
44	0.65
54	0.91
59	1.08
67	1.33
0	0.41



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **32461 kN/m2/m**
Equivalent CBR = **4 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Kiwa CMT Testing
Unit 5 Prime Park Way
Prime Enterprise Park
Derby
DE1 3QB

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F +44 (0)1332 602607
E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Ltd
Scotland Farm
Far Lane
Ockbrook, Derby
Derbyshire
DE72 3RX

Date: 21/07/2020

Lab Ref: 200720-02

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just befor Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 20/07/2020 in order to carry out 10No. 450 plate load testing tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

Results:

The individual result sheets may be viewed on pages 2 to 11 of this report.

Kiwa CMT Testing

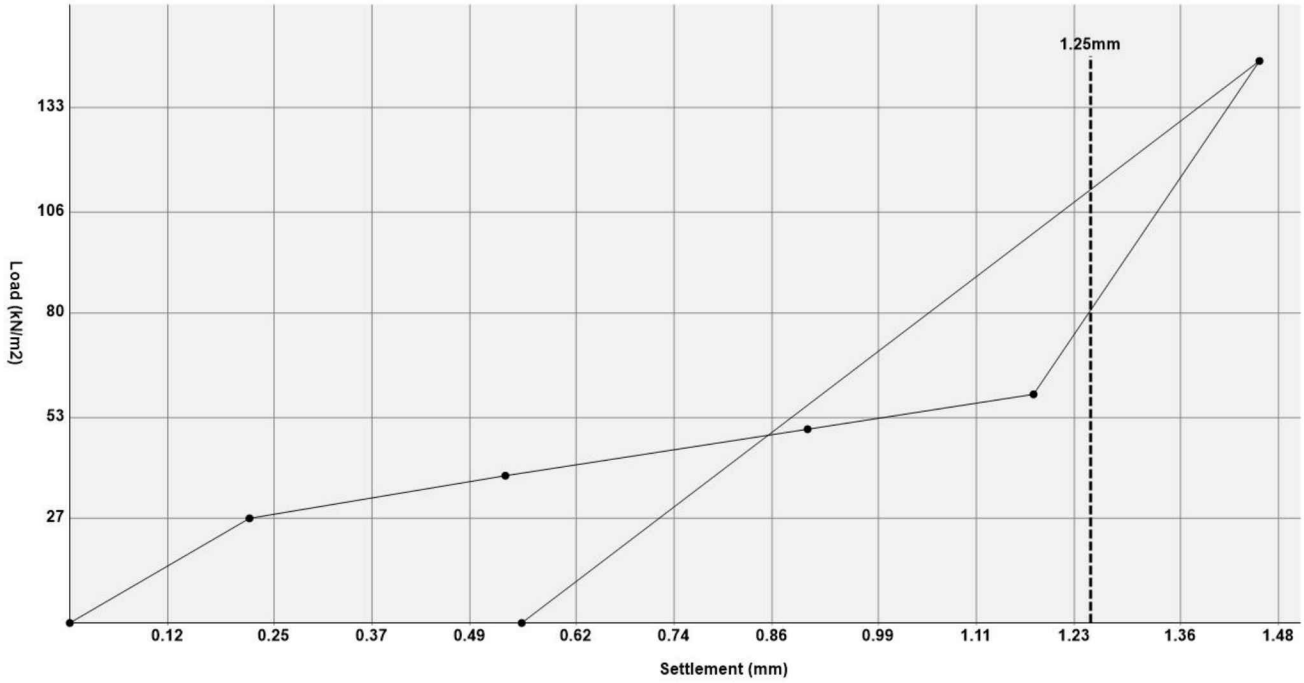
Checked and Authorised by: R Cartlidge
Manager Geotechnical Department

Kiwa CMT

300mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy Clay
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 1
		^ **Test Location:**	E33 Layer1, Retest
Lab Ref.:	200720-02	**Layer:**	Laid
Kentledge:	16t roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
27	0.22
38	0.53
50	0.90
59	1.18
145	1.46
0	0.55



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **28583 kN/m2/m**
Equivalent CBR = **3.2 %**

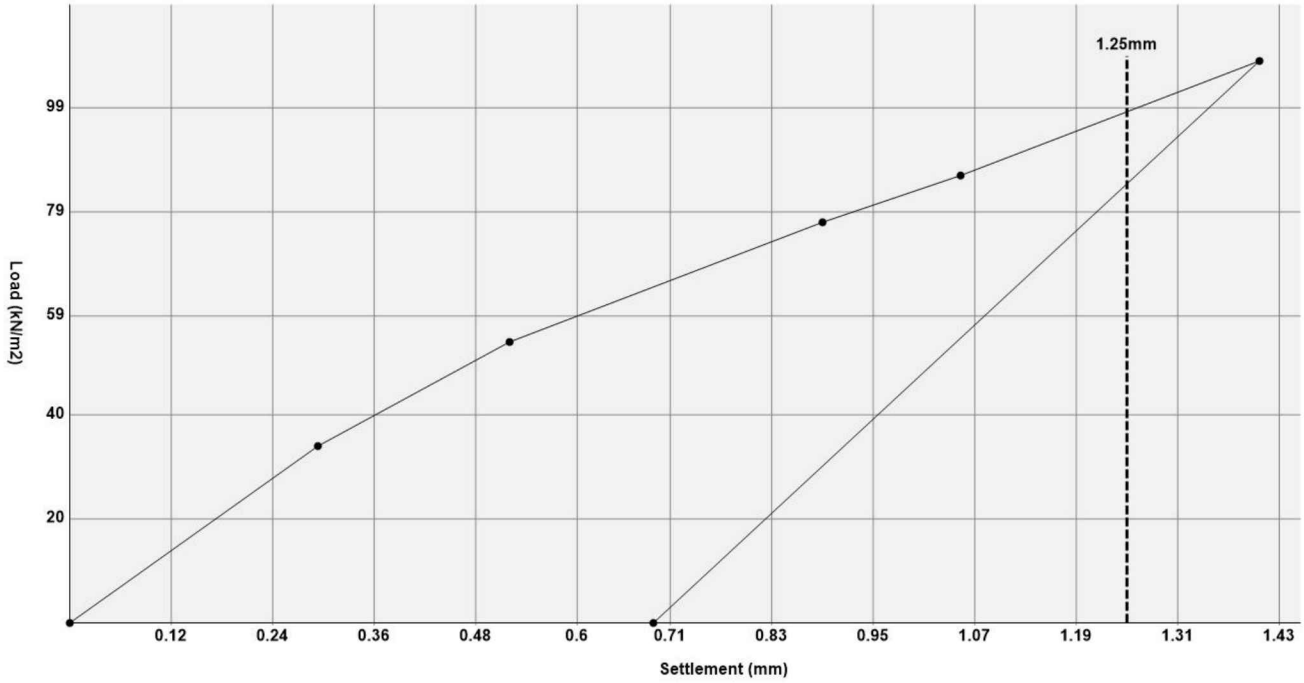
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy Clay
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 2
		^ **Test Location:**	E39 Layer1, Retest
Lab Ref.:	200720-02	**Layer:**	Laid
Kentledge:	16t roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.29
54	0.52
77	0.89
86	1.05
108	1.41
0	0.69



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **48942 kN/m2/m**
Equivalent CBR = **8.2 %**

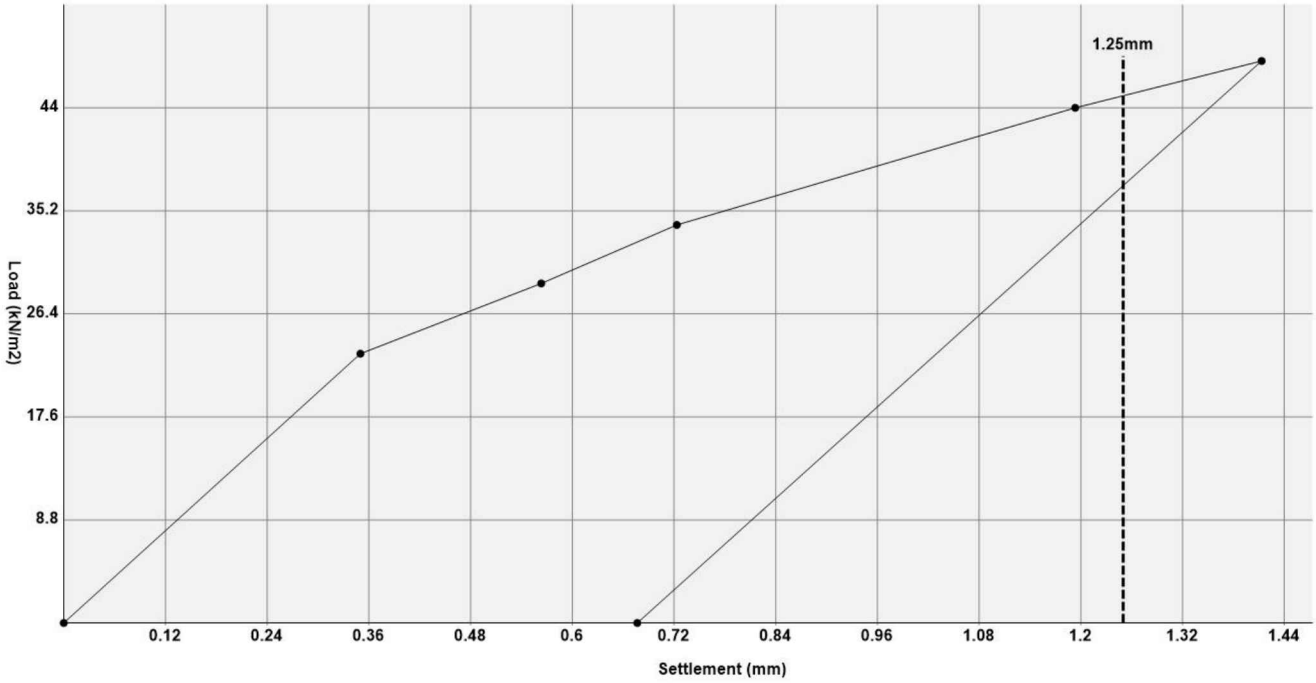
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly, sandy Clay
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 3
		^ **Test Location:**	E45 Layer1, Retest
Lab Ref.:	200720-02	**Layer:**	Laid
Kentledge:	16t roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
23	0.35
29	0.56
34	0.72
44	1.19
48	1.41
0	0.68



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **22473 kN/m2/m**
Equivalent CBR = **2.1 %**

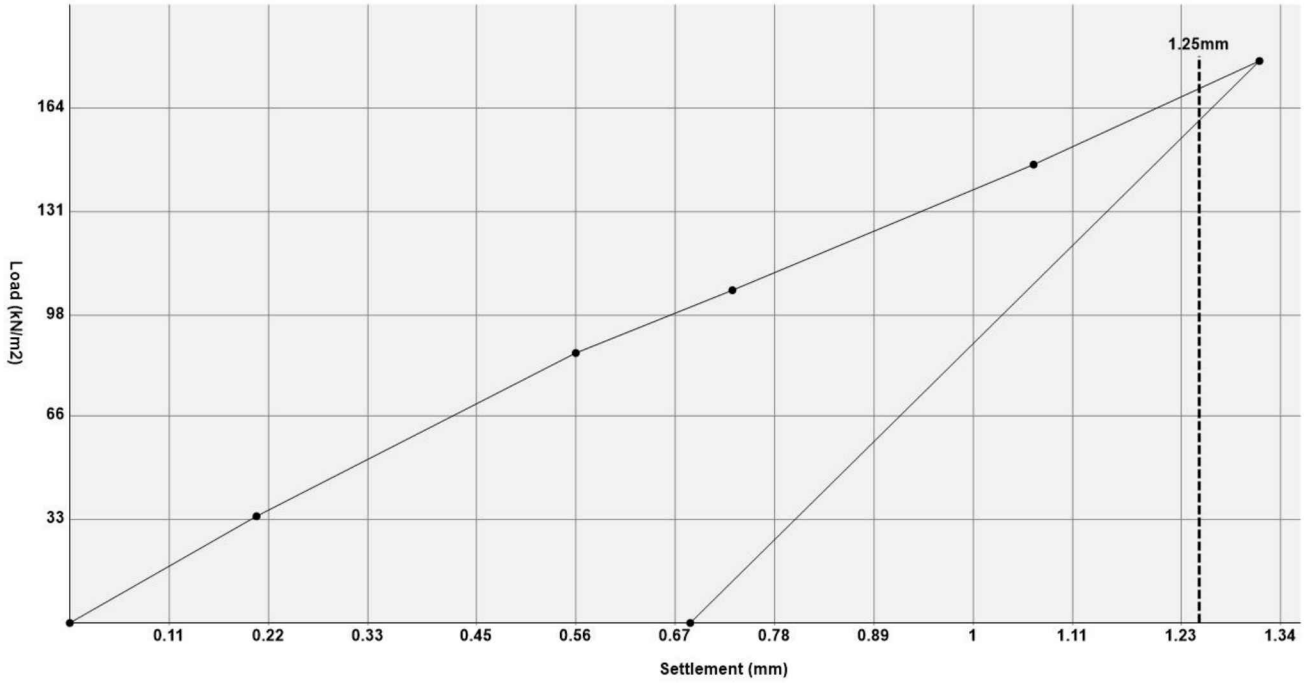
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 4
		^ **Test Location:**	B2 Type1, Final Layer
Lab Ref.:	200720-02	**Layer:**	Sub Base
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.21
86	0.56
106	0.73
146	1.07
179	1.32
0	0.69



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **84899 kN/m2/m**
Equivalent CBR = **21.2 %**

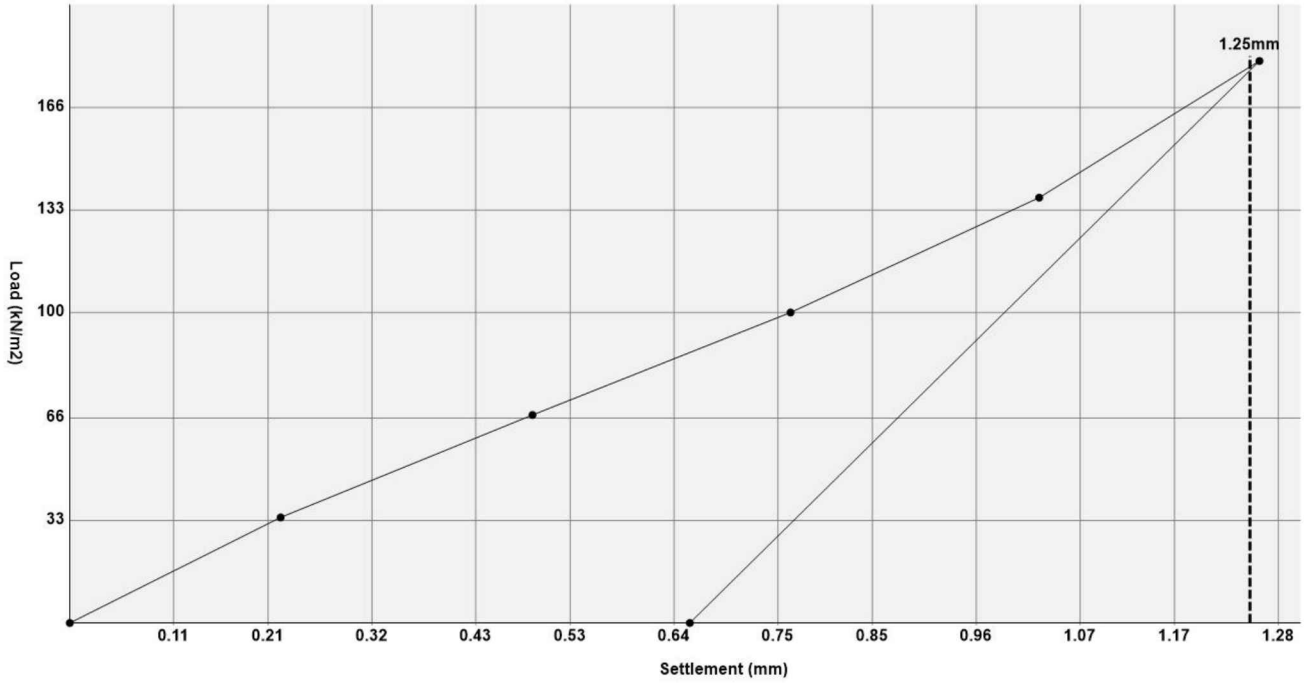
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 5
		^ **Test Location:**	B3 Type1, Final Layer
Lab Ref.:	200720-02	**Layer:**	Sub Base
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.22
67	0.49
100	0.76
137	1.03
181	1.26
0	0.66



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **89394 kN/m2/m**
Equivalent CBR = **23.2 %**

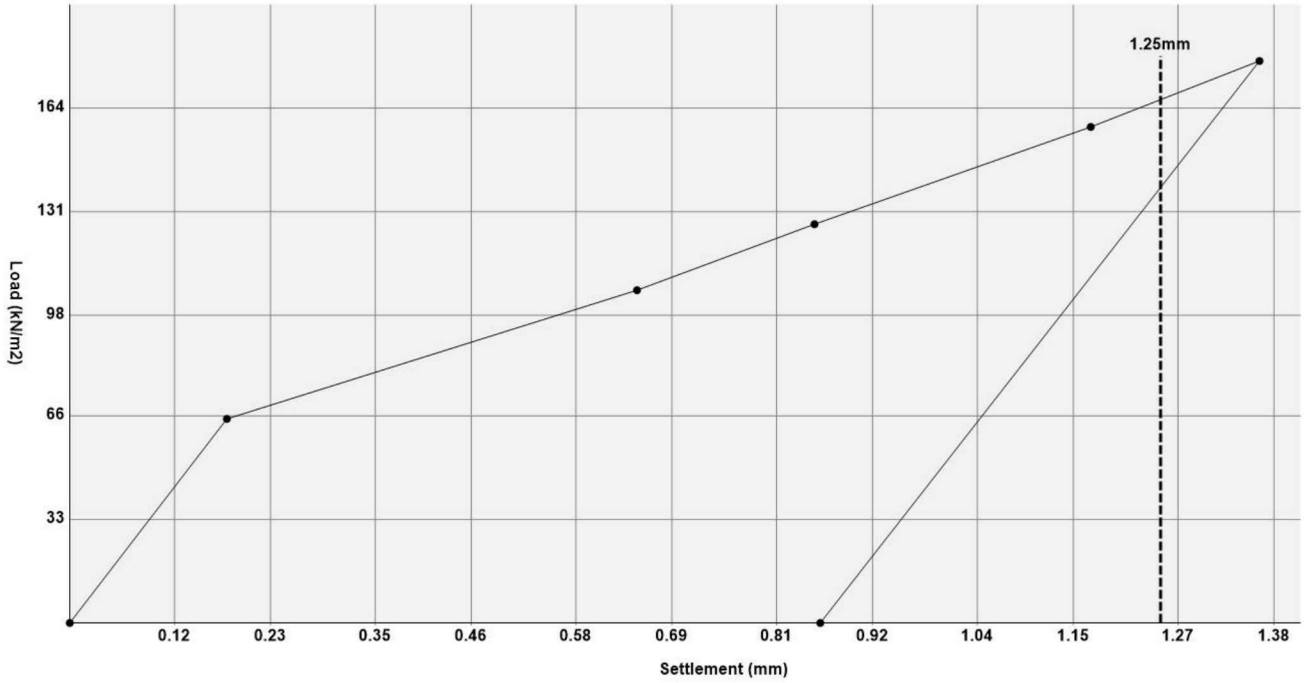
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 6
		^ **Test Location:**	B5 Type1, Final Layer
Lab Ref.:	200720-02	**Layer:**	Sub Base
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.18
106	0.65
127	0.85
158	1.17
179	1.36
0	0.86



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **83401 kN/m2/m**
Equivalent CBR = **20.6 %**

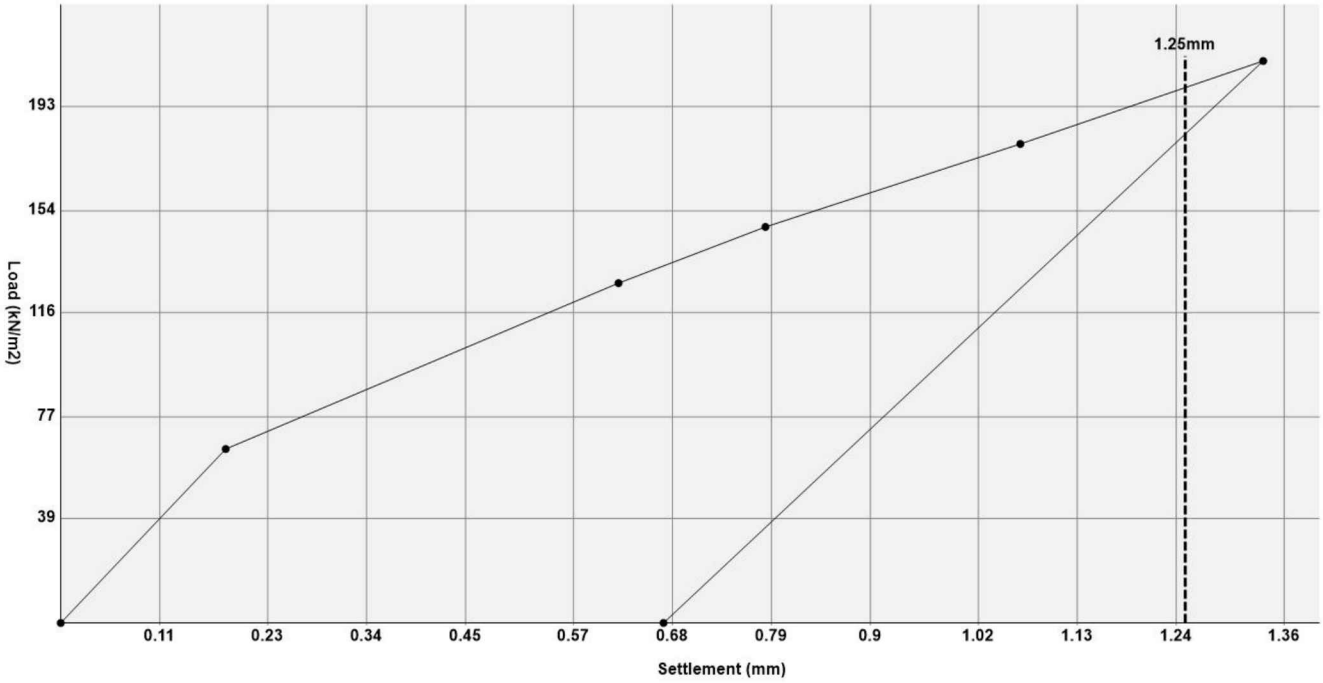
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 7
		^ **Test Location:**	B6 Type1, Final Layer
Lab Ref.:	200720-02	**Layer:**	Sub Base
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.18
127	0.62
148	0.78
179	1.07
210	1.34
0	0.67



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **99881 kN/m2/m**
Equivalent CBR = **28.1 %**

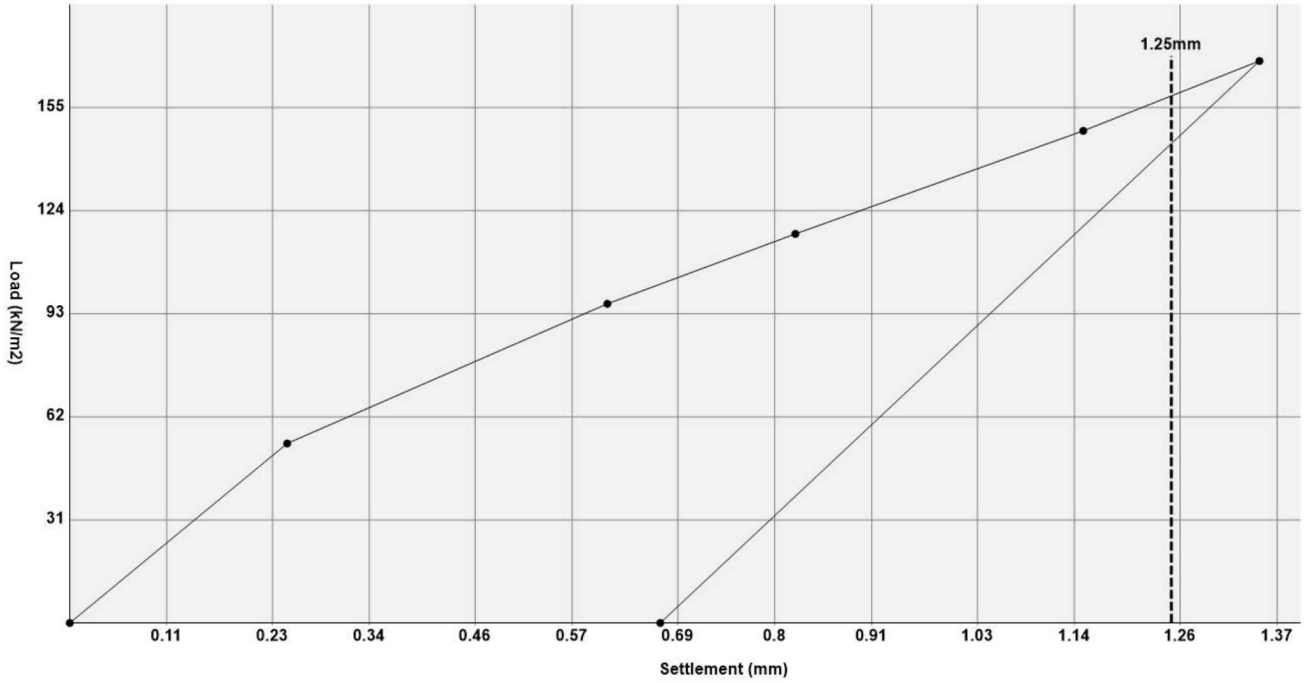
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 8
		^ **Test Location:**	B7 Type1, Final Layer
Lab Ref.:	200720-02	**Layer:**	Sub Base
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
54	0.25
96	0.61
117	0.82
148	1.15
169	1.35
0	0.67



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **78906 kN/m2/m**
Equivalent CBR = **18.7 %**

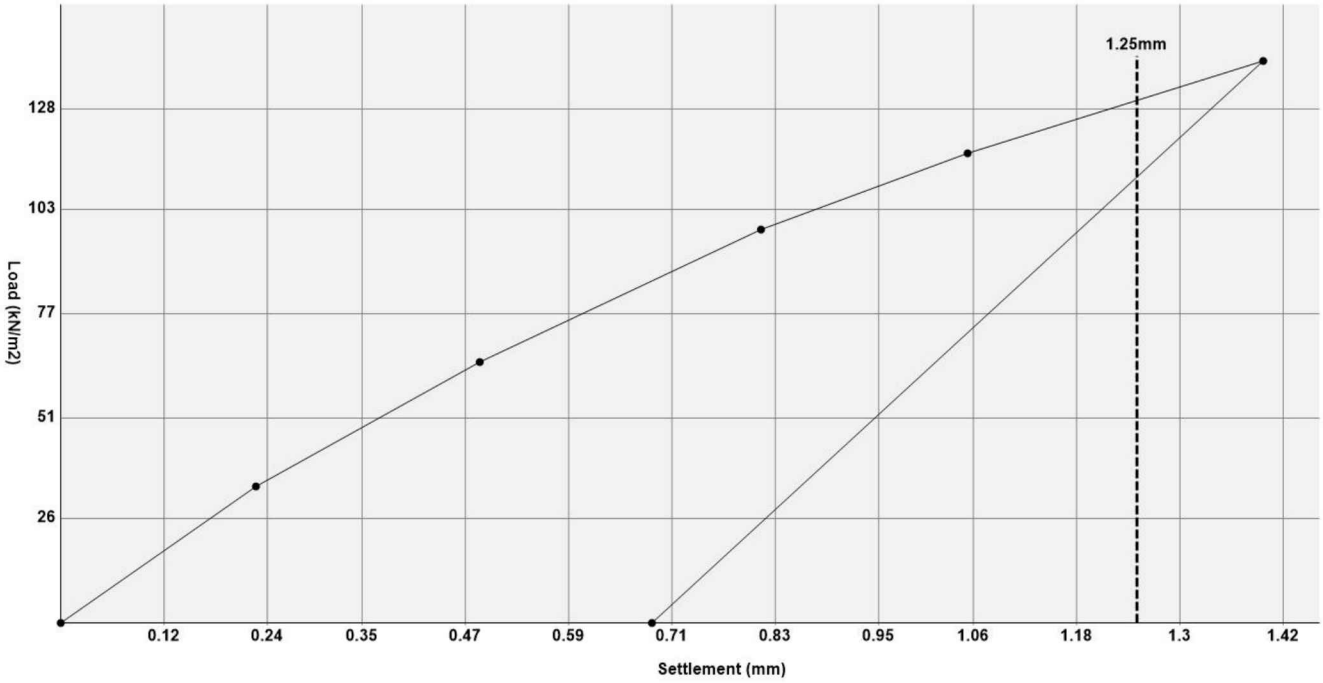
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 9
		^ **Test Location:**	B8 Type1, Final Layer
Lab Ref.:	200720-02	**Layer:**	Sub Base
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.23
65	0.49
98	0.81
117	1.05
140	1.40
0	0.69



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **64923 kN/m2/m**
Equivalent CBR = **13.3 %**

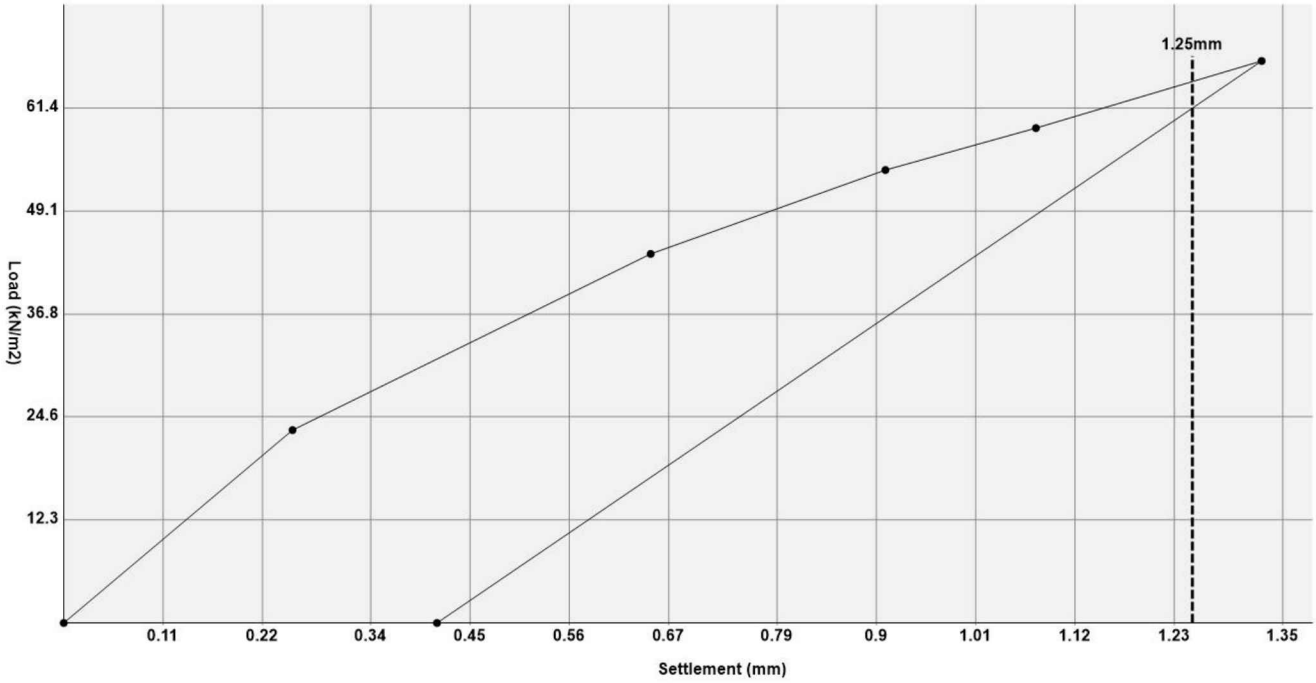
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 10
		^ **Test Location:**	B10 Type1, Final Layer
Lab Ref.:	200720-02	**Layer:**	Sub Base
Kentledge:	8t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	20/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
23	0.25
44	0.65
54	0.91
59	1.08
67	1.33
0	0.41



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **32461 kN/m2/m**
Equivalent CBR = **4 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Kiwa CMT Testing
Unit 5 Prime Park Way
Prime Enterprise Park
Derby
DE1 3QB

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F +44 (0)1332 602607
E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Ltd
Scotland Farm
Far Lane
Ockbrook, Derby
Derbyshire
DE72 3RX

Date: 29/07/2020

Lab Ref: 290720-01

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just befor Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 29/07/2020 in order to carry out 4 x 450 plate load testing tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

Results:

The individual result sheets may be viewed on pages 2 to 5 of this report.

Kiwa CMT Testing

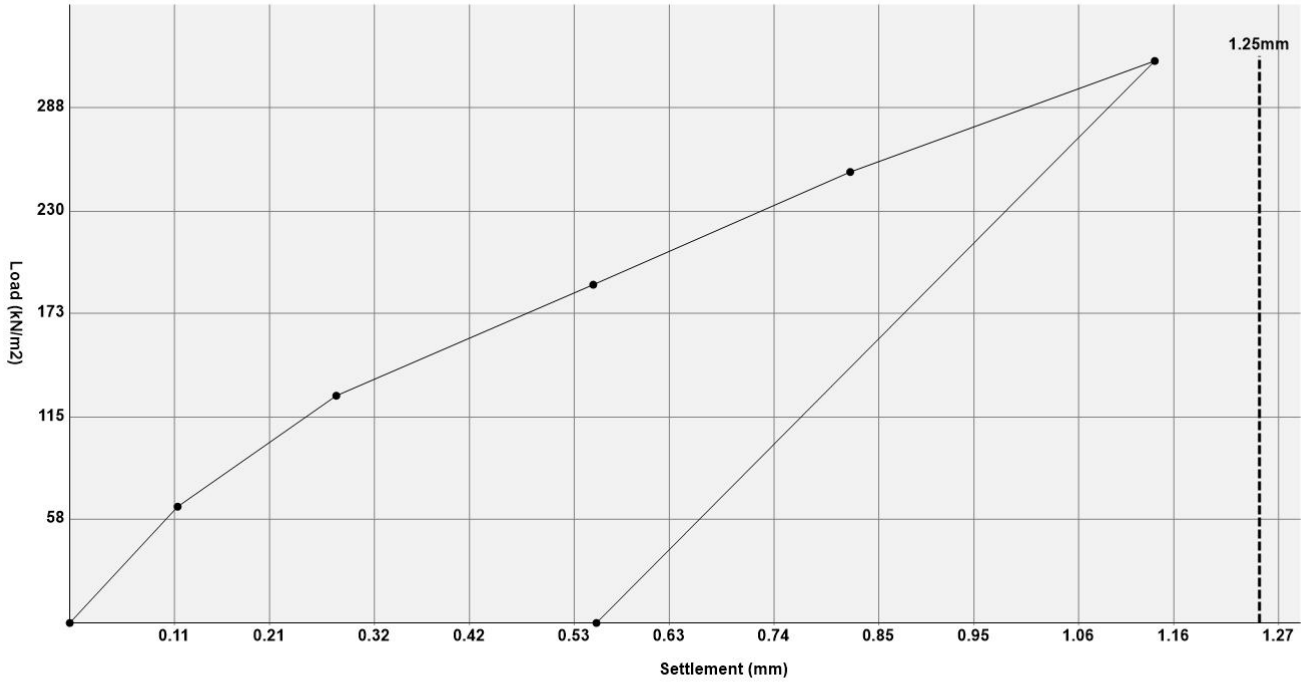
Checked and Authorised by: R Cartlidge
Manager Geotechnical Department

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	brown gravelly sandy clay
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 1 (E29, Form)
		^ **Test Location:**	E29 formation
Lab Ref.:	290720-01	**Layer:**	Formation
Kentledge:	16t roller	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	29/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.11
127	0.28
189	0.55
252	0.82
314	1.14
0	0.55



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

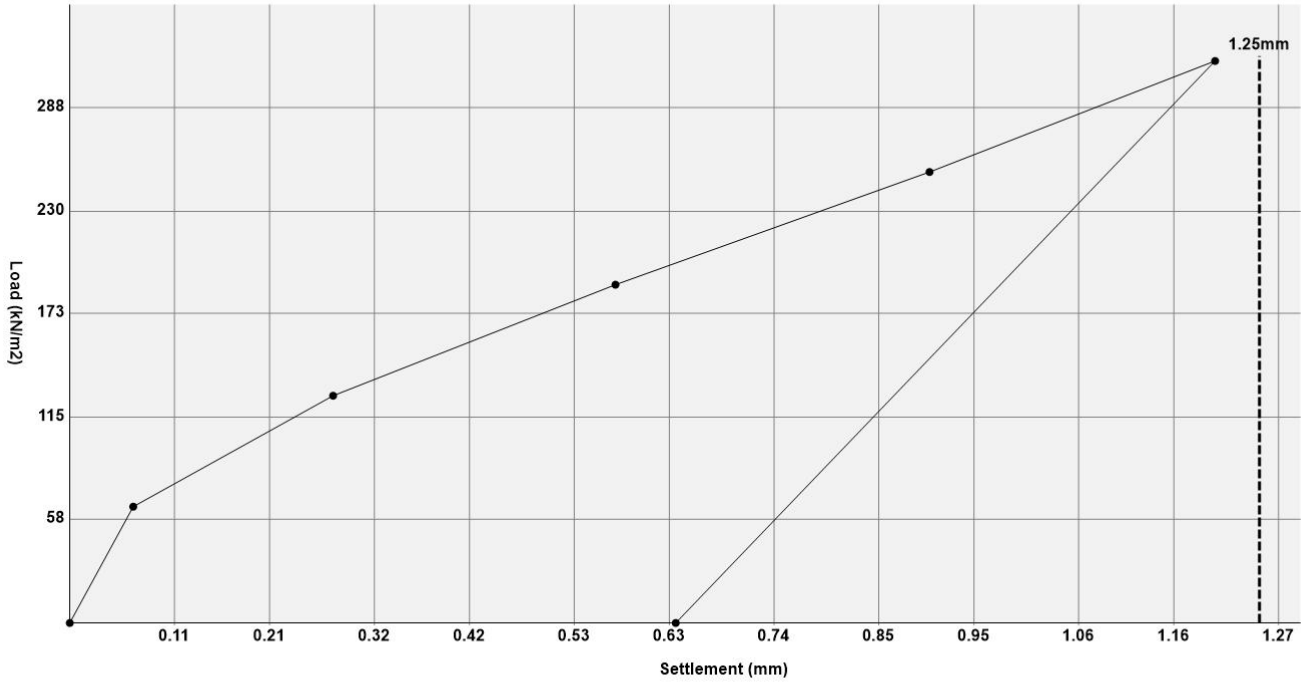
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	brown gravelly sandy clay
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 2 (E22 Form)
		^ **Test Location:**	E22 formation
Lab Ref.:	290720-01	**Layer:**	Formation
Kentledge:	16t roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	29/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.07
127	0.28
189	0.57
252	0.90
314	1.20
0	0.64



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

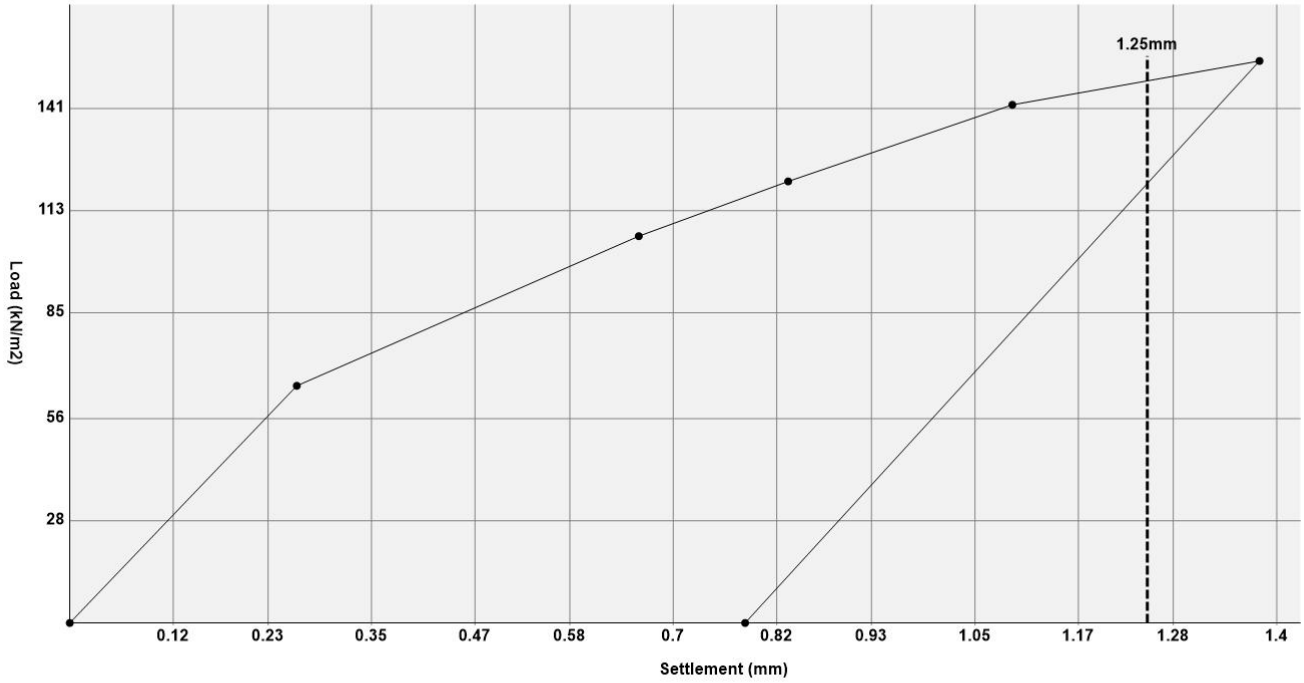
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Type 1
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 3 (E47 Type 1)
		^ **Test Location:**	E47 Type1
Lab Ref.:	290720-01	**Layer:**	Sub Base
Kentledge:	16t roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	29/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.26
106	0.66
121	0.83
142	1.09
154	1.38
0	0.78



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **74412 kN/m2/m**
Equivalent CBR = **16.9 %**

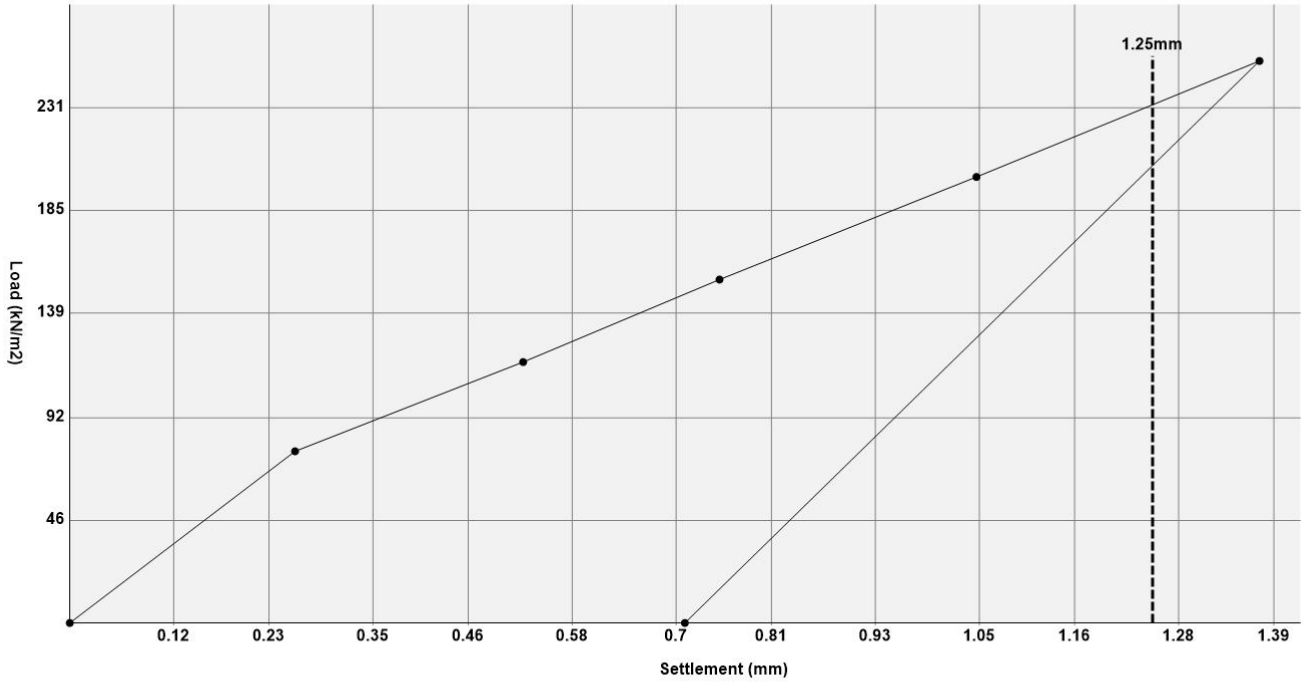
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Type 1
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR 4 (E48 T1)
		^ **Test Location:**	E48 Type 1 final layer
Lab Ref.:	290720-01	**Layer:**	Sub Base
Kentledge:	16t roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	29/07/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
77	0.26
117	0.52
154	0.75
200	1.05
252	1.37
0	0.71



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **115862 kN/m2/m**
Equivalent CBR = **36.4 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

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Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
Derbyshire
DE72 3RX

Date: 4th August 2020

Lab Ref: 030820-04

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just before Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 3rd August 2020 in order to carry out 1No. 450mm plate bearing test to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with **Interim Advice Note (IAN) 73/06 Revision 1 (2009)**.

To carry out Nuclear Density Testing in accordance with **Documented In-House Method** SO35.

Results:

The individual result sheets may be viewed on pages 2 to 4 of this report.

Kiwa CMT Testing

Author: D. Spencer
Administrator

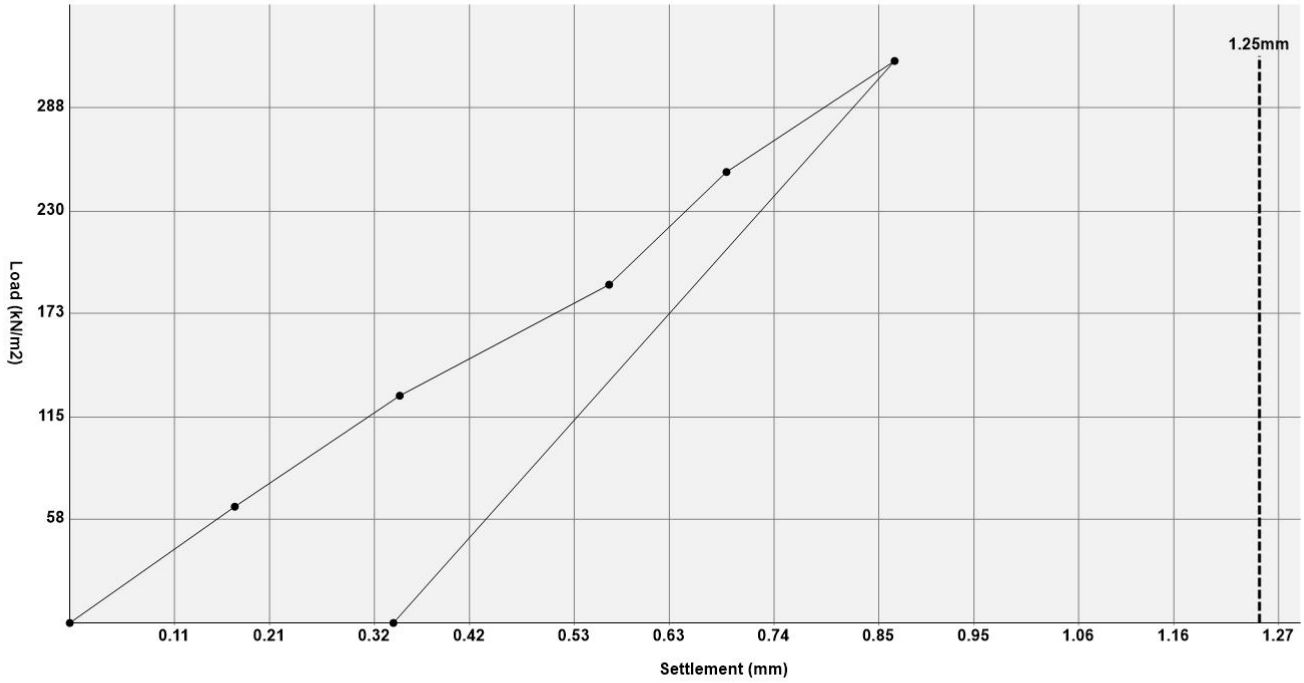
Checked and Approved by: J. Eckford
Senior Geotechnical Technician

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown very gravelly sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR1 (E21,form)
		^ **Test Location:**	E21, formation
Lab Ref.:	030820-04	**Layer:**	Formation
Kentledge:	16t roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.17
127	0.35
189	0.57
252	0.69
314	0.87
0	0.34



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Job №:	030820-04	Client Ref:	IV.131.20	Date:	03/08/20
Weather:	fine				
Client:	IVY HOUSE ENVIROMENTAL			Tech Name:	PO
Site:	Mitchell Road, Corby			Max DD/OMC Source:	CLIENT
				MDD:	2250
PD:	2.67	OMC:			
				Density offset:	
Moisture offset:					
				Test depth mm:	300
Time: 15 sec					
Material:	Crushed Stone			New MS	649
% Difference	0.3	%			
				New DS	1653
% Difference	0.4	%			

№	Wet density kg/m³	Dry Density kg/m³	Compaction %	MC %	Air Voids %	Plot and Grid	Level	Test No.	SRD
N	2274	2185	97.1	4.0	9.3	B1	Final Layer Type1	1	NO
S	2206	2125	94.5	3.8	12.3			AOD	
E	2201	2109	93.7	4.3	11.9			E	
W	2260	2180	96.9	3.6	10.4			N	
Mean	2235	2150	95.6	3.9	11.0				
N	2277	2190	97.3	4.0	9.3	B2	Final Layer Type1	2	NO
S	2285	2193	97.4	4.2	8.6			AOD	
E	2308	2221	98.7	3.9	8.1			E	
W	2295	2199	97.7	4.4	8.1			N	
Mean	2291	2201	97.8	4.1	8.5				
N	2211	2124	94.4	4.1	11.8	B3	Final Layer Type1	3	NO
S	2312	2243	99.7	3.1	9.1			AOD	
E	2342	2272	101.0	3.1	7.9			E	
W	2254	2176	96.7	3.6	10.7			N	
Mean	2280	2204	98.0	3.5	9.9				
N	2185	2121	94.3	3.0	14.1	B4	Final Layer Type1	4	NO
S	2131	2058	91.5	3.6	15.6			AOD	
E	2187	2121	94.3	3.1	14.0			E	
W	2204	2135	94.9	3.2	13.1			N	
Mean	2177	2109	93.8	3.2	14.2				
N	2132	2086	92.7	2.2	17.2	B10	Final Layer Type1	5	NO
S	2169	2103	93.5	3.1	14.7			AOD	
E	2167	2119	94.2	2.3	15.8			E	
W	2142	2086	92.7	2.7	16.2			N	
Mean	2153	2099	93.3	2.6	16.0				
N	2253	2162	96.1	4.2	9.9	B5	Final Layer Type1	6	NO
S	2243	2170	96.4	3.4	11.4			AOD	
E	2170	2088	92.8	3.9	13.6			E	
W	2224	2148	95.5	3.6	11.9			N	
Mean	2223	2142	95.2	3.8	11.7				
N	2299	2222	98.8	3.4	9.1	B6	Final Layer Type1	7	NO
S	2245	2158	95.9	4.0	10.5			AOD	
E	2252	2181	96.9	3.2	11.3			E	
W	2292	2208	98.1	3.8	8.9			N	
Mean	2272	2192	97.4	3.6	10.0				
N	2227	2149	95.5	3.6	11.7	B7	Final Layer Type1	8	NO
S	2226	2133	94.8	4.4	10.8			AOD	
E	2263	2185	97.1	3.6	10.4			E	
W	2235	2159	95.9	3.5	11.5			N	
Mean	2238	2157	95.8	3.8	11.1				

Kiwa CMT

Job Nº:	030820-04	Client Ref:	IV.131.20	Date:	03/08/20	Weather:	fine				
Client:	IVY HOUSE ENVIROMENTAL			Tech Name:		PO					
Site:	Mitchell Road, Corby			Max DD/OMC Source:		CLIENT					
				MDD:	2	PD:	2.67	OMC:			
				Density offset:				Moisture offset:			
				Test depth mm:		300		Time: 15 sec			
Material:	Crushed Stone			New MS	649			% Difference	0.3	%	
				New DS	1653			% Difference	0.4	%	

Nº	Wet density kg/m³	Dry Density kg/m³	Compaction %	MC %	Air Voids %	Plot and Grid	Level	Test No.	SRD
N	2225	2175	95.9	3.1	12.5	B8	Final Layer Type1	9	NO
S	2251	2175	96.7	3.5	10.9			AOD	
E	2189	2113	93.9	3.6	13.2			E	
W	2170	2094	93.1	3.6	13.9			N	
Mean	2209	2139	94.9	3.5	12.6				
N	2271	2192	97.4	3.6	10.0	B9	Final Layer Type1	10	NO
S	2237	2156	95.8	3.7	11.1			AOD	
E	2374	2300	102.2	3.3	6.4			E	
W	2277	2195	97.5	3.8	9.6			N	
Mean	2290	2211	98.2	3.6	9.3				

Job Nº:	030820-04	Client Ref:	IV.131.20	Date:	03/08/20	Weather:	fine				
Client:	IVY HOUSE ENVIROMENTAL			Tech Name:		PO					
Site:	Mitchell Road, Corby			Max DD/OMC Source:		Kcmt					
				MDD:	1930	PD:	2.65	OMC:			
				Density offset:				Moisture offset:			
				Test depth mm:		300		Time: 15 sec			
Material:	Brown gravelly CLAY			New MS	649			% Difference	0.3	%	
				New DS	1653			% Difference	0.4	%	

Nº	Wet density kg/m³	Dry Density kg/m³	Compaction %	MC %	Air Voids %	Plot and Grid	Level	Test No.	SRD
N	2068	1931	100.1	7.1	14.0	E26	Layer1	11	NO
S	2104	1939	100.5	8.5	10.9			AOD	
E	2181	2035	105.5	7.2	9.2			E	
W	2118	1984	102.8	6.7	12.3			N	
Mean	2118	1972	102.2	7.4	11.6				
N	2088	1880	97.4	11.1	8.7	E27	Layer1	12	NO
S	2094	1879	97.4	11.4	8.1			AOD	
E	1988	1786	92.6	11.3	13.0			E	
W	2025	1811	93.8	11.8	10.8			N	
Mean	2049	1839	95.3	11.4	10.2				

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www.kiwa.co.uk/cmt

Client: Ivy House Environmental Ltd
Scotland Farm
Far Lane
Ockbrook, Derby
Derbyshire
DE72 3RX

Date: 07/08/2020

Lab Ref: 070820-01

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just befor Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 07/08/2020 in order to carry out 5 NDG and 450 plate load testing tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

Results:

The individual result sheets may be viewed on pages 2 to 6 of this report.

Kiwa CMT Testing

Checked and Authorised by: J. Eckford
Senior Geotechnical Technician

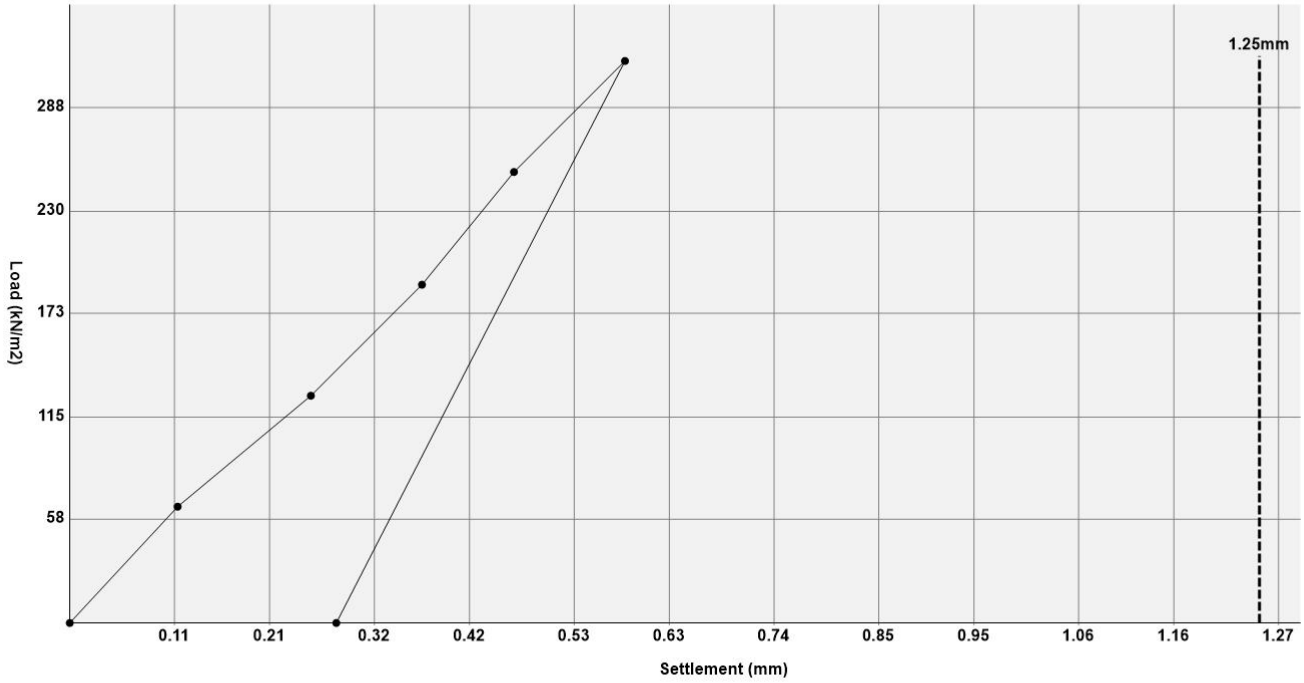
UKAS TESTING
0529

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR1(E17,Form)
		^ **Test Location:**	E17 Formation
Lab Ref.:	070820-01	**Layer:**	Formation
Kentledge:	16t roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	07/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.11
127	0.25
189	0.37
252	0.47
314	0.58
0	0.28



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

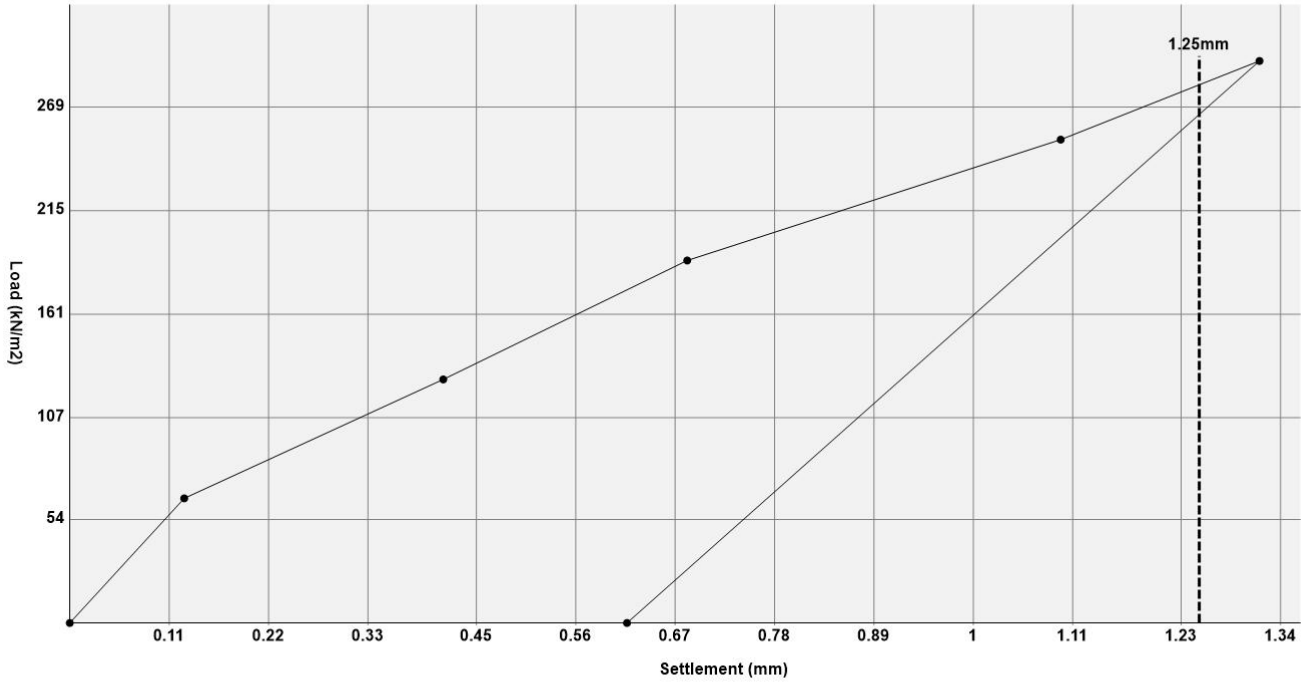
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR2(E11,Form)
		^ **Test Location:**	E11 Formation
Lab Ref.:	070820-01	**Layer:**	Formation
Kentledge:	16t roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	07/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.13
127	0.41
189	0.68
252	1.10
293	1.32
0	0.62



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **140333 kN/m2/m**
Equivalent CBR = **50.7 %**

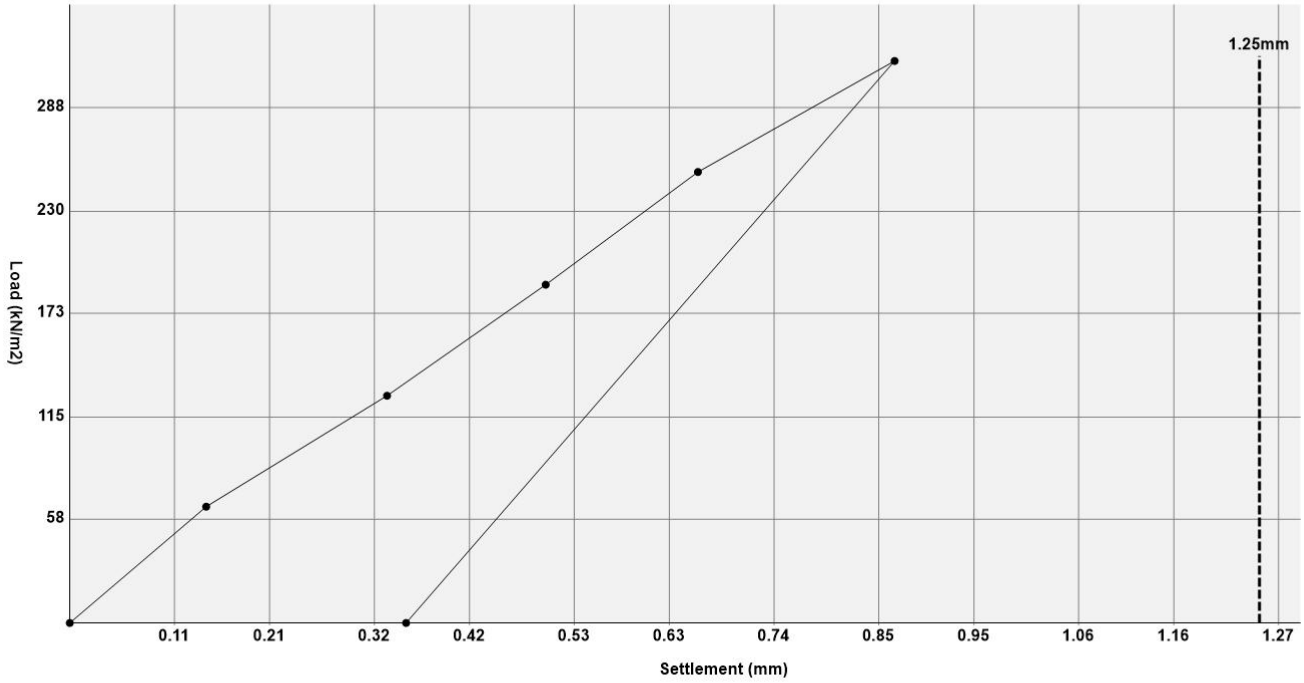
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR3(E5,Form)
		^ **Test Location:**	E5 Formation
Lab Ref.:	070820-01	**Layer:**	Formation
Kentledge:	16t roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	07/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.14
127	0.33
189	0.50
252	0.66
314	0.87
0	0.35



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

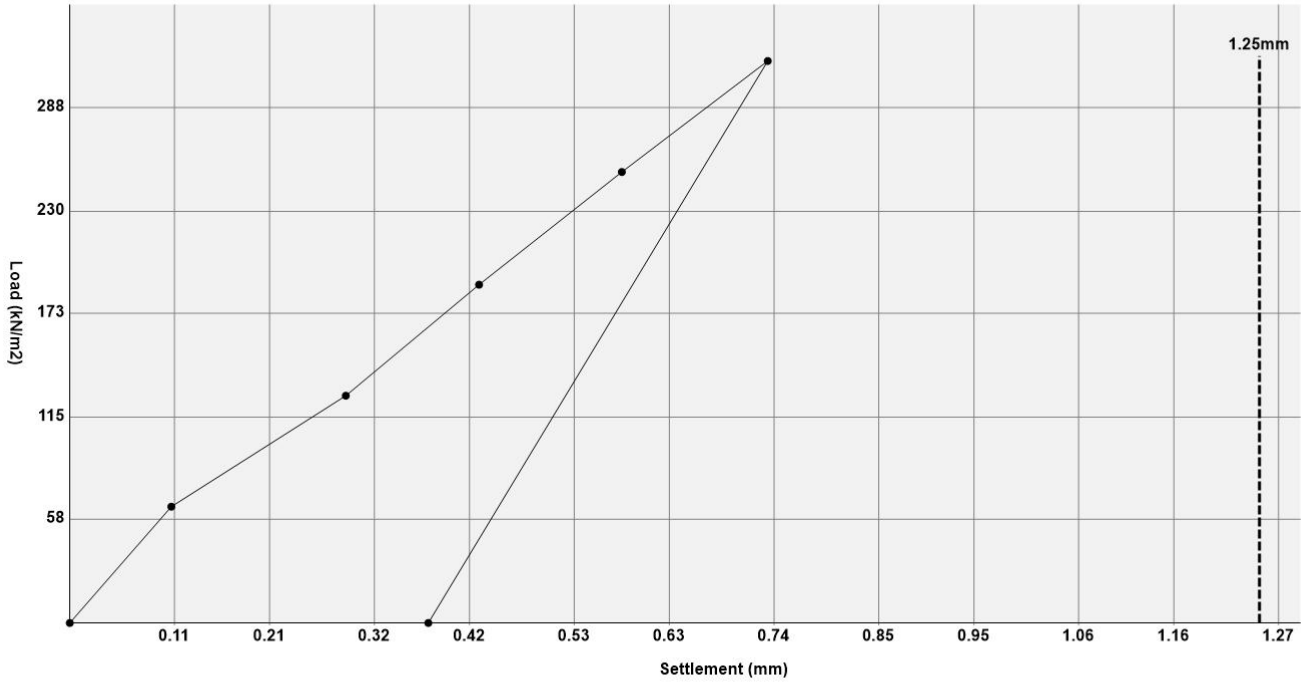
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR4(E4,Form)
		^ **Test Location:**	E4 Formation
Lab Ref.:	070820-01	**Layer:**	Formation
Kentledge:	16t roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	07/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.11
127	0.29
189	0.43
252	0.58
314	0.73
0	0.38



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

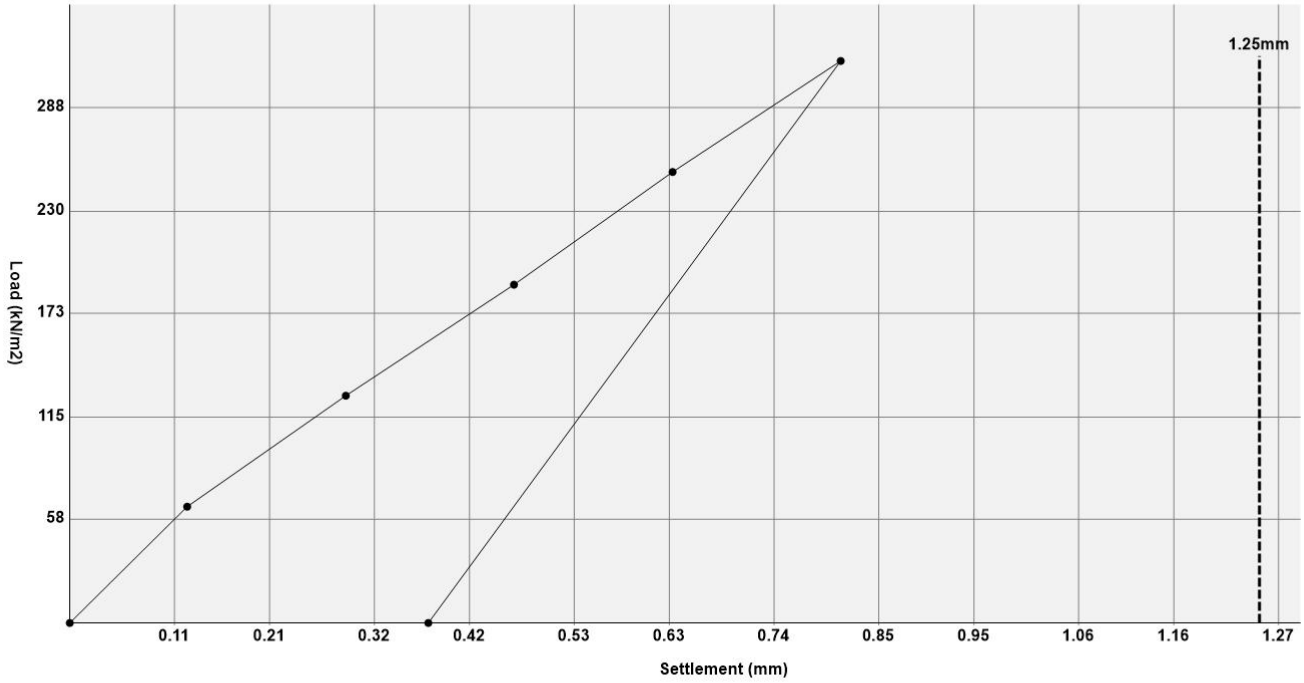
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR5(E10,Form)
		^ **Test Location:**	E10,Formation
Lab Ref.:	070820-01	**Layer:**	Formation
Kentledge:	16t roller	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	07/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.12
127	0.29
189	0.47
252	0.63
314	0.81
0	0.38



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Job Nº:	070820-01	Client Ref:	IV.131.20	Date:	07/08/20	Weather:	fine				
Client:	IVY HOUSE ENVIROMENTAL			Tech Name:		PO					
Site:	Mitchell Road, Corby			Max DD/OMC Source:		CLIENT					
				MDD:	1930	PD:	2.6	OMC:			
				Density offset:		Moisture offset:					
				Test depth mm:		300	Time: 15 sec				
Material:	Brown gravelly Clay			New MS	648	% Difference	0.03	%			
				New DS	1649	% Difference	0.04	%			

Nº	Wet density kg/m³	Dry Density kg/m³	Compaction %	MC %	Air Voids %	Plot and Grid	Level	Test No.	SRD
N	1993	1831	94.8	8.9	14.7	E21	Site Won Layer1	1	NO
S	2018	1885	97.7	7.0	15.6			AOD	
E	1955	1820	94.3	7.4	17.8			E	
W	2011	1847	95.7	8.9	13.9			N	
Mean	1994	1846	95.6	8.1	15.5				
N	2027	1851	95.9	9.5	12.6	E20	Site Won Layer1	2	NO
S	2017	1847	95.7	9.2	13.3			AOD	
E	2005	1829	94.7	9.6	13.4			E	
W	1039	1847	95.7	10.4	11.1			N	
Mean	1772	1844	95.5	9.7	12.6				
N	2157	1980	102.6	9.0	7.5	E14	Site Won Layer1	3	NO
S	2158	1988	103.0	8.6	8.0			AOD	
E	2132	1971	102.1	8.2	9.5			E	
W	2161	1972	102.2	9.6	6.6			N	
Mean	2152	1978	102.5	8.9	7.9				

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Client: Ivy House Environmental Limited
Scotland Farm
Far Lane
Ockbrook
Derby
Derbyshire
DE72 3RX

Date: 12th August 2020

Lab Ref: 120820-02

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just before Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 12th August 2020 in order to carry out 5No. 450mm plate bearing test to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with **Interim Advice Note (IAN) 73/06 Revision 1 (2009)**.

To carry out Nuclear Density Testing in accordance with **Documented In-House Method** SO35.

Results:

The individual result sheets may be viewed on pages 2 to 7 of this report.

Kiwa CMT Testing

Author: D. Spencer
Administrator

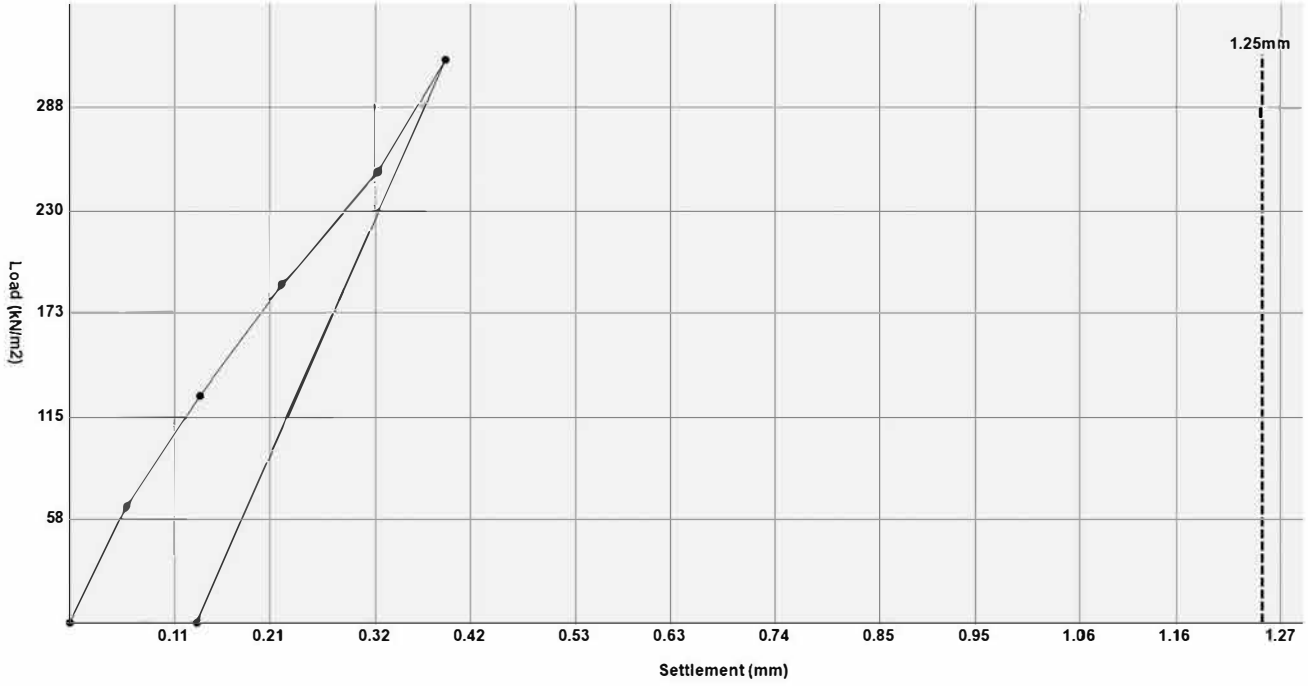
Checked and Approved by: R. Cartlidge
Departmental Manager

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR1(E15,Form)
		^ **Test Location:**	E15 Formation
Lab Ref.:	120820-02	**Layer:**	Formation
Kentledge:	13t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	12/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.06
127	0.14
189	0.22
252	0.32
314	0.39
0	0.13



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

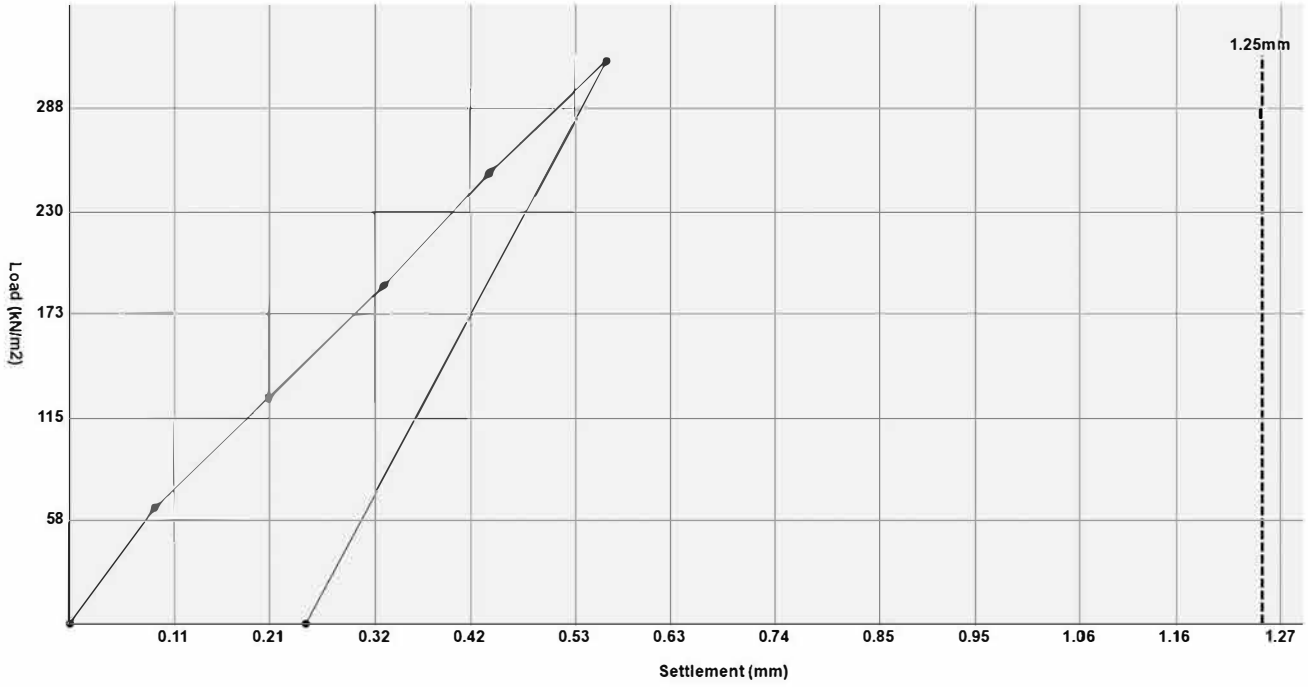
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR2(E16,Form)
		^ **Test Location:**	E16 Formation
Lab Ref.:	120820-02	**Layer:**	Formation
Kentledge:	13t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	12/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.09
127	0.21
189	0.33
252	0.44
314	0.56
0	0.25



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

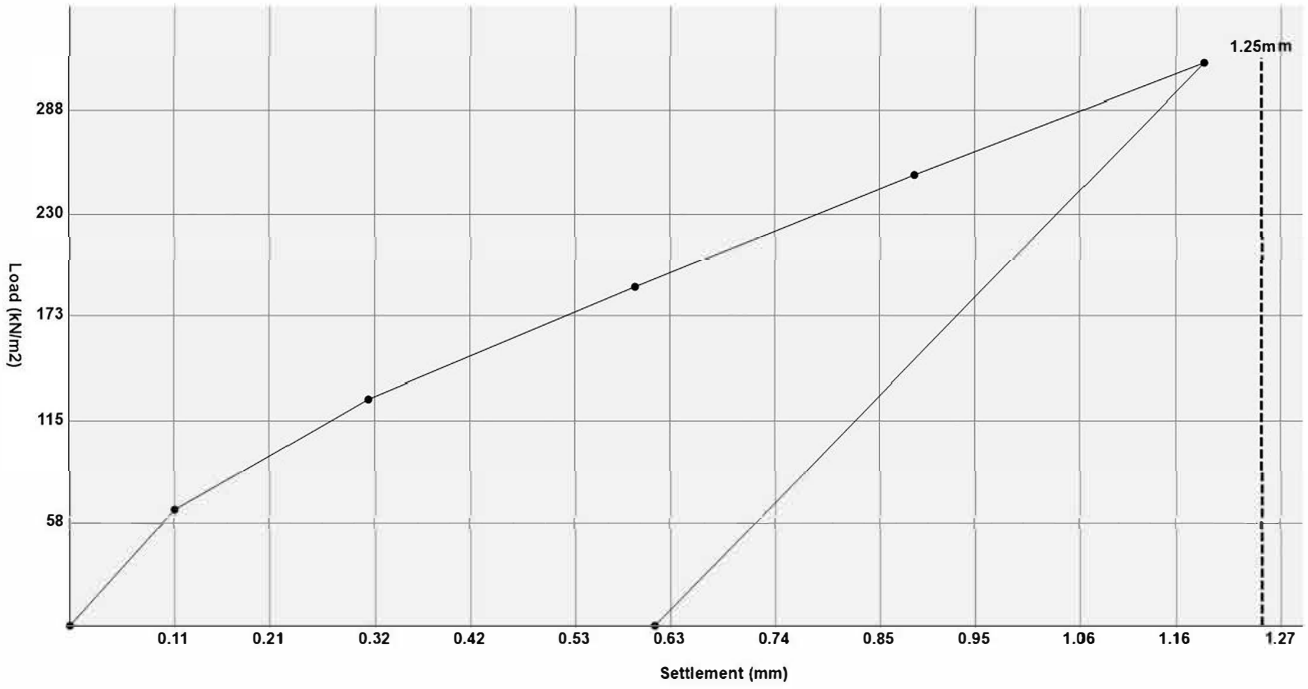
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR3(E9,Form)
		^ **Test Location:**	E9 Formation
Lab Ref.:	120820-02	**Layer:**	Formation
Kentledge:	13t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	12/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.11
127	0.31
189	0.59
252	0.89
314	1.19
0	0.61



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

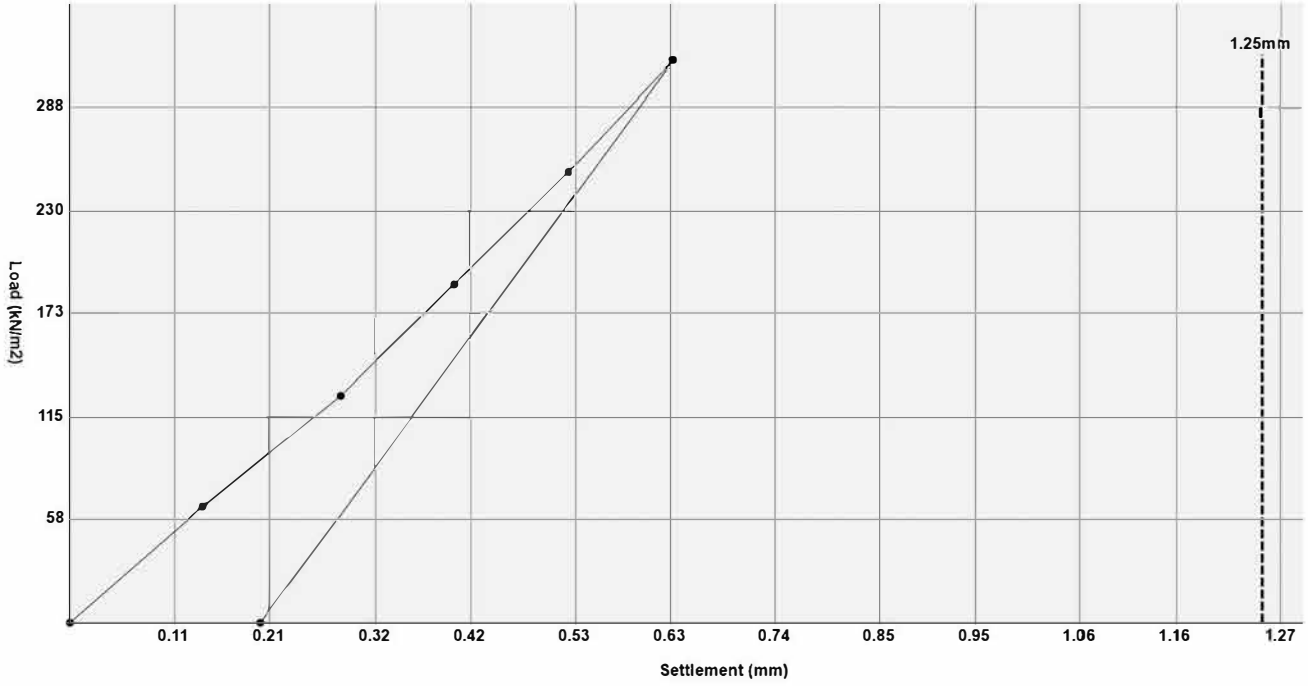
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR4(E3,Form)
		^ **Test Location:**	E3 Formation
Lab Ref.:	120820-02	**Layer:**	Formation
Kentledge:	13t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	12/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.14
127	0.28
189	0.40
252	0.52
314	0.63
0	0.20



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

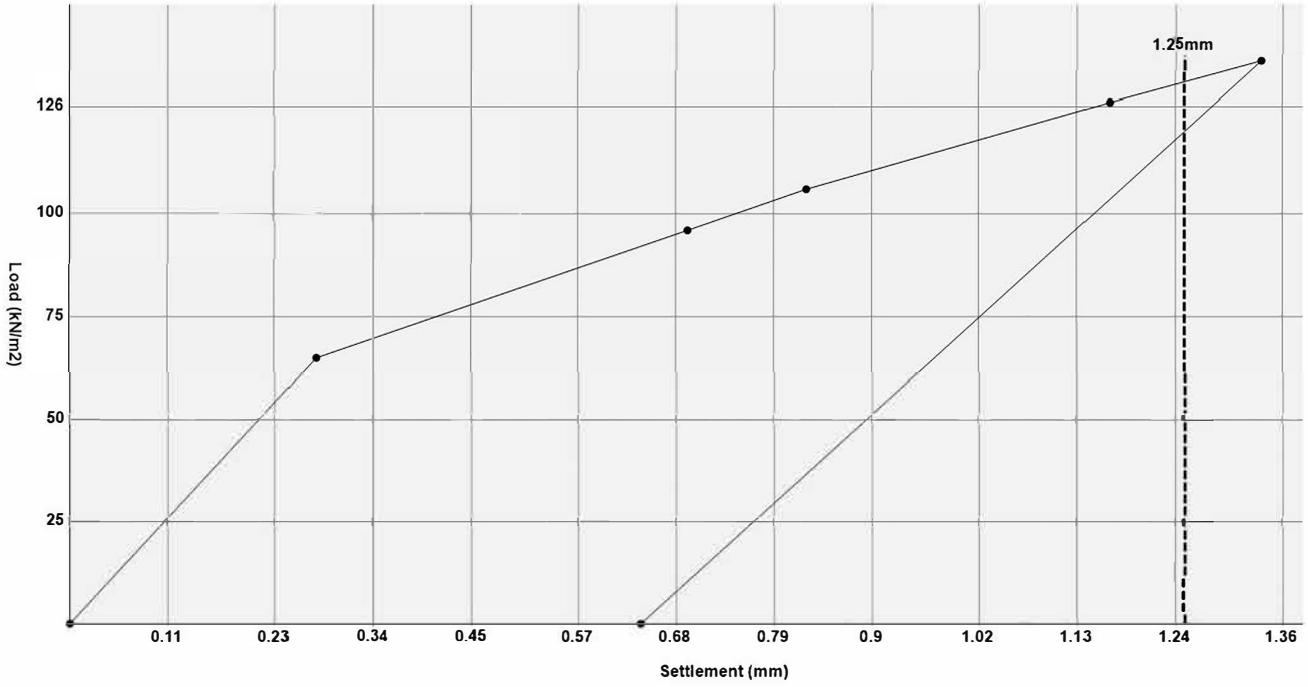
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown gravelly CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR5(E28,Final Layer)
		^ **Test Location:**	E28 Final Layer
Lab Ref.:	120820-02	**Layer:**	Formation
Kentledge:	13t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	12/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.28
96	0.69
106	0.83
127	1.17
137	1.34
0	0.64



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **65922 kN/m2/m**
Equivalent CBR = **13.7 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Job Nº:	120820-02	Client Ref:	IV.131.20	Date:	12/08/20	Weather:	fine				
Client:	IVY HOUSE ENVIROMENTAL			Tech Name:		PO					
Site:	Mitchell Road, Corby			Max DD/OMC Source:		CLIENT					
				MDD:	1930	PD:	2.6	OMC:			
				Density offset:				Moisture offset:			
				Test depth mm:		300		Time: 15 sec			
Material:	Brown gravelly Clay			New MS	643			% Difference	0.88	%	
				New DS	1651			% Difference	0.07	%	

Nº	Wet density kg/m³	Dry Density kg/m³	Compaction %	MC %	Air Voids %	Plot and Grid	Level	Test No.	SRD
N	2116	1911	99.0	10.7	7.4	E28	Site Won Final Layer	1	NO
S	2208	1980	102.6	11.5	2.5			AOD	
E	2225	2025	104.9	9.9	3.6			E	
W	2102	1864	96.6	12.8	5.8			N	
Mean	2163	1945	100.8	11.2	4.8				

Kiwa CMT

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www.kiwa.co.uk/cmt

Client: Ivy House Environmental Ltd
Scotland Farm
Far Lane
Ockbrook, Derby
Derbyshire
DE72 3RX

Date: 28/08/2020

Lab Ref: 270820-05

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just befor Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 27/08/2020 in order to carry out 13 NDG and 450 plate load testing tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

Results:

The individual result sheets may be viewed on pages 2 to 14 of this report.

Kiwa CMT Testing

Checked and Authorised by: J. Eckford
Senior Geotechnical Technician

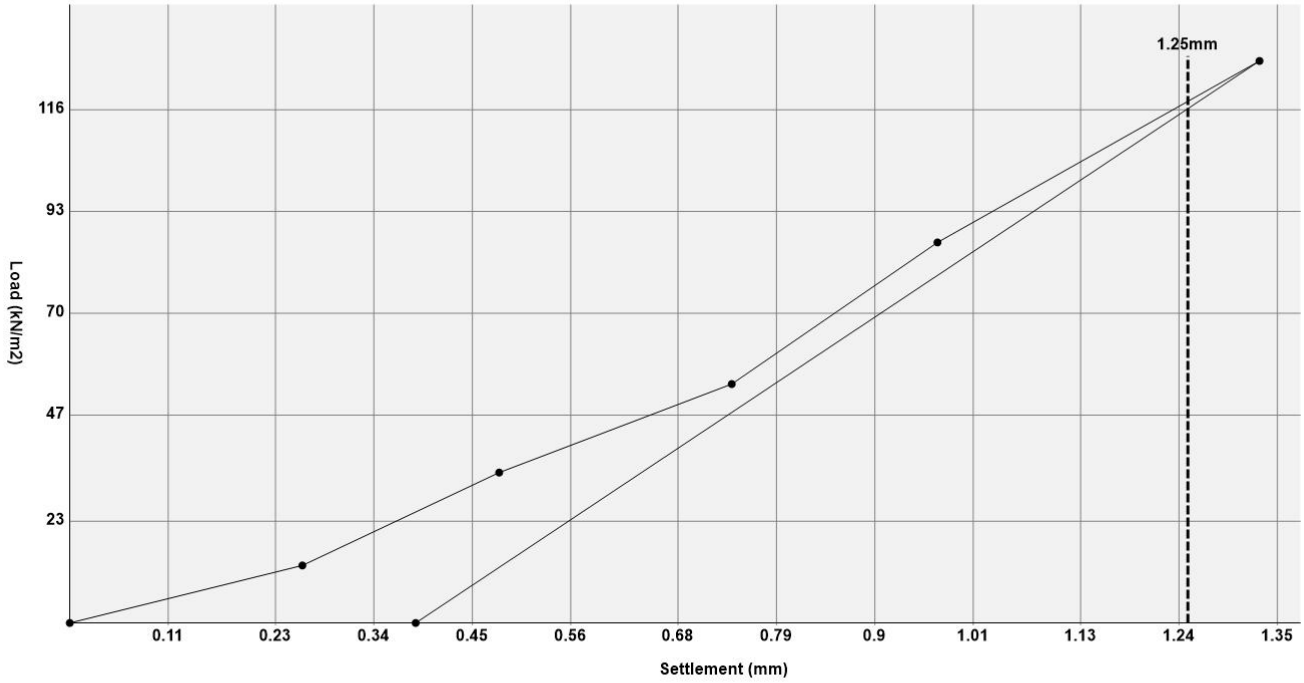
UKAS TESTING
0529

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	BROWN SOIL CLAY AND AGGRGATE MIX
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 1
		^ **Test Location:**	GRID E 20 LAYER 1
Lab Ref.:	270820-05	**Layer:**	Laid
Kentledge:	24 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
13	0.26
34	0.48
54	0.74
86	0.97
127	1.33
0	0.39



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **58930 kN/m2/m**
Equivalent CBR = **11.3 %**

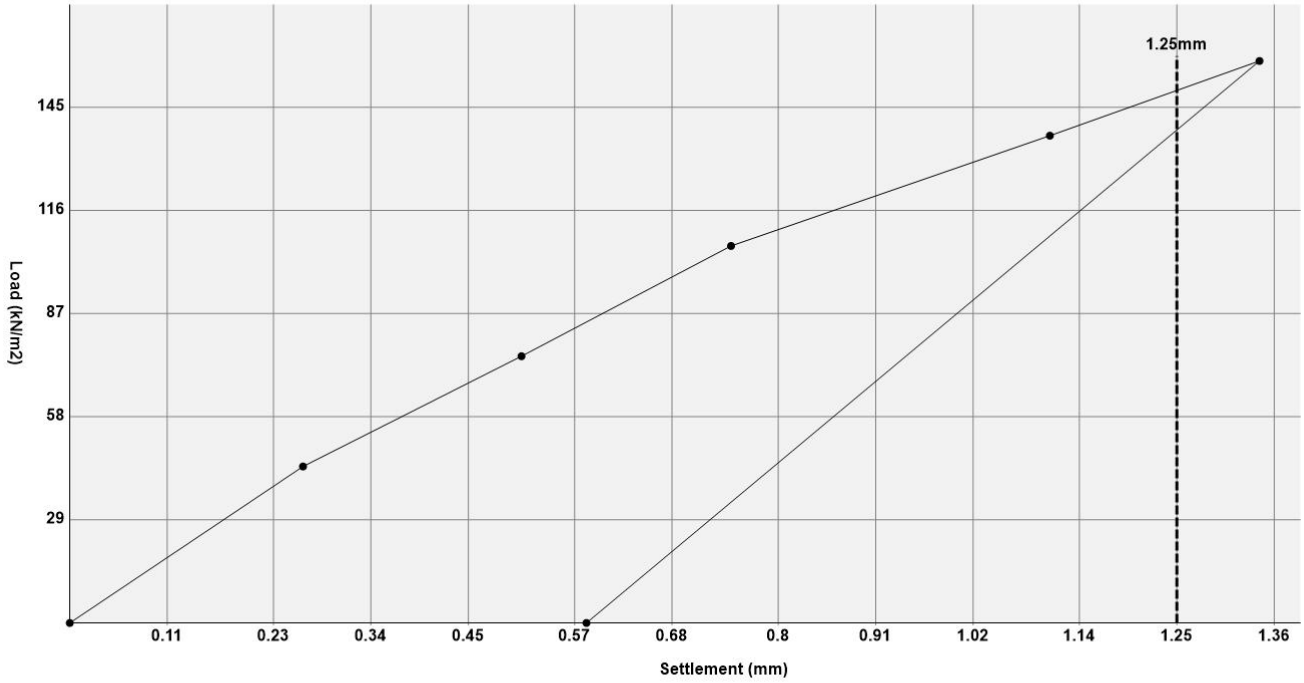
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	BROWN SOIL CLAY AND AGGRGATE MIX
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 2
		^ **Test Location:**	GRID E21 LAYER 1
Lab Ref.:	270820-05	**Layer:**	Laid
Kentledge:	24 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
44	0.26
75	0.51
106	0.75
137	1.11
158	1.34
0	0.58



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **74911 kN/m2/m**
Equivalent CBR = **17.1 %**

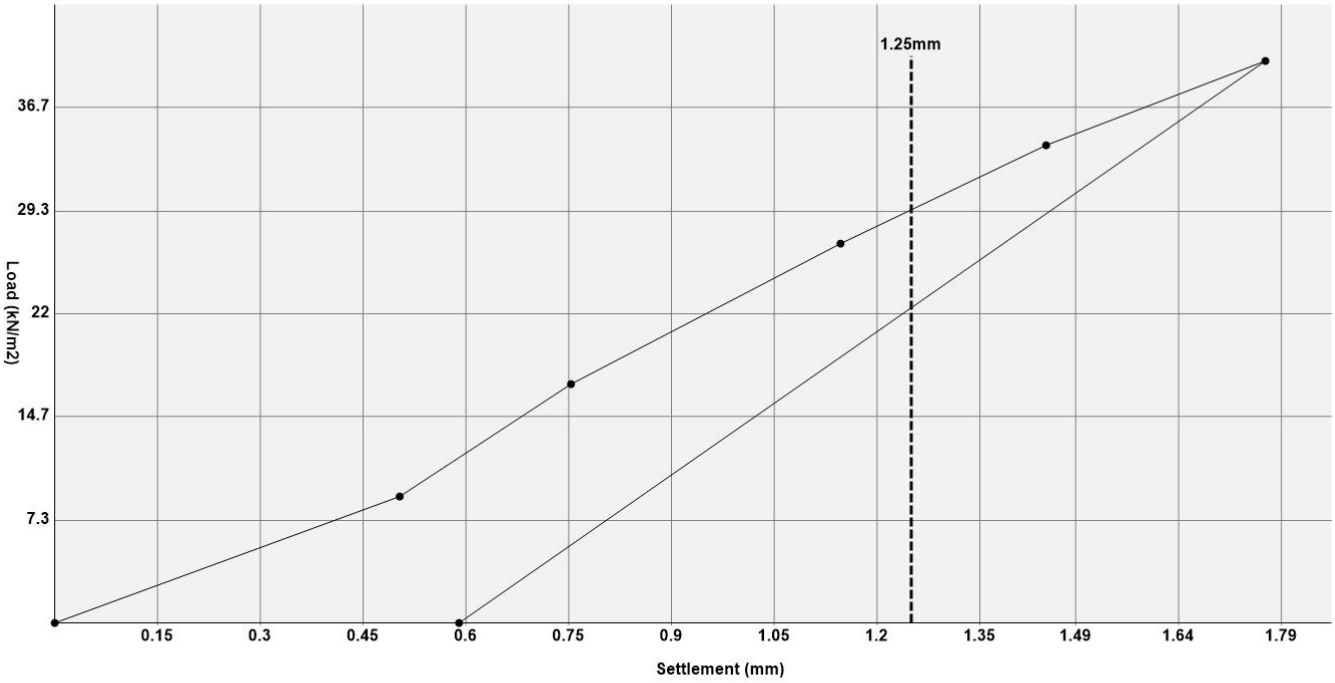
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	BROWN SOIL CLAY AND AGGRGATE MIX
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 3
		^ **Test Location:**	GRID E 22 LAYER 1
Lab Ref.:	270820-05	**Layer:**	Laid
Kentledge:	24 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
9	0.50
17	0.75
27	1.15
34	1.45
40	1.77
0	0.59



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **14483 kN/m2/m**
Equivalent CBR = **1 %**

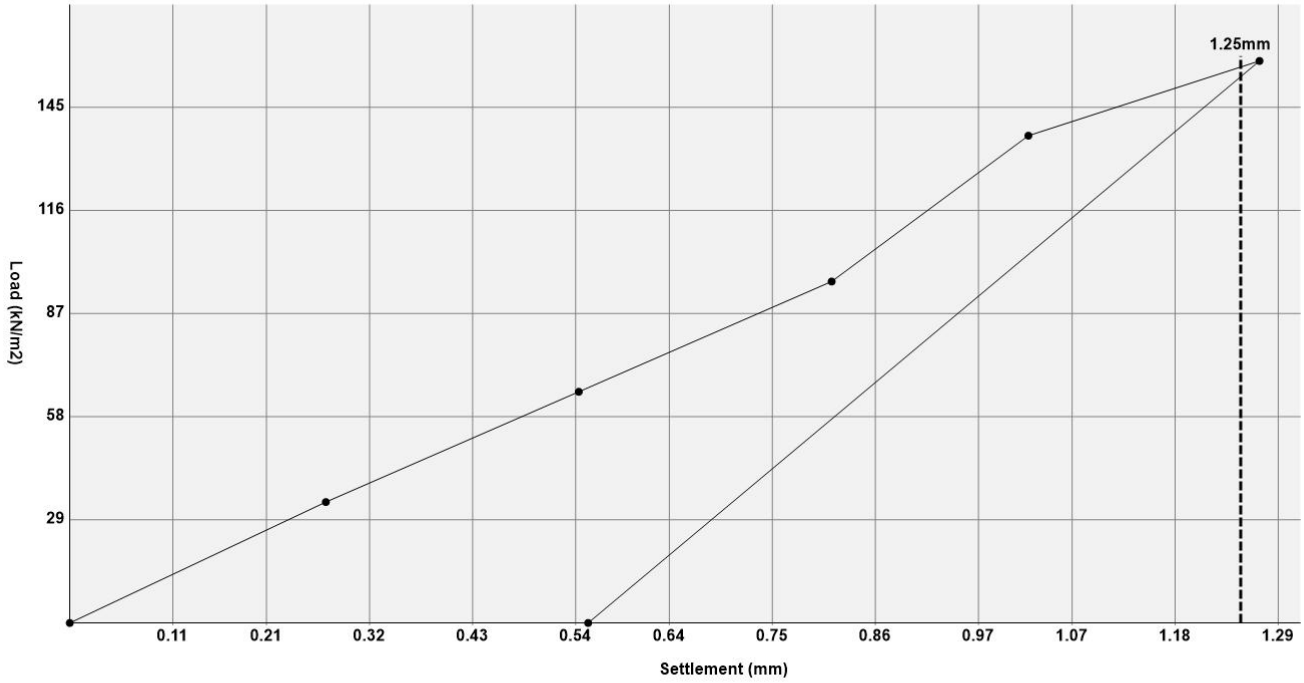
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE AND AGGRGATE MIX
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 4
		^ **Test Location:**	GRID E23 FORMATOIN
Lab Ref.:	270820-05	**Layer:**	Laid
Kentledge:	24 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.27
65	0.54
96	0.81
137	1.02
158	1.27
0	0.55



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **77908 kN/m2/m**
Equivalent CBR = **18.3 %**

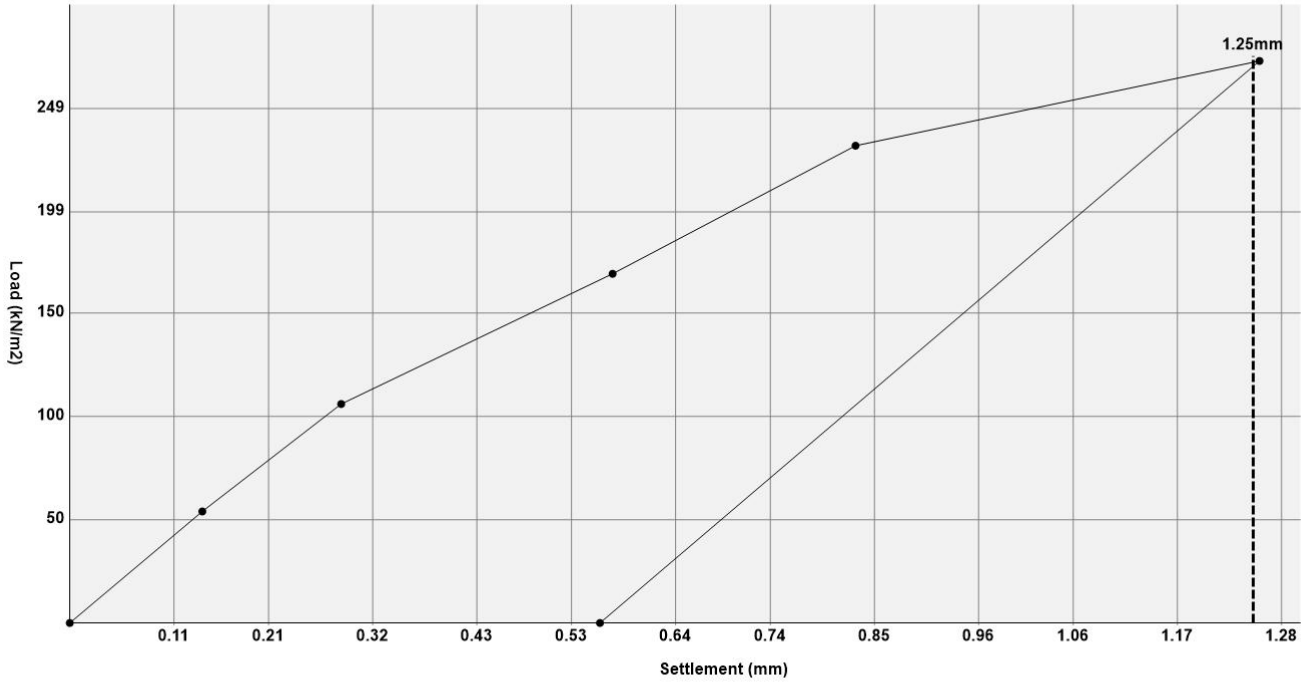
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE & AGGRGATE MIX
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 5
		^ **Test Location:**	GRID 24 FORMATOIN
Lab Ref.:	270820-05	**Layer:**	Formation
Kentledge:	24 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
54	0.14
106	0.29
169	0.57
231	0.83
272	1.26
0	0.56



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **135339 kN/m2/m**
Equivalent CBR = **47.7 %**

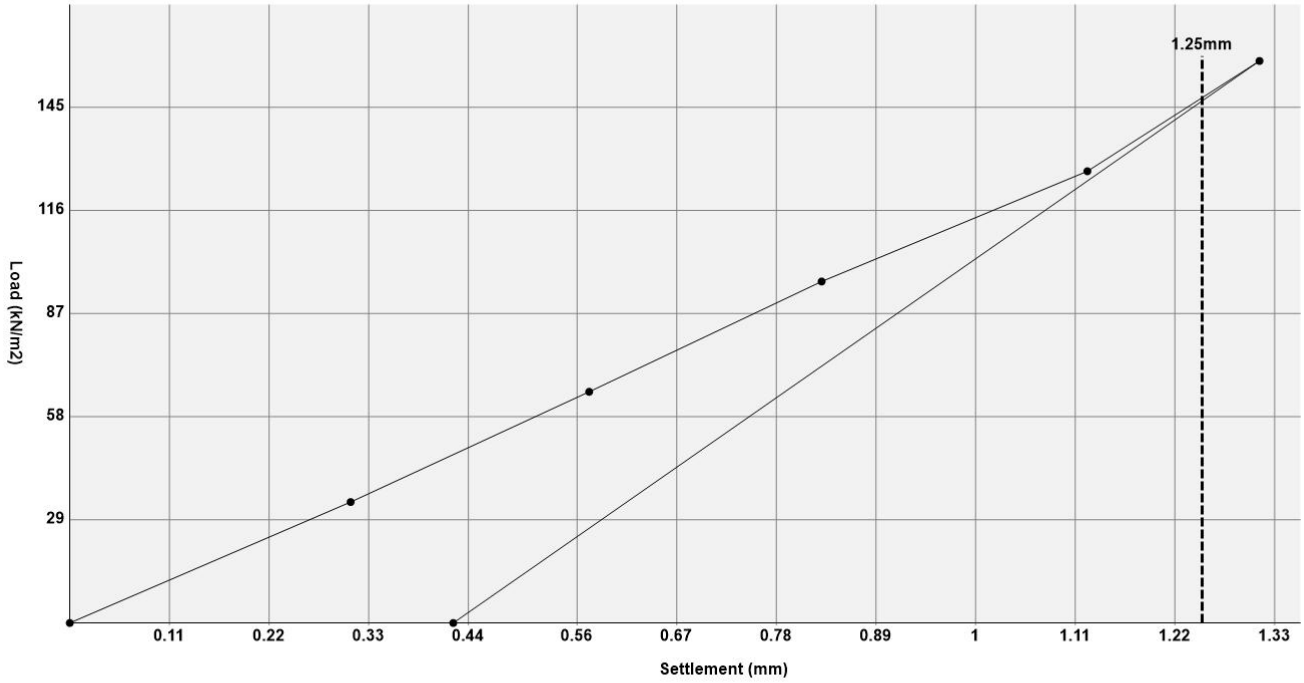
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED SONE AND AGGRGATE MIX
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 6
		^ **Test Location:**	- GRID E30 FORMATION
Lab Ref.:	270820-05	**Layer:**	Formation
Kentledge:	24 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.31
65	0.57
96	0.83
127	1.12
158	1.31
0	0.42



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **73912 kN/m2/m**
Equivalent CBR = **16.7 %**

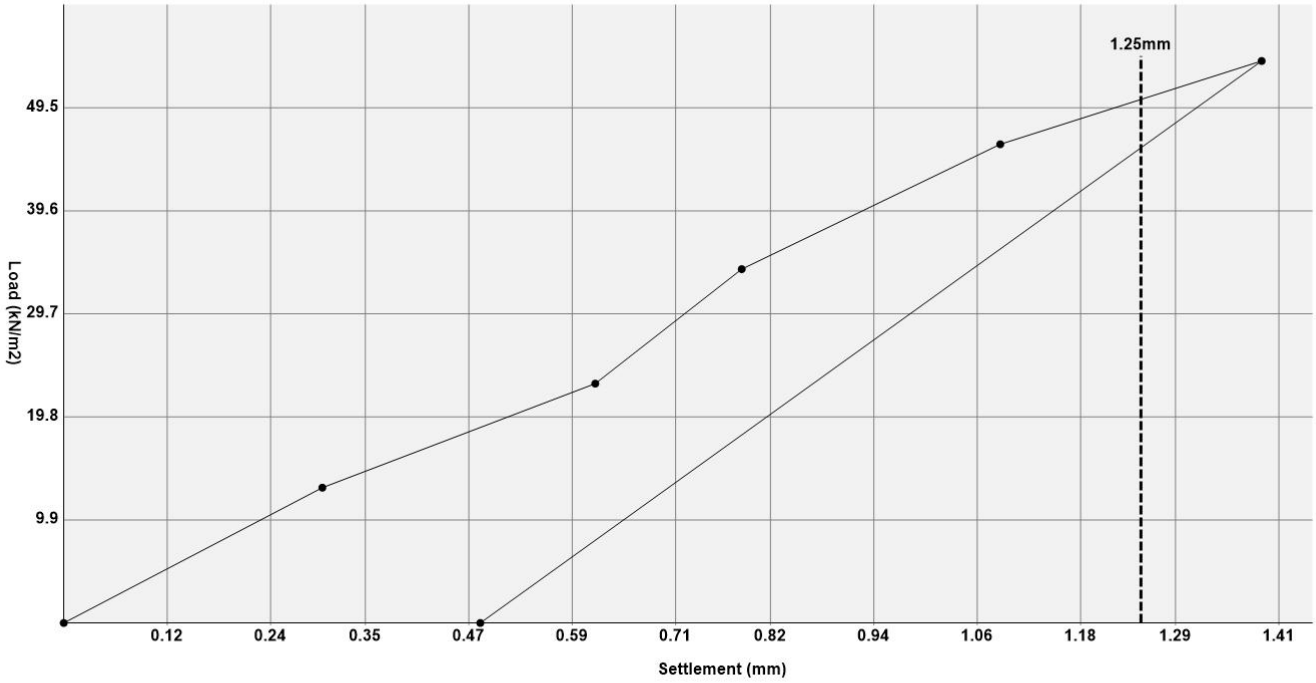
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	BROWN SOIL CLAY AND AGGRGATE MIX
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 7
		^ **Test Location:**	GRID E22 RETEST LOCATOIN MOVED 1M FROM ORIGINAL
Lab Ref.:	270820-05	**Layer:**	Laid
Kentledge:	24 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
13	0.30
23	0.62
34	0.79
46	1.09
54	1.39
0	0.48



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **24970 kN/m2/m**
Equivalent CBR = **2.5 %**

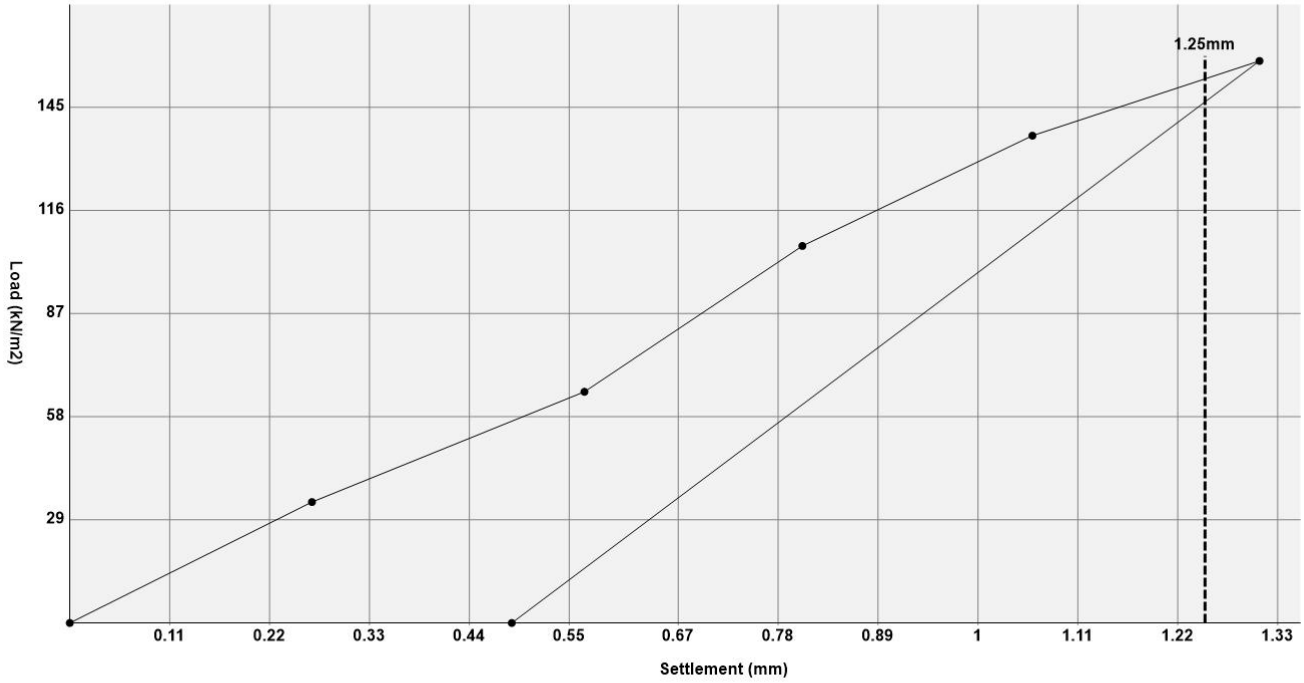
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE AND AGGREGATE
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 8
		^ **Test Location:**	GRID E 15 FORMATION
Lab Ref.:	270820-05	**Layer:**	Formation
Kentledge:	24 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.27
65	0.57
106	0.81
137	1.06
158	1.31
0	0.49



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **76409 kN/m2/m**
Equivalent CBR = **17.7 %**

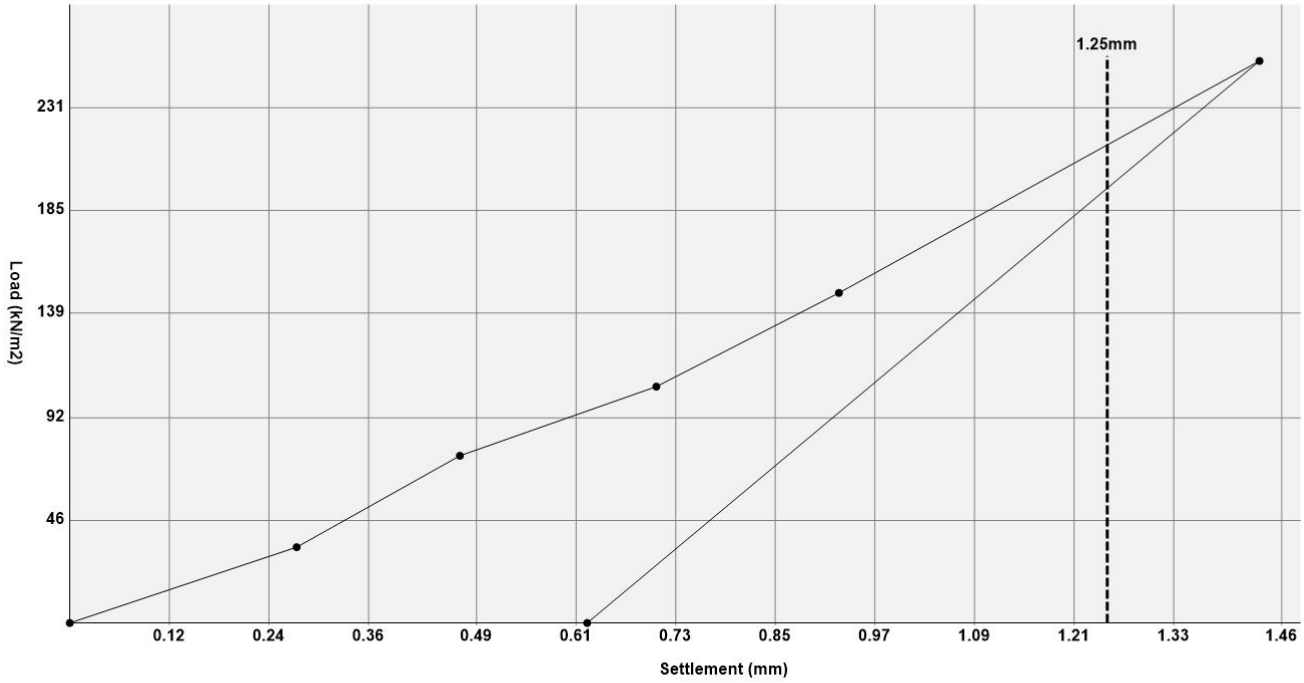
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	CRUSHED STONE AND AGGRGATE MIX
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 9
		^ **Test Location:**	GRID E18 FORMATION
Lab Ref.:	270820-05	**Layer:**	Formation
Kentledge:	24 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.27
75	0.47
106	0.71
148	0.93
252	1.43
0	0.62



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **106873 kN/m2/m**
Equivalent CBR = **31.6 %**

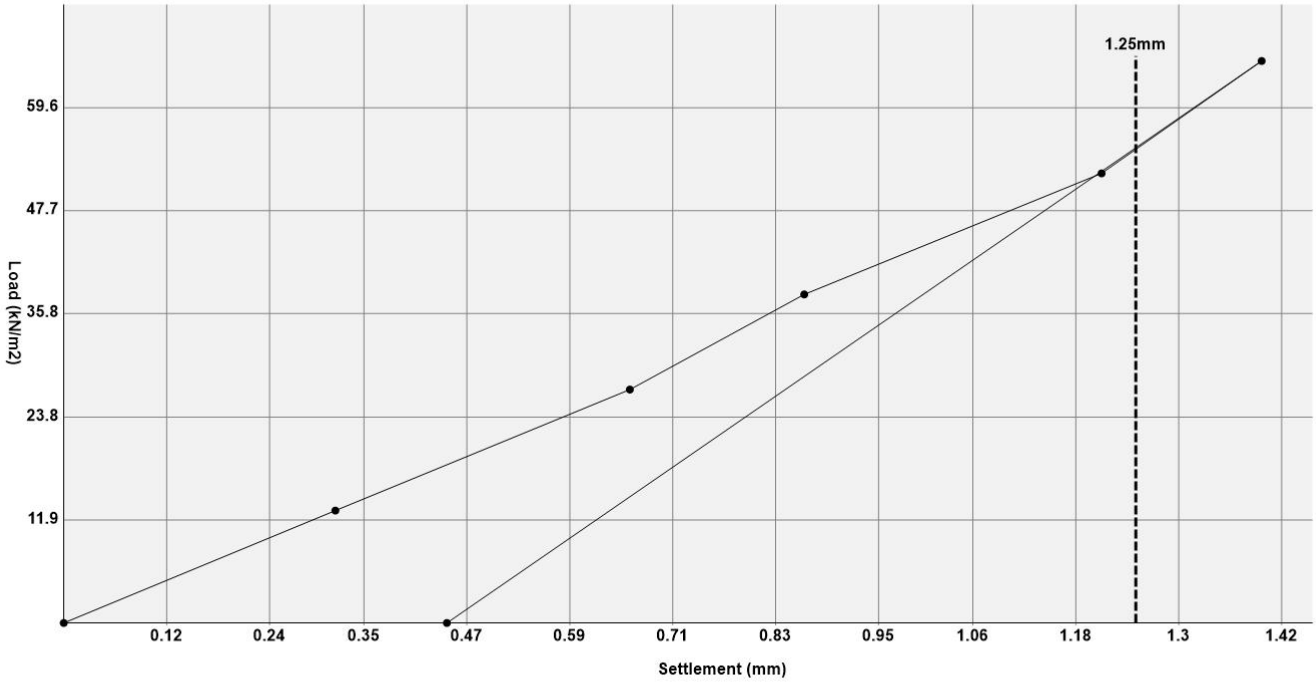
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	BROWN SOIL CLAY AND AGGRGATE MIX
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 10
		^ **Test Location:**	-GRID E 17 FORMATOIN
Lab Ref.:	270820-05	**Layer:**	Formation
Kentledge:	24 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
13	0.32
27	0.66
38	0.86
52	1.21
65	1.40
0	0.45



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **27467 kN/m2/m**
Equivalent CBR = **3 %**

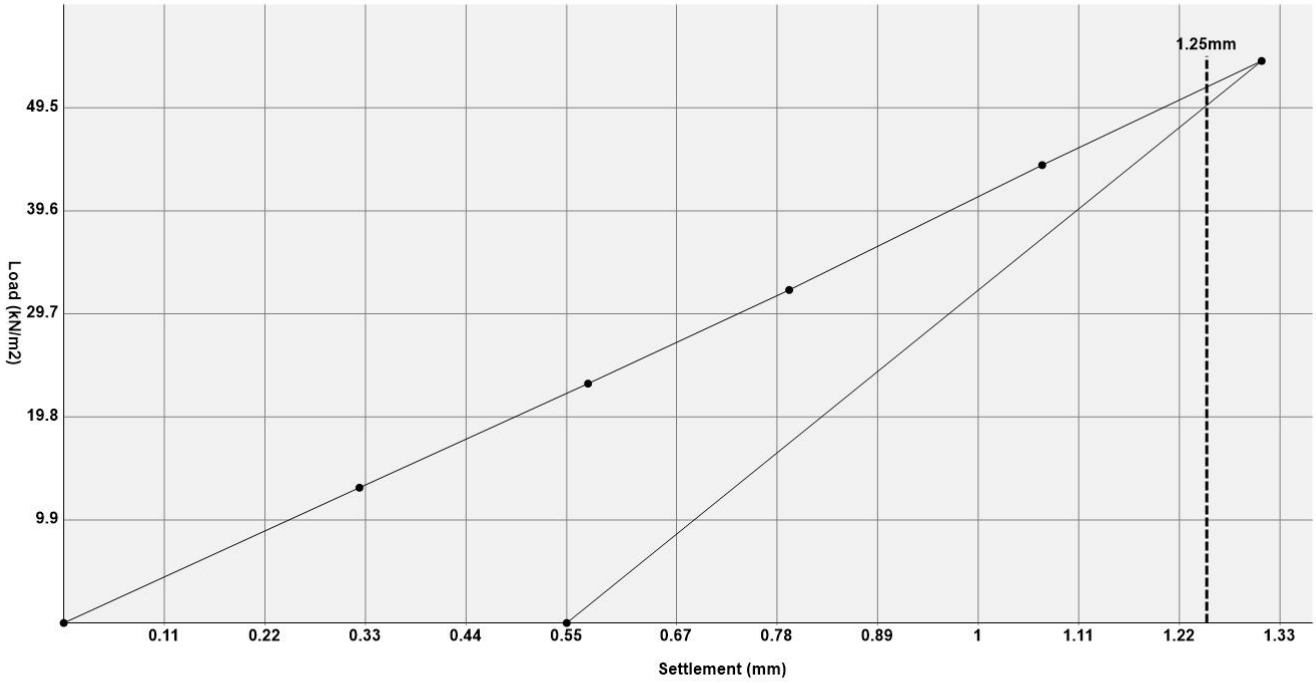
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	BROWN SOIL CLAY AND AGGRGATE MIX
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 11
		^ **Test Location:**	GRID E 16 LAYER 1
Lab Ref.:	270820-05	**Layer:**	Laid
Kentledge:	24 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
13	0.32
23	0.57
32	0.79
44	1.07
54	1.31
0	0.55



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **25969 kN/m2/m**
Equivalent CBR = **2.7 %**

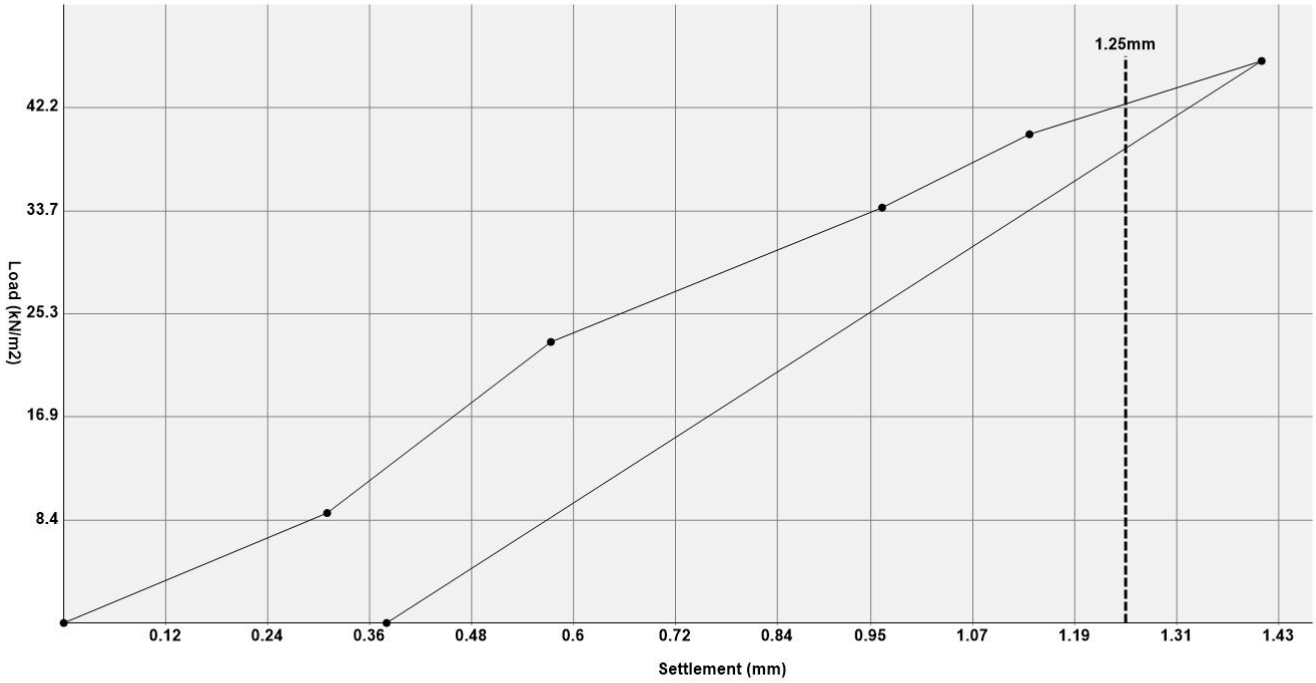
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	BROWN SOIL CLAY AND AGGRGATE MIX
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 12
		^ **Test Location:**	GRID E15 LAYER 1
Lab Ref.:	270820-05	**Layer:**	Laid
Kentledge:	24 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
9	0.31
23	0.57
34	0.96
40	1.14
46	1.41
0	0.38



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **20975 kN/m2/m**
Equivalent CBR = **1.9 %**

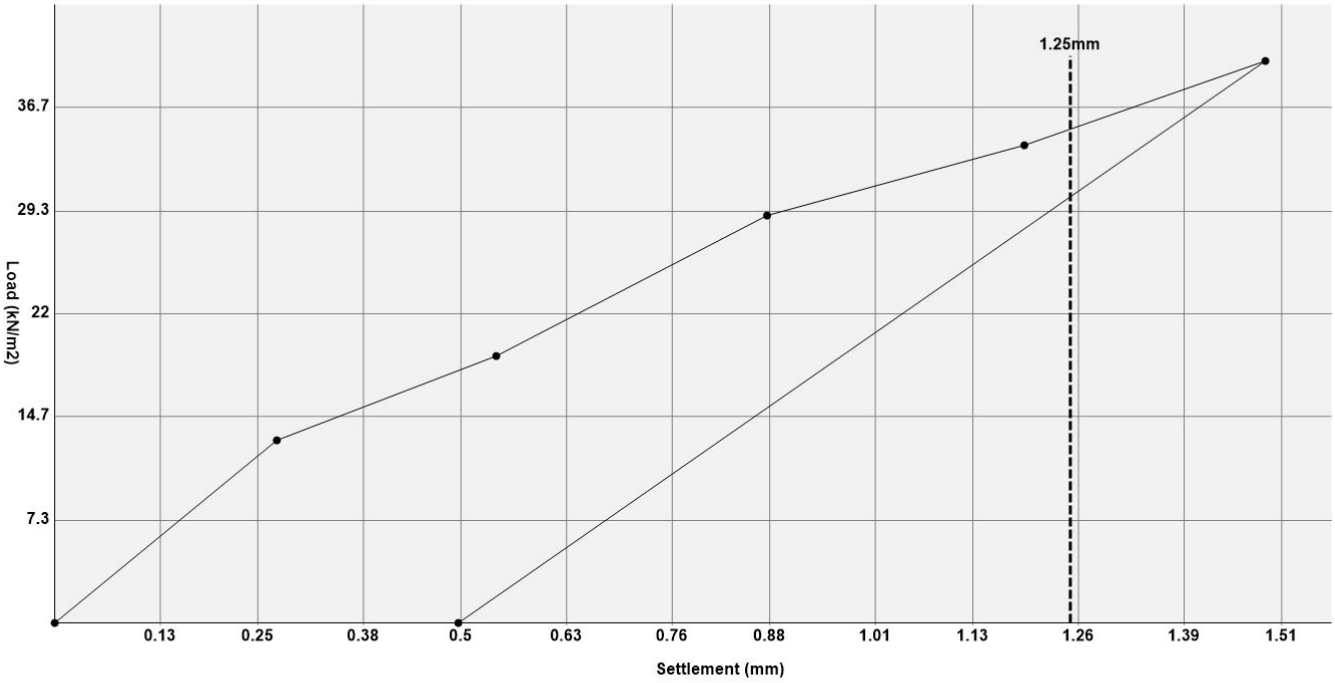
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	BROWN SOIL CLAY AND AGGRGATE MIX
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 13
		^ **Test Location:**	GRID E 22 RETEST OF RETEST
Lab Ref.:	270820-05	**Layer:**	Laid
Kentledge:	24 TONNE DIGGER	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	27/08/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
13	0.27
19	0.54
29	0.88
34	1.19
40	1.49
0	0.50



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **17479 kN/m2/m**
Equivalent CBR = **1.4 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Job Nº:	270820--05	Client Ref:	1V.131.20	Date:	27/08/20	Weather:	DRY		
Client:	IVY HOUSE ENVIROMENTAL			Tech Name:		JOHN MACINTYRE			
Site:	MITCHEL RD CORBY NN17 5AF			Max DD/OMC Source:		CLIENT			
				MDD:	1740	PD:	2.68	OMC:	17%
				Density offset:		Moisture offset:			
				Test depth mm:		250	Time: 15 sec		
Material:	brown soil and clay with small aggregate			New MS	688	% Difference	0.1	%	
				New DS	1733	% Difference	0.2	%	

Nº	Wet density kg/m³	Dry Density kg/m³	Compaction %	MC %	Air Voids %	Plot and Grid	Level	Test No.	SRD
N	2081	1836	105.6	13.2	7.2	E20	1	1	
S	2082	1862	107.0	11.8	8.5			AOD	
E	2071	1856	106.7	11.5	9.3			E	
W	2078	1876	107.8	10.8	9.7			N	
Mean	2078	1858	106.8	11.8	8.7				
N	2179	1922	110.8	13.0	3.0	E21	1	2	
S	2171	1954	112.3	11.1	5.4			AOD	
E	2153	1924	110.6	11.9	5.4			E	
W	2106	1849	106.3	13.6	5.3			N	
Mean	2152	1912	110.0	12.4	4.8				
N	2159	1951	112.1	10.6	6.7	E22	1	3	
S	2249	2035	118.0	9.5	4.1			AOD	
E	2090	1891	108.1	10.5	9.8			E	
W	2040	1780	102.3	14.7	7.6			N	
Mean	2135	1914	110.1	11.3	7.1				

Kiwa CMT

Kiwa CMT Testing
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E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Ltd
Scotland Farm
Far Lane
Ockbrook, Derby
Derbyshire
DE72 3RX

Date: 10/09/2020

Lab Ref: 100920-02

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just before Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 10/09/2020 in order to carry out 11No 450 plate load testing tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

Results:

The individual result sheets may be viewed on pages 2 to 12 of this report.

Kiwa CMT Testing

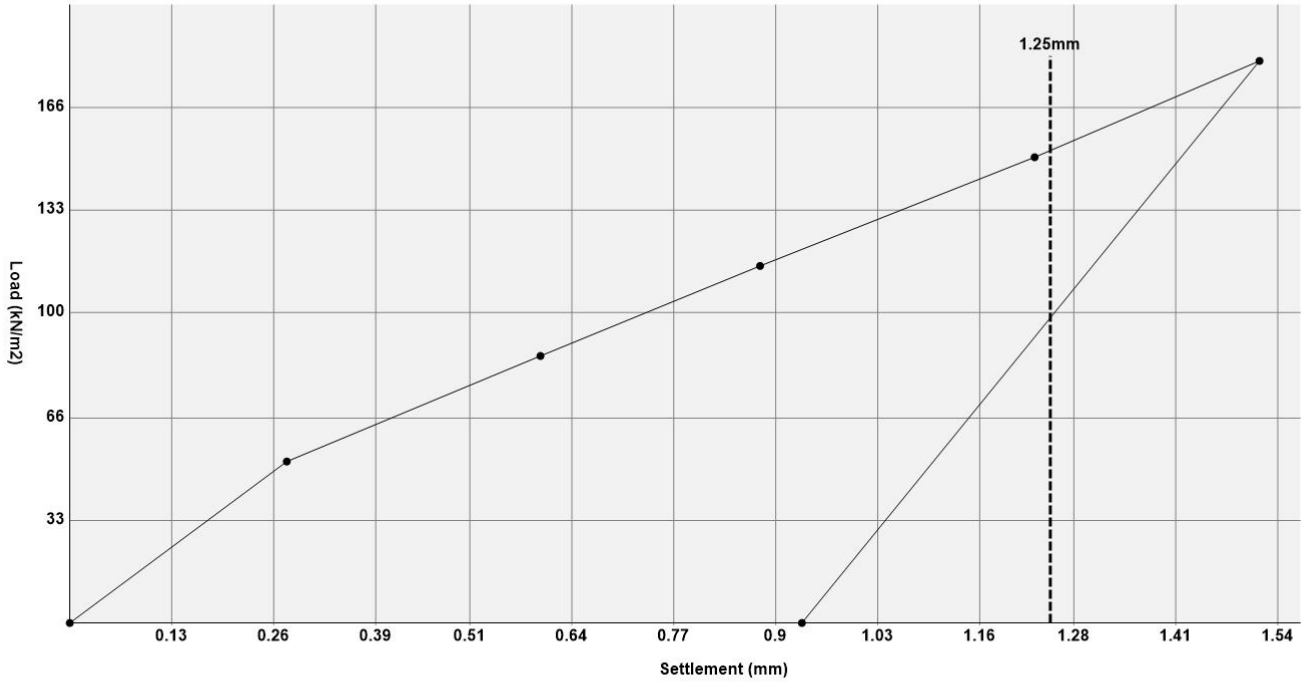
Checked and Authorised by: R Cartlidge
Manager Geotechnical Department

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 1
		^ **Test Location:**	E69 Final Layer Yellow Type 1
Lab Ref.:	100920-02	**Layer:**	Sub Base
Kentledge:	14 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	10/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
52	0.28
86	0.60
115	0.88
150	1.23
181	1.52
0	0.93



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **75910 kN/m2/m**
Equivalent CBR = **17.5 %**

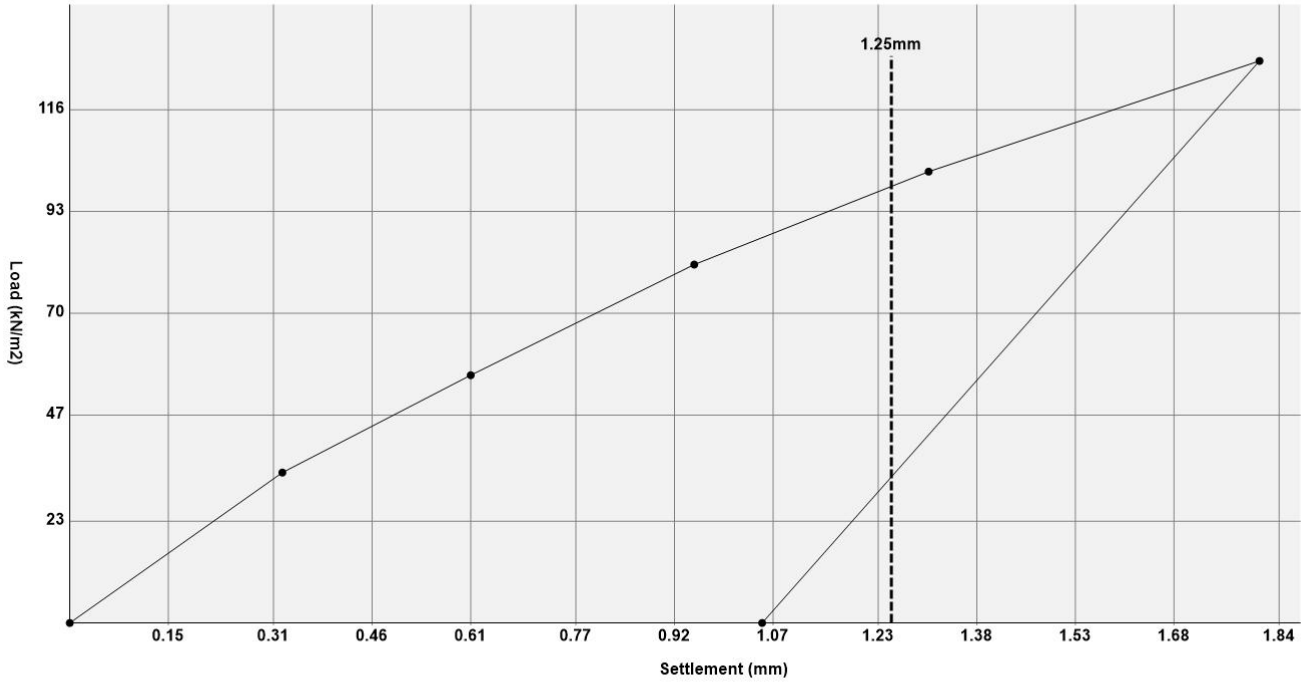
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 2
		^ **Test Location:**	E68 Final Layer Yellow Type 1
Lab Ref.:	100920-02	**Layer:**	Sub Base
Kentledge:	14 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	10/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.32
56	0.61
81	0.95
102	1.31
127	1.81
0	1.05



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **49441 kN/m2/m**
Equivalent CBR = **8.3 %**

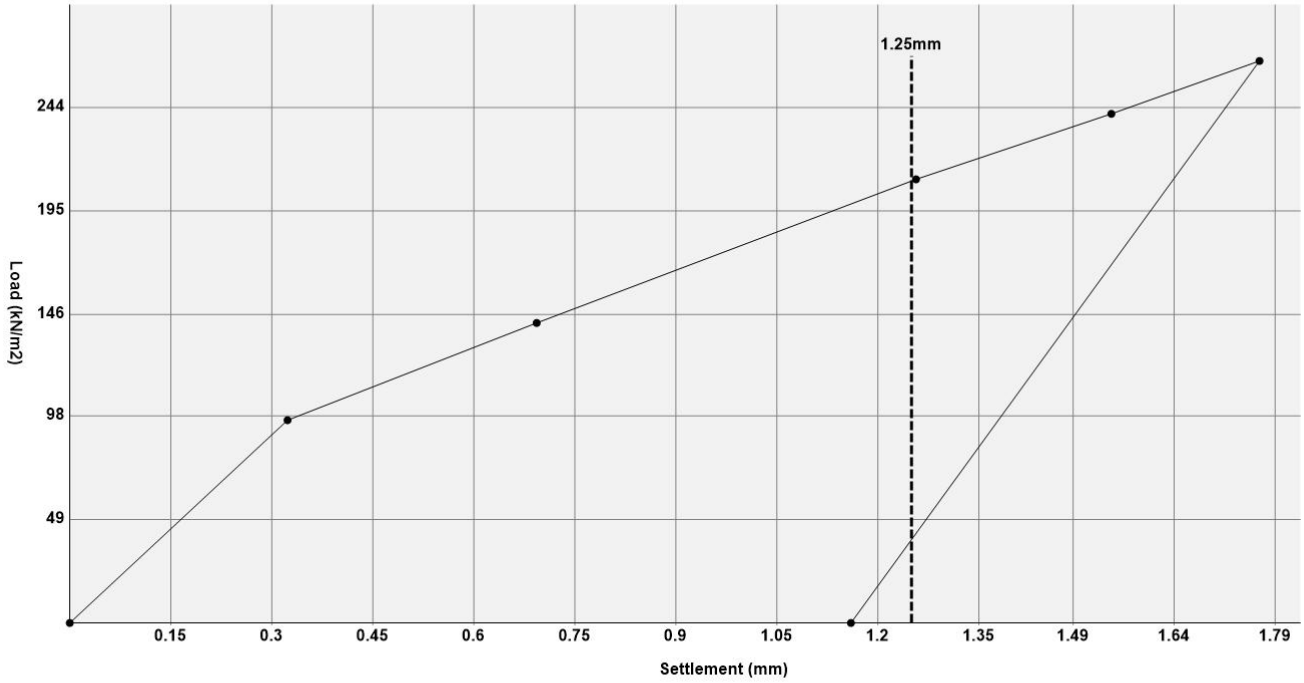
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 3
		^ **Test Location:**	E67 Final Layer Grey Type 1
Lab Ref.:	100920-02	**Layer:**	Sub Base
Kentledge:	14 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	10/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
96	0.32
142	0.69
210	1.26
241	1.55
266	1.77
0	1.16



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **104376 kN/m2/m**
Equivalent CBR = **30.4 %**

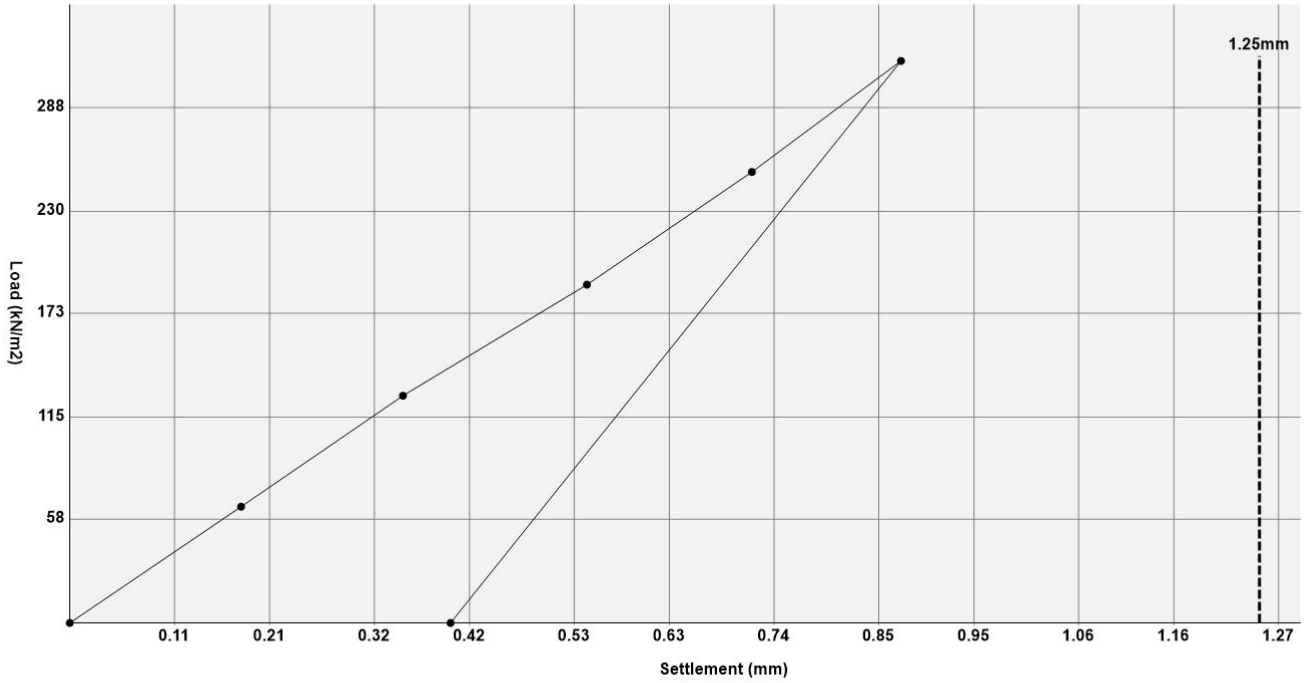
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 4
		^ **Test Location:**	E66 Final Layer Grey Type 1
Lab Ref.:	100920-02	**Layer:**	Sub Base
Kentledge:	14 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	10/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.18
127	0.35
189	0.54
252	0.72
314	0.87
0	0.40



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

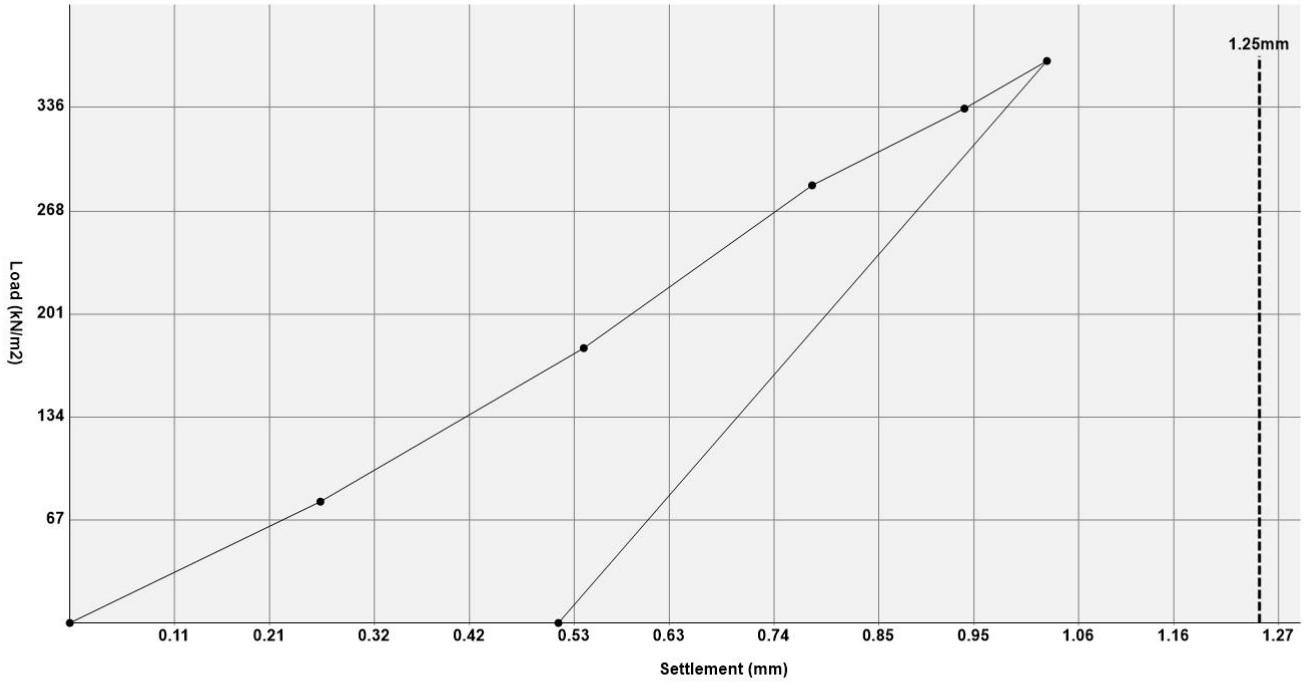
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 5
		^ **Test Location:**	E65 Final Layer Grey Type 1
Lab Ref.:	100920-02	**Layer:**	Sub Base
Kentledge:	14 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	10/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
79	0.26
179	0.54
285	0.78
335	0.94
366	1.03
0	0.51



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>182783 kN/m2/m**
Equivalent CBR = **>80.2 %**

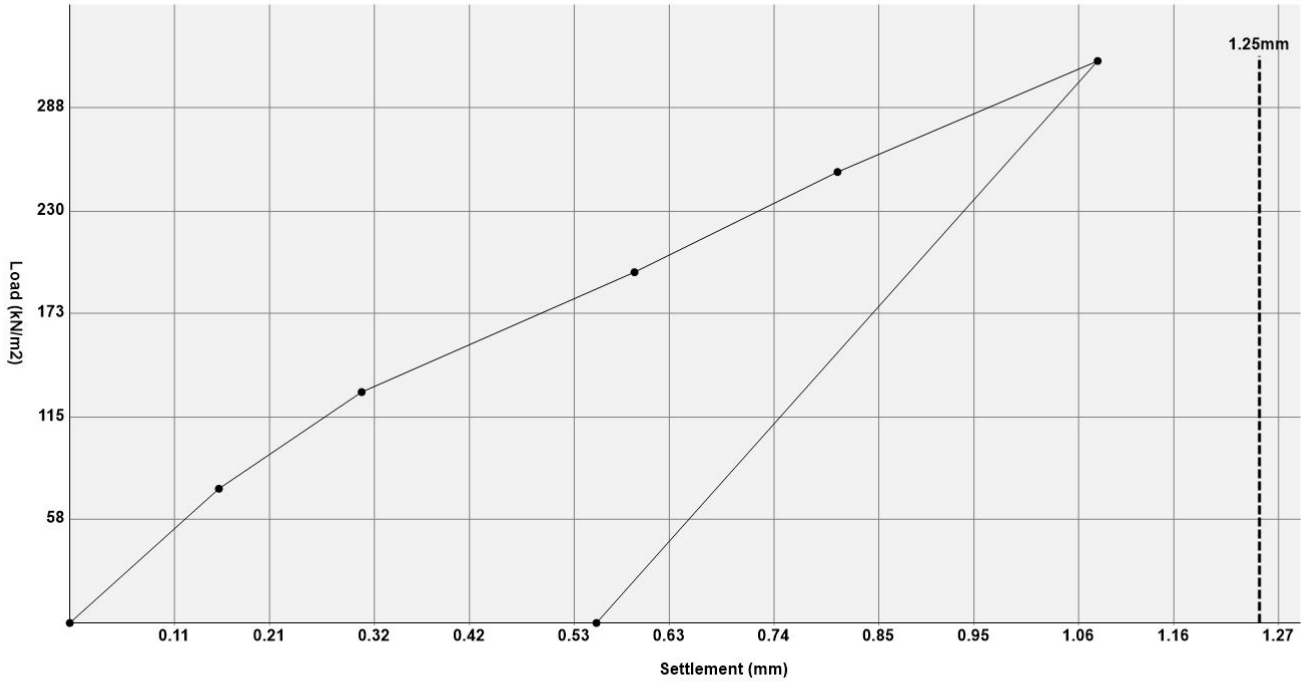
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 6
		^ **Test Location:**	E62 Final Layer Grey type 1
Lab Ref.:	100920-02	**Layer:**	Sub Base
Kentledge:	14 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	10/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
75	0.16
129	0.31
196	0.59
252	0.81
314	1.08
0	0.55



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

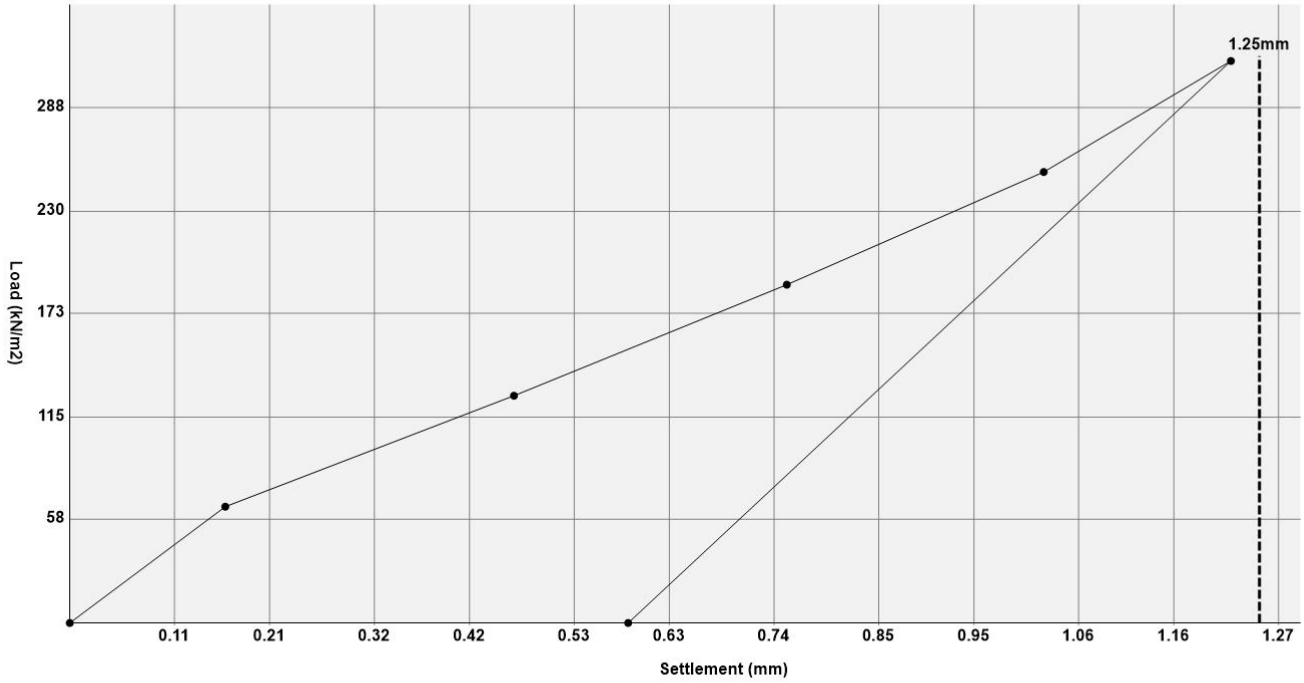
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 7
		^ **Test Location:**	E55 Final Layer Grey Type 1
Lab Ref.:	100920-02	**Layer:**	Sub Base
Kentledge:	14 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	10/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.16
127	0.47
189	0.75
252	1.02
314	1.22
0	0.59



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

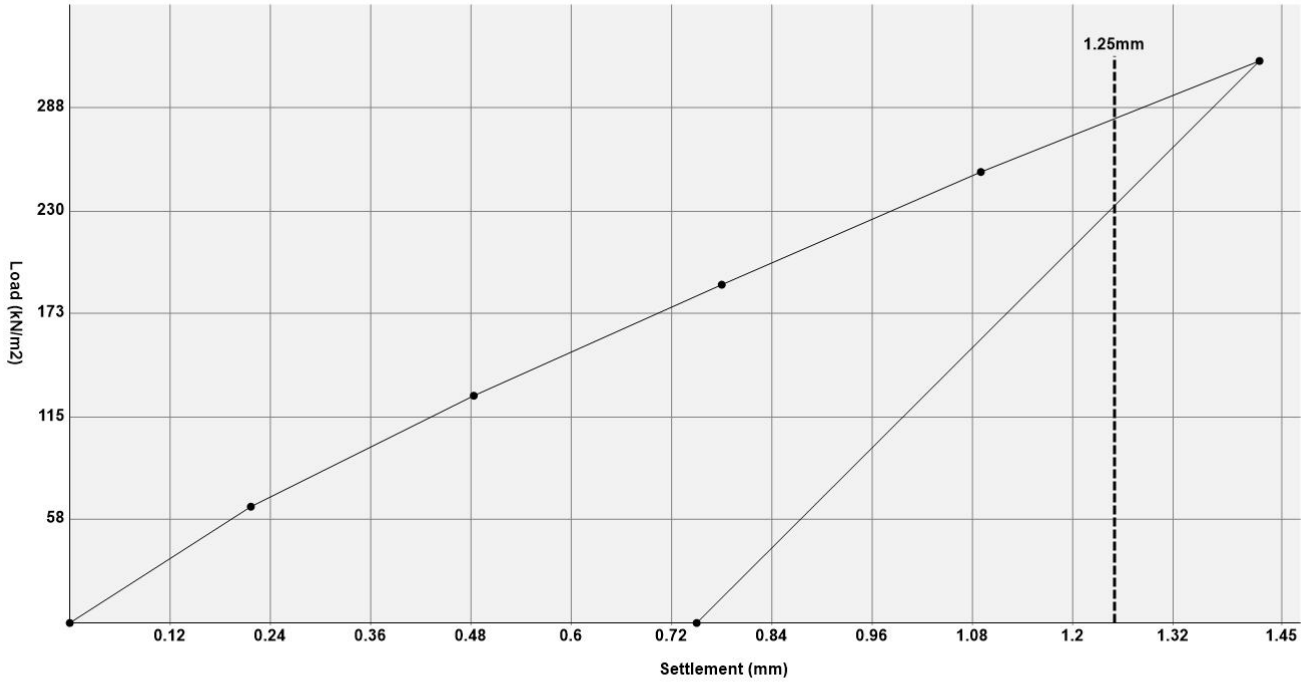
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 8
		^ **Test Location:**	E58 Final Layer Grey Type 1
Lab Ref.:	100920-02	**Layer:**	Sub Base
Kentledge:	14 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	10/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.22
127	0.48
189	0.78
252	1.09
314	1.42
0	0.75



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **140833 kN/m2/m**
Equivalent CBR = **51.1 %**

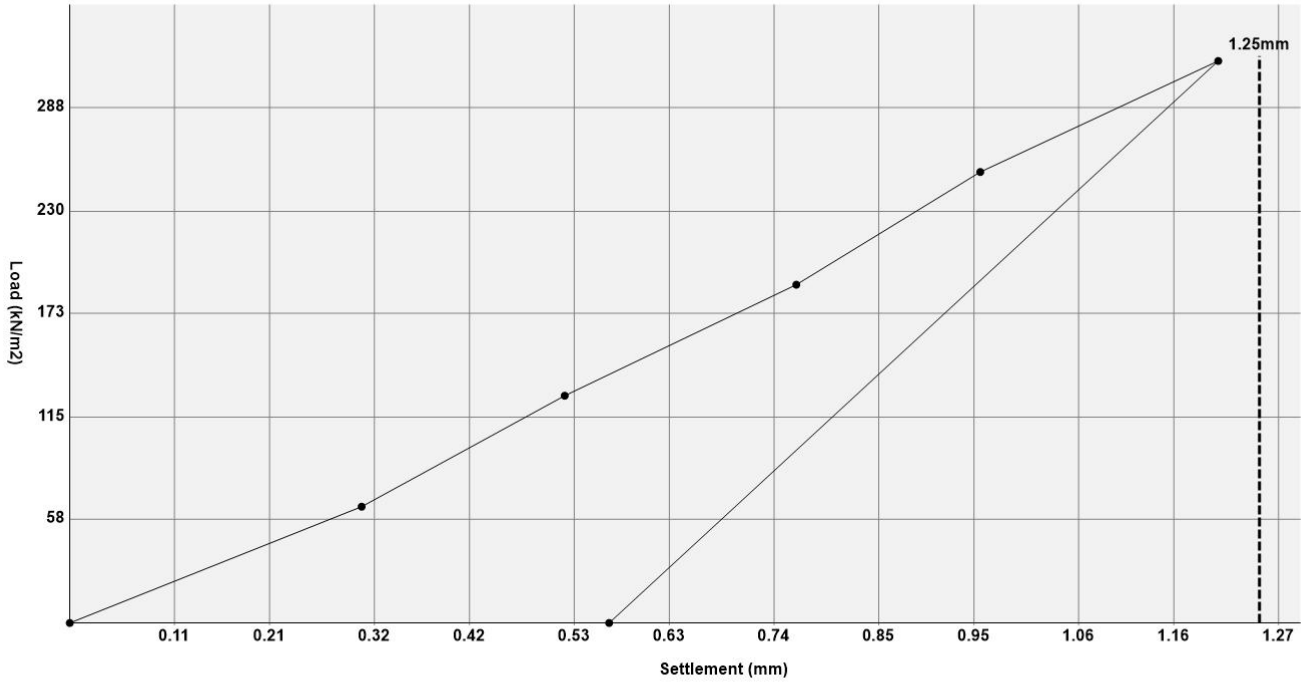
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 9
		^ **Test Location:**	E59 Final Layer Grey Type 1
Lab Ref.:	100920-02	**Layer:**	Sub Base
Kentledge:	14 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	10/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.31
127	0.52
189	0.76
252	0.96
314	1.21
0	0.57



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

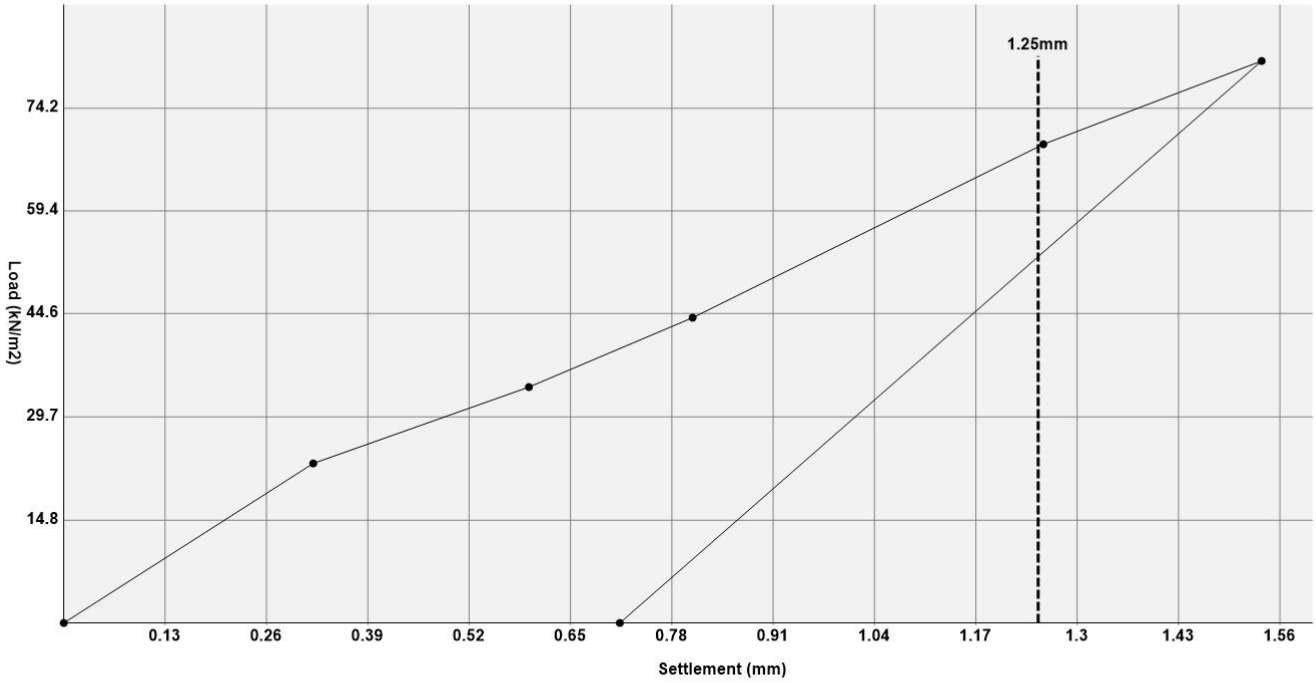
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 10
		^ **Test Location:**	E61 Final Layer Yellow Type 1
Lab Ref.:	100920-02	**Layer:**	Sub Base
Kentledge:	14 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	10/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
23	0.32
34	0.60
44	0.81
69	1.26
81	1.54
0	0.71



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **34459 kN/m2/m**
Equivalent CBR = **4.5 %**

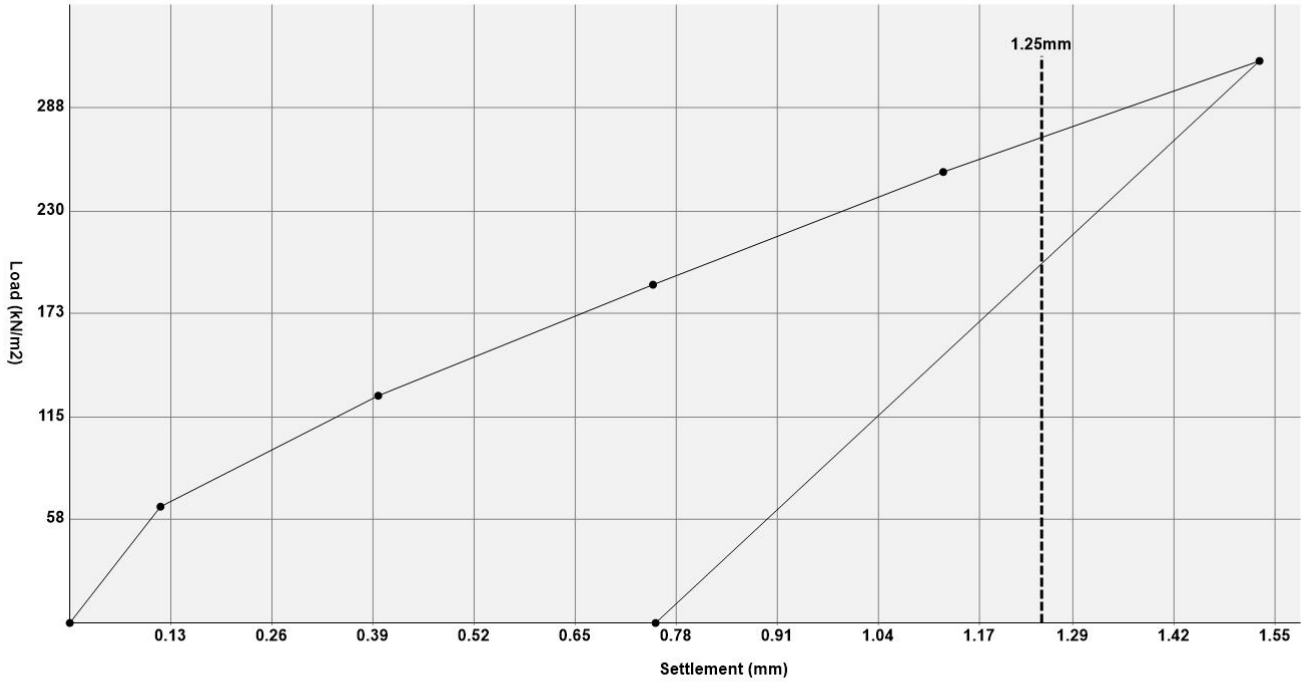
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Brown Graverly Clay
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 11
		^ **Test Location:**	E12 Formation
Lab Ref.:	100920-02	**Layer:**	Formation
Kentledge:	14 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	10/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.12
127	0.40
189	0.75
252	1.12
314	1.53
0	0.75



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **135339 kN/m2/m**
Equivalent CBR = **47.7 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Kiwa CMT Testing
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Prime Enterprise Park
Derby
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E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Ltd
Scotland Farm
Far Lane
Ockbrook, Derby
Derbyshire
DE72 3RX

Date: 11/09/2020

Lab Ref: 110920-03

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just before Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 11/09/2020 in order to carry out 6 NDG and 450 plate load testing tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

Results:

The individual result sheets may be viewed on pages 2 to 7 of this report.

Kiwa CMT Testing

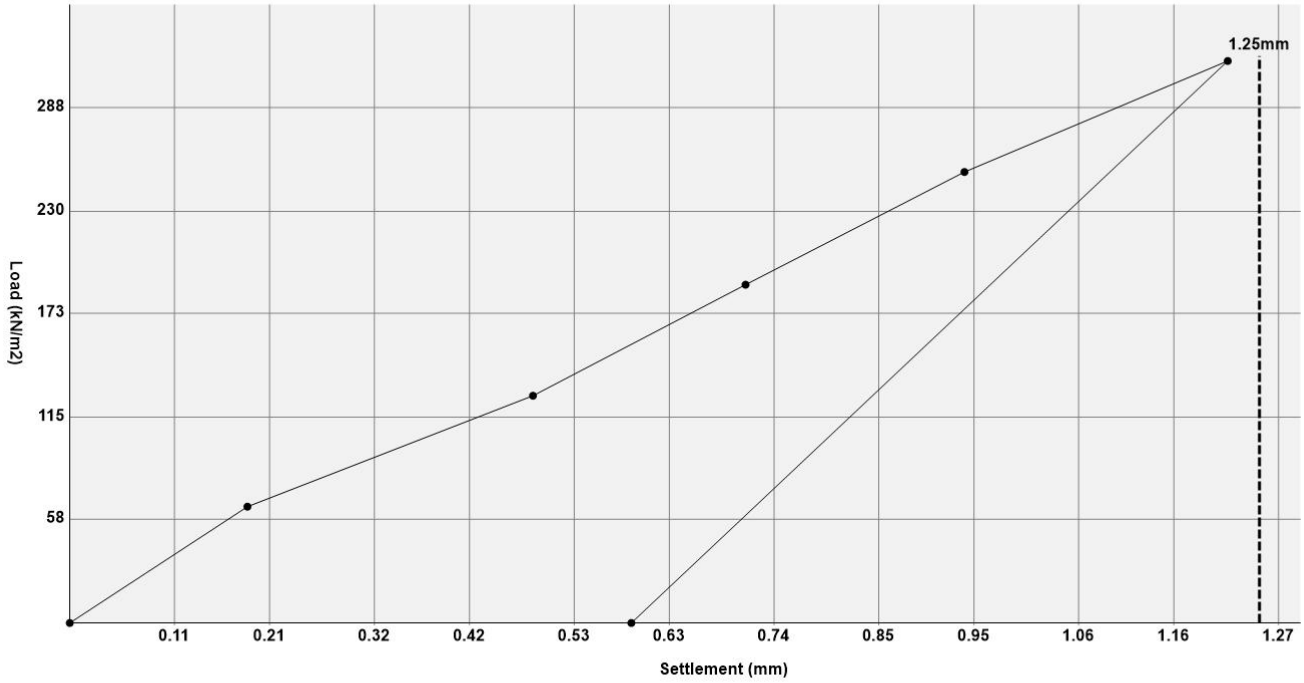
Checked and Authorised by: R Cartlidge
Manager Geotechnical Department

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR1(E60)
		^ **Test Location:**	E60 Final Layer Granite Type1
Lab Ref.:	110920-03	**Layer:**	Sub Base
Kentledge:	13t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	11/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.19
127	0.49
189	0.71
252	0.94
314	1.22
0	0.59



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

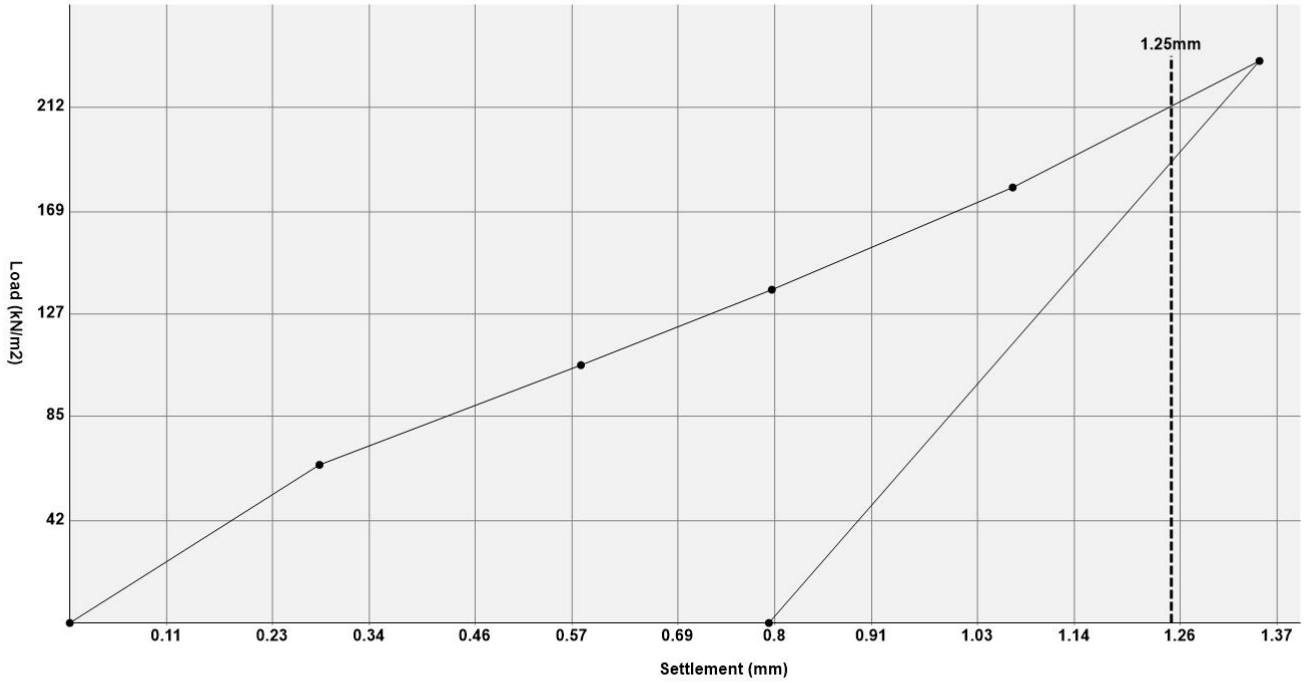
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR2(E68)
		^ **Test Location:**	E68 Final Layer Granite Type21
Lab Ref.:	110920-03	**Layer:**	Sub Base
Kentledge:	13t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	11/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.28
106	0.58
137	0.80
179	1.07
231	1.35
0	0.79



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **105874 kN/m2/m**
Equivalent CBR = **31.1 %**

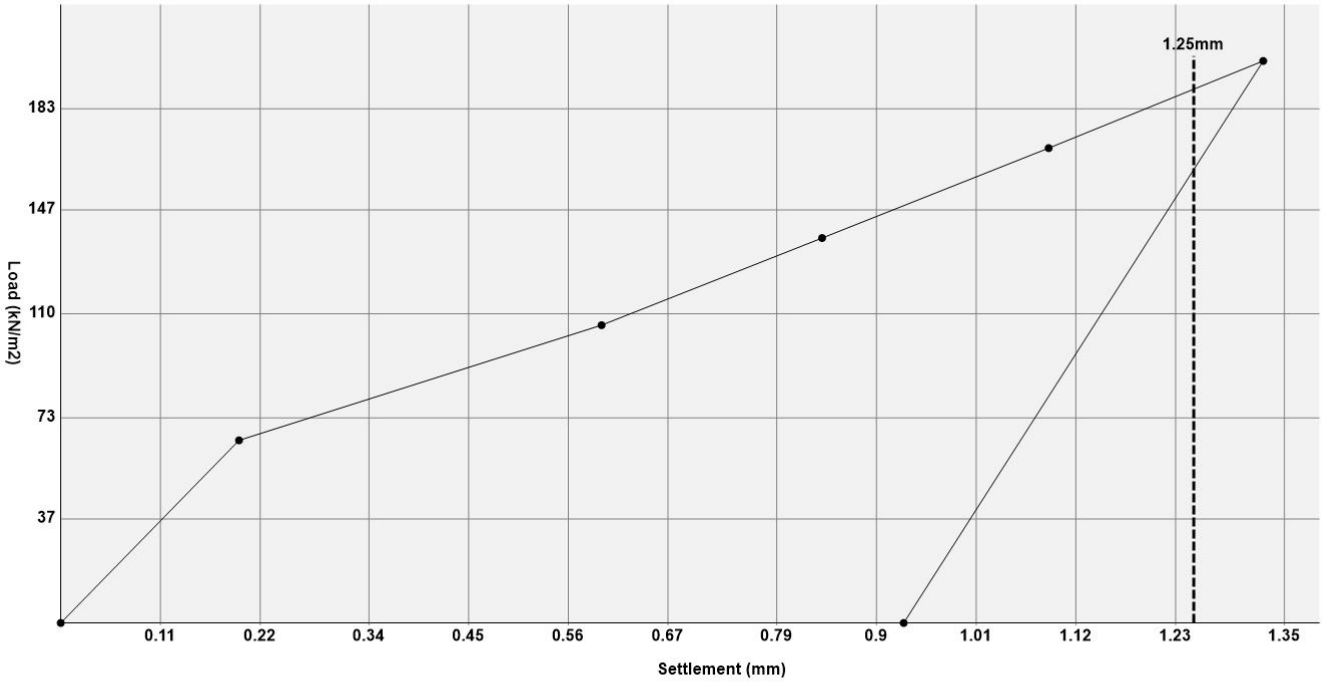
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR3(E69)
		^ **Test Location:**	E69 Final Layer Granite Type1
Lab Ref.:	110920-03	**Layer:**	Sub Base
Kentledge:	13t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	11/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.20
106	0.60
137	0.84
169	1.09
200	1.33
0	0.93



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **94887 kN/m2/m**
Equivalent CBR = **25.8 %**

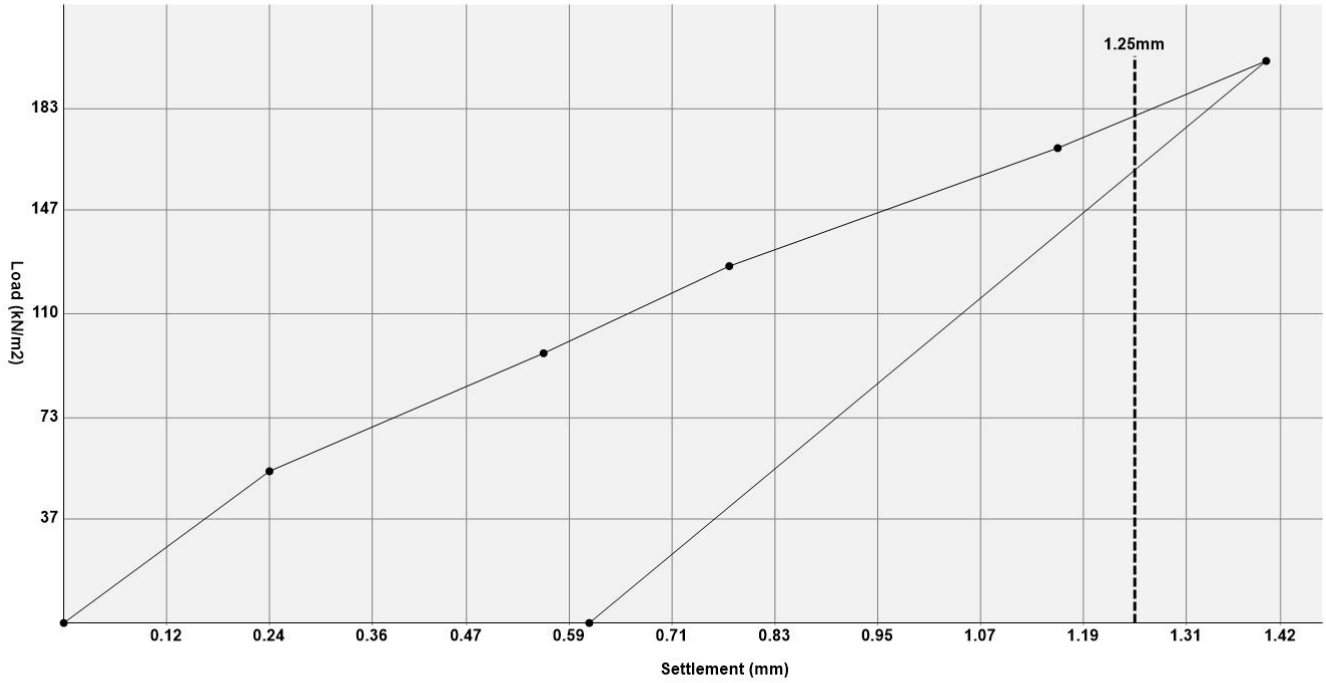
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR4(E61)
		^ **Test Location:**	E61 Final Layer Limestone Type1
Lab Ref.:	110920-03	**Layer:**	Sub Base
Kentledge:	13t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	11/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
54	0.24
96	0.56
127	0.78
169	1.16
200	1.40
0	0.61



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **89893 kN/m2/m**
Equivalent CBR = **23.4 %**

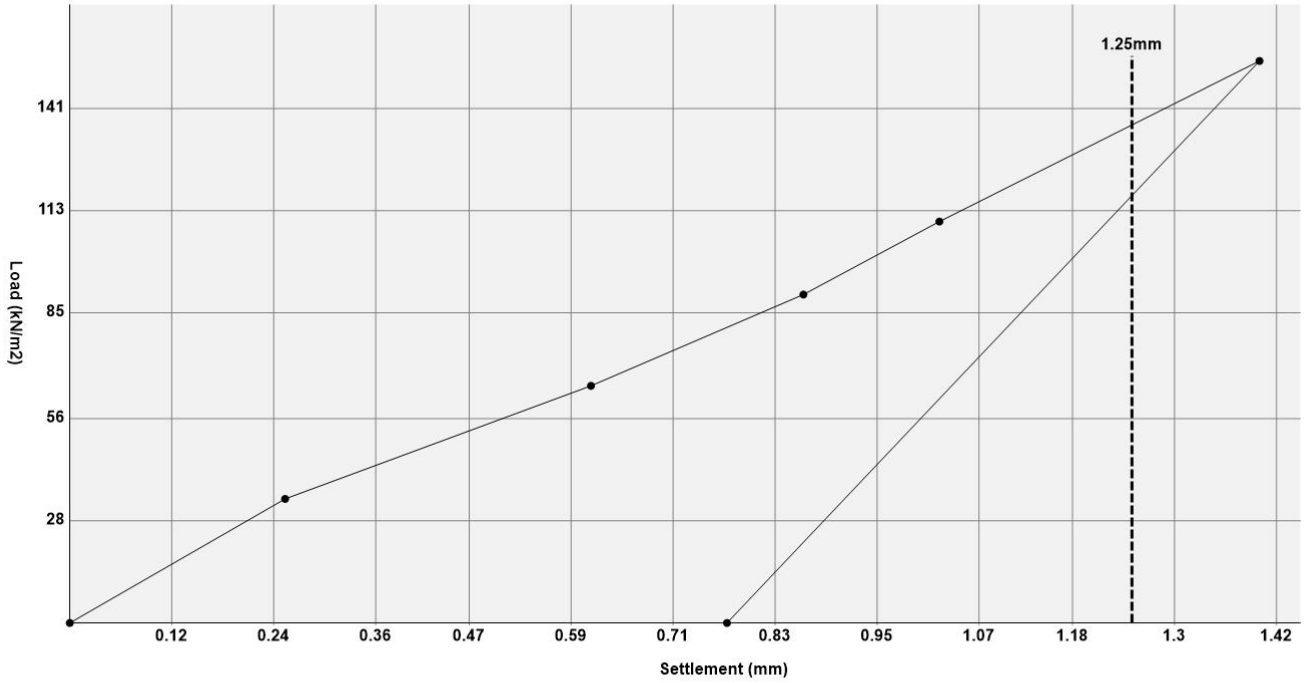
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR5(E70)
		^ **Test Location:**	E70 Final Layer Limestone/Granite Type1
Lab Ref.:	110920-03	**Layer:**	Sub Base
Kentledge:	13t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	11/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.25
65	0.61
90	0.86
110	1.02
154	1.40
0	0.77



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **67919 kN/m2/m**
Equivalent CBR = **14.4 %**

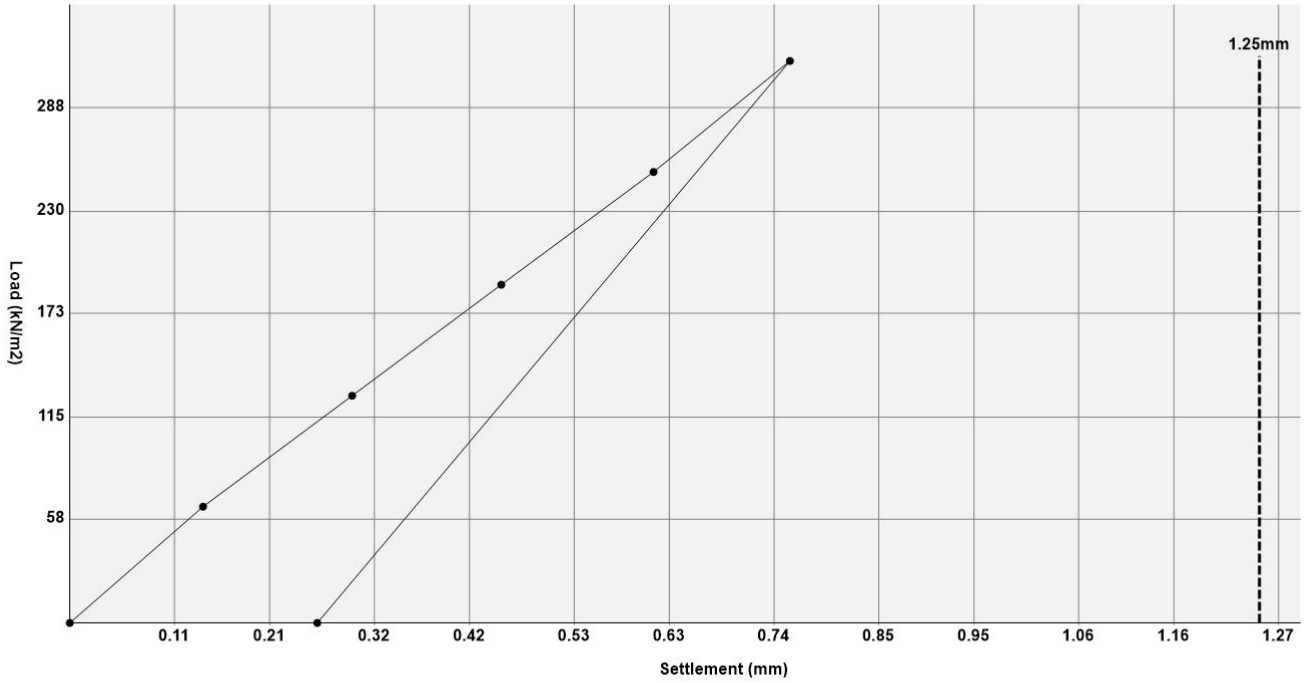
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR6(E54)
		^ **Test Location:**	E54 Final Layer Limestone Type1
Lab Ref.:	110920-03	**Layer:**	Sub Base
Kentledge:	13t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	11/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.14
127	0.30
189	0.45
252	0.61
314	0.76
0	0.26



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Kiwa CMT Testing
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Derby
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E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Ltd
Scotland Farm
Far Lane
Ockbrook, Derby
Derbyshire
DE72 3RX

Date: 03/09/2020

Lab Ref: 030920-02

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just before Rockingham
Speedway NN17 5AF

Requirements:

Attend the above site on 03/09/2020 in order to carry out 13 450mm plate load testing tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

Results:

The individual result sheets may be viewed on pages 2 to 14 of this report.

Kiwa CMT Testing

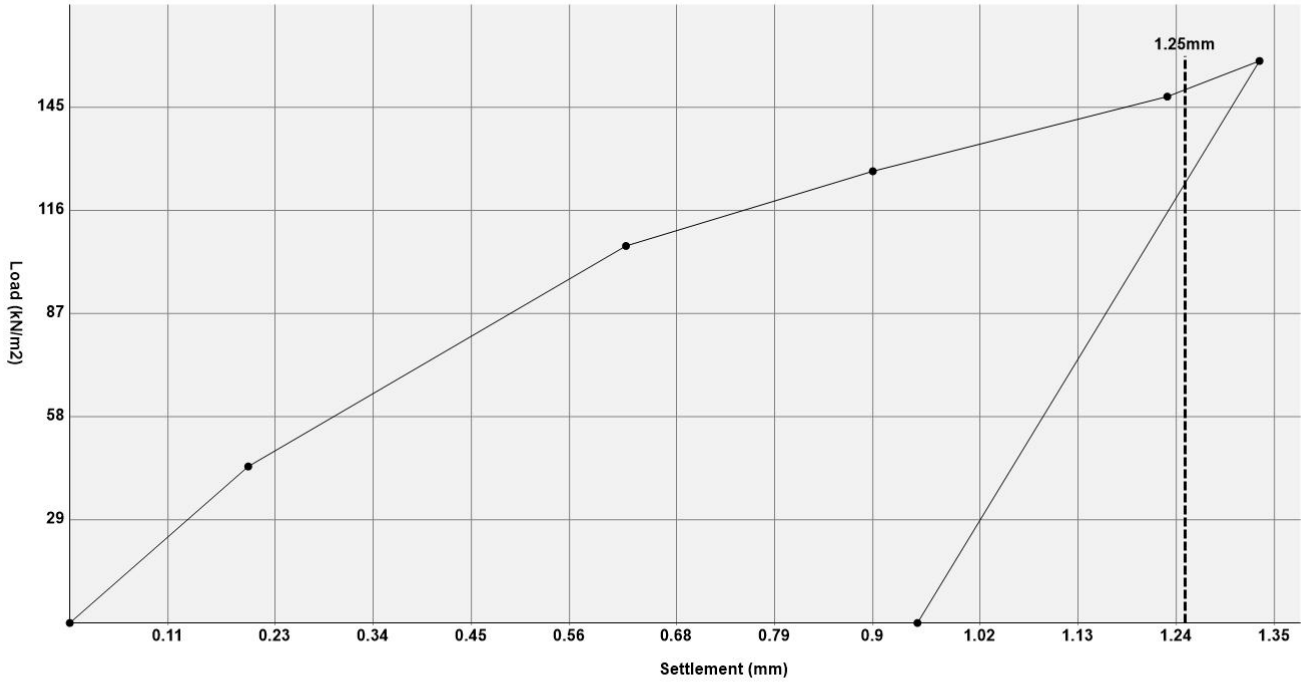
Checked and Authorised by: R Cartlidge
Manager Geotechnical Department

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Recycled Aggregate
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR1(E15,Final,6F2)
		^ **Test Location:**	E15 Final Layer 6F2
Lab Ref.:	030920-02	**Layer:**	Capping
Kentledge:	13t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
44	0.20
106	0.62
127	0.90
148	1.23
158	1.33
0	0.95



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **74911 kN/m2/m**
Equivalent CBR = **17.1 %**

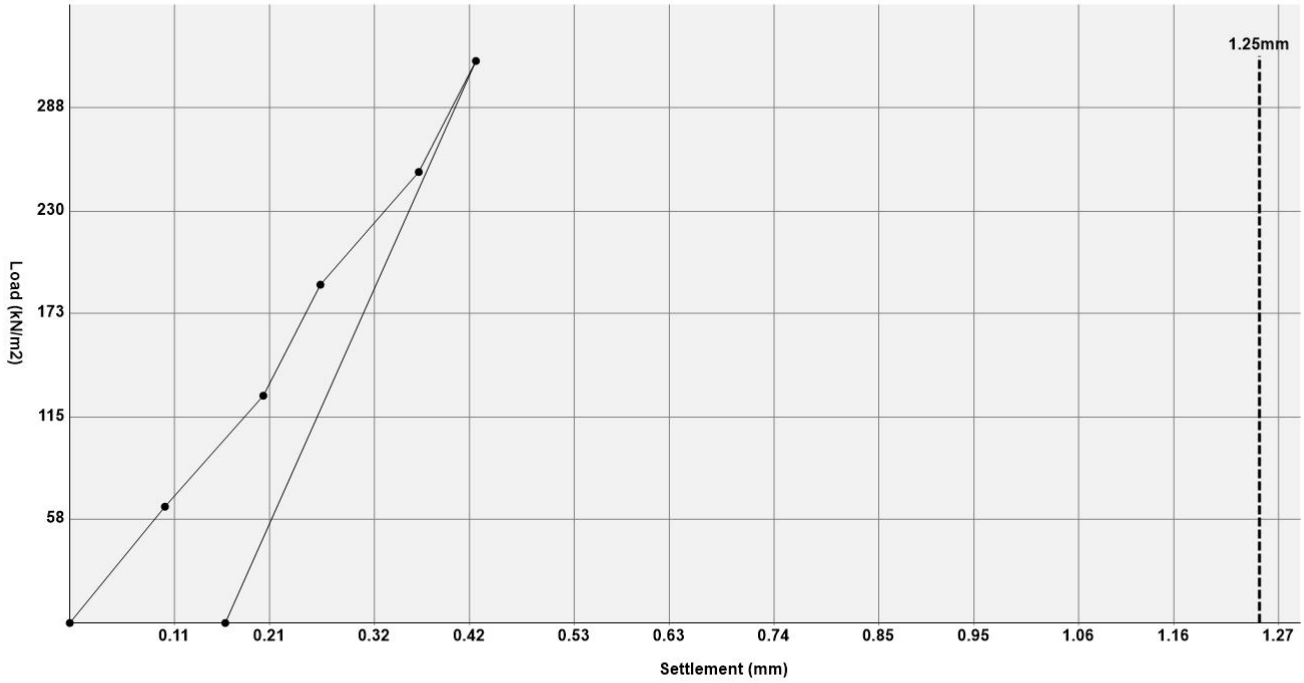
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR10(E7,Form)
		^ **Test Location:**	E7 Formation
Lab Ref.:	030920-02	**Layer:**	Formation
Kentledge:	22t Dozzer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.10
127	0.20
189	0.26
252	0.37
314	0.43
0	0.16



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

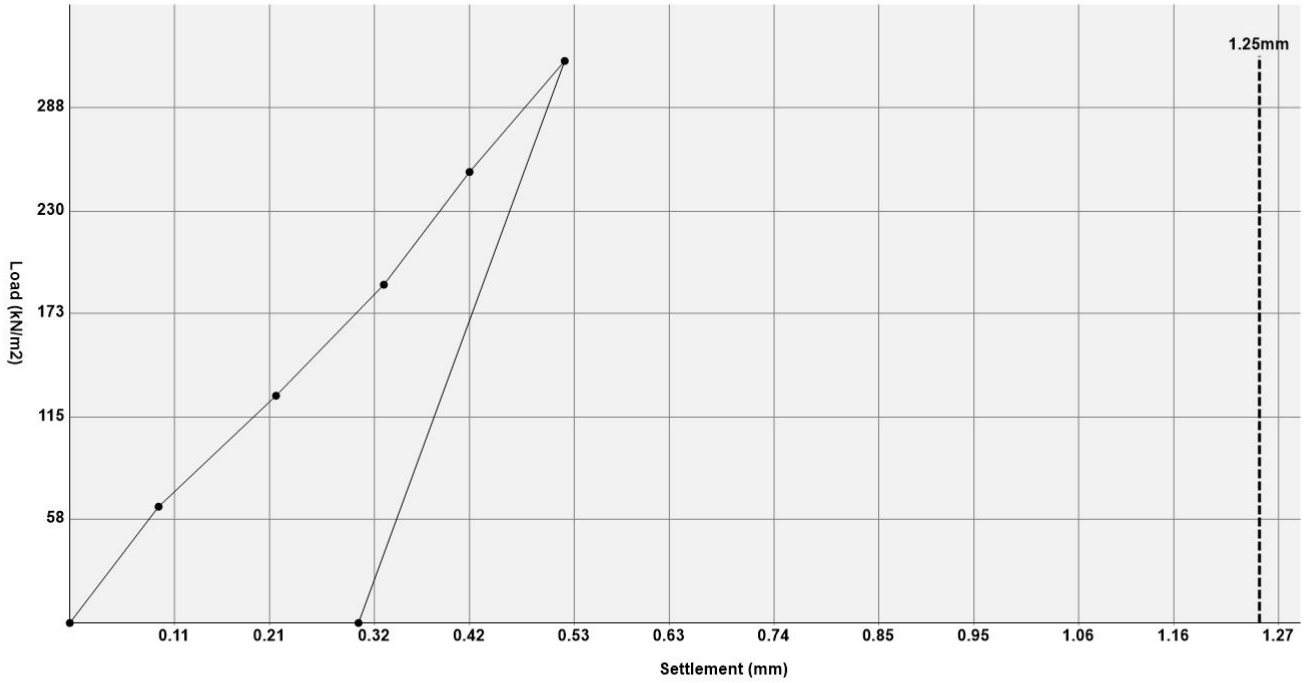
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushd Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR11(E2,Form)
		^ **Test Location:**	E2 Formation
Lab Ref.:	030920-02	**Layer:**	Formation
Kentledge:	22t Dozzer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.09
127	0.22
189	0.33
252	0.42
314	0.52
0	0.30



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

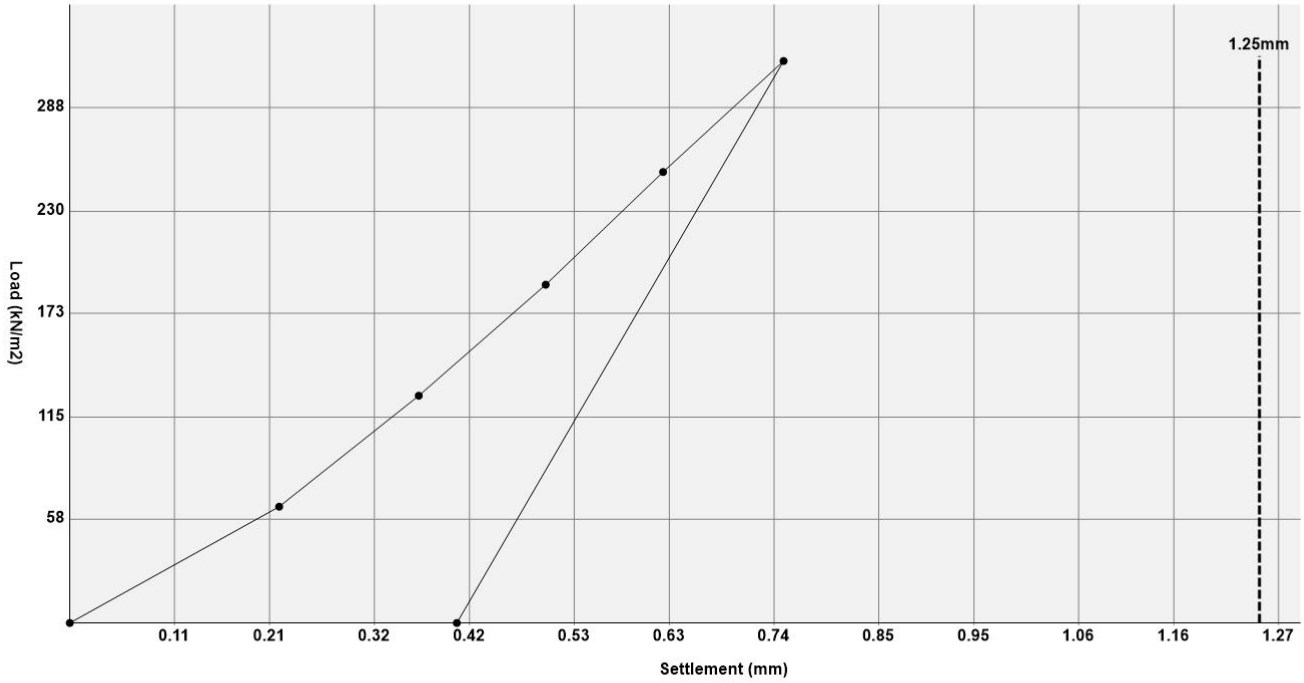
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR12(E8,Form)
		^ **Test Location:**	E8 Formation
Lab Ref.:	030920-02	**Layer:**	Formation
Kentledge:	22t Dozzer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.22
127	0.37
189	0.50
252	0.62
314	0.75
0	0.41



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

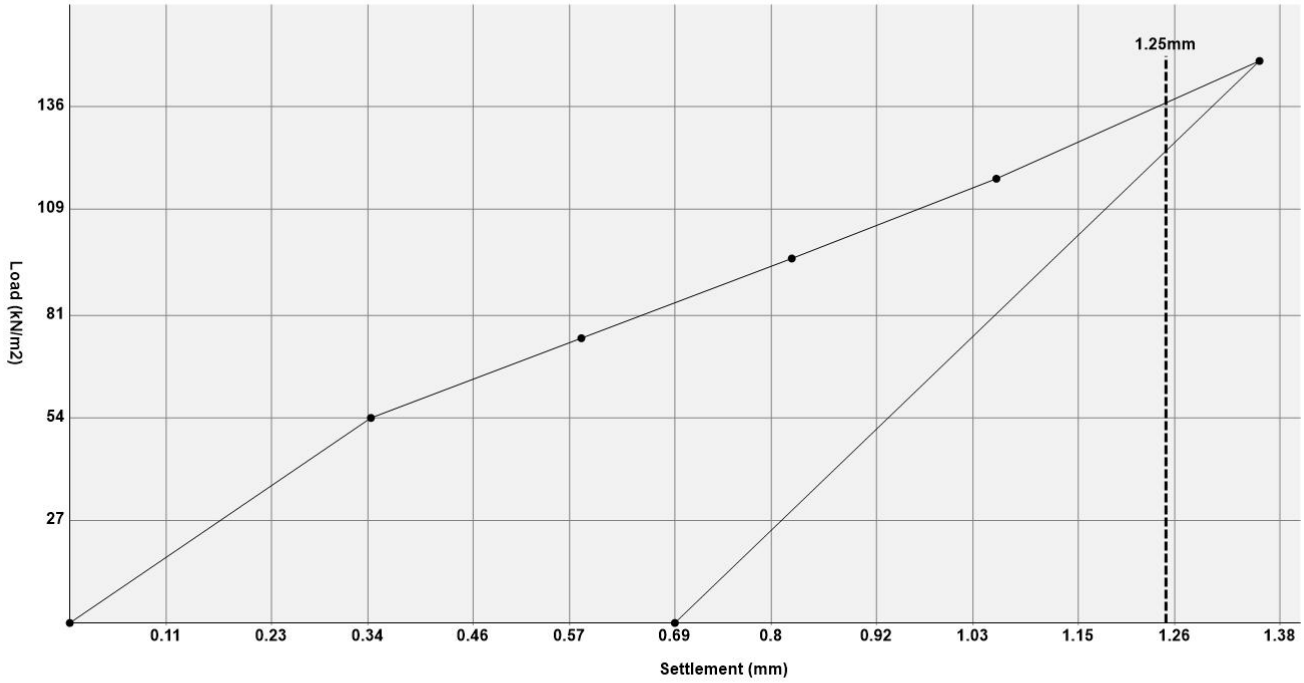
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	BrownGravelly Sandy CLAY
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR13(E6,Form)
		^ **Test Location:**	E6 Formation
Lab Ref.:	030920-02	**Layer:**	Formation
Kentledge:	22t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
54	0.34
75	0.58
96	0.82
117	1.06
148	1.36
0	0.69



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **68419 kN/m2/m**
Equivalent CBR = **14.6 %**

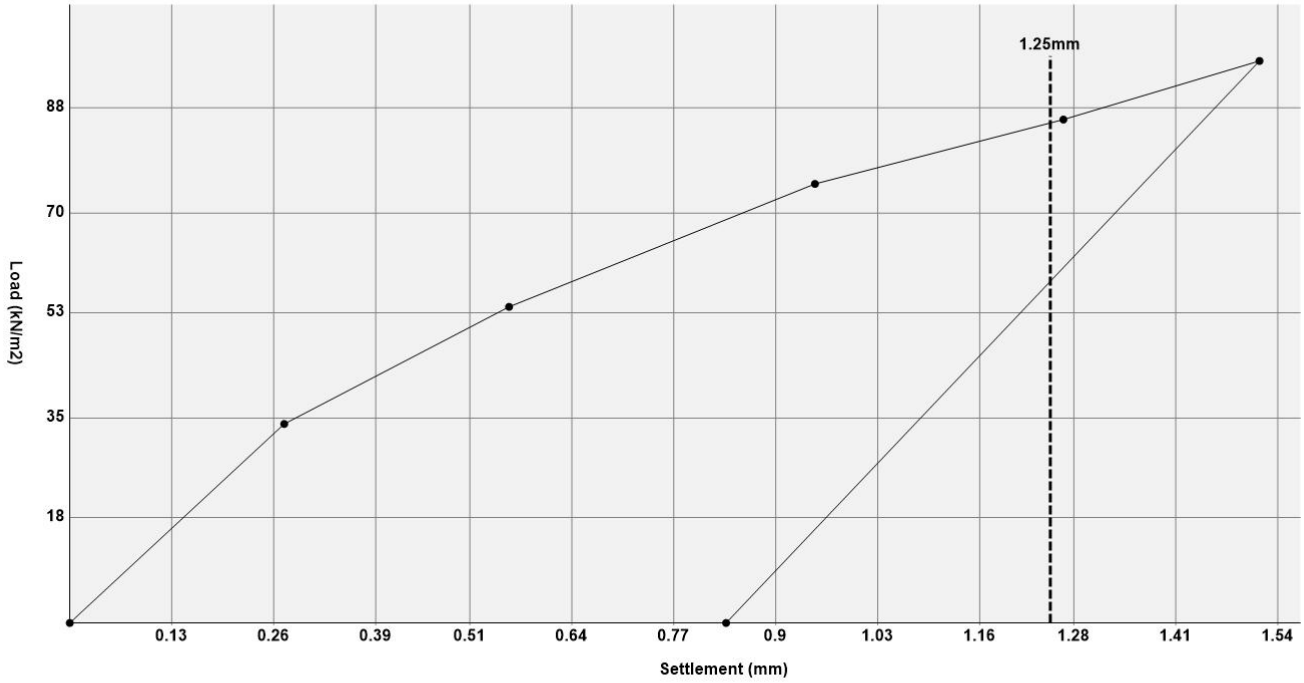
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Recycled Aggregate
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR2(E21,Final,6F2)
		^ **Test Location:**	E21 Final Layer 6F2
Lab Ref.:	030920-02	**Layer:**	Capping
Kentledge:	13t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.27
54	0.56
75	0.95
86	1.27
96	1.52
0	0.84



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **42450 kN/m2/m**
Equivalent CBR = **6.4 %**

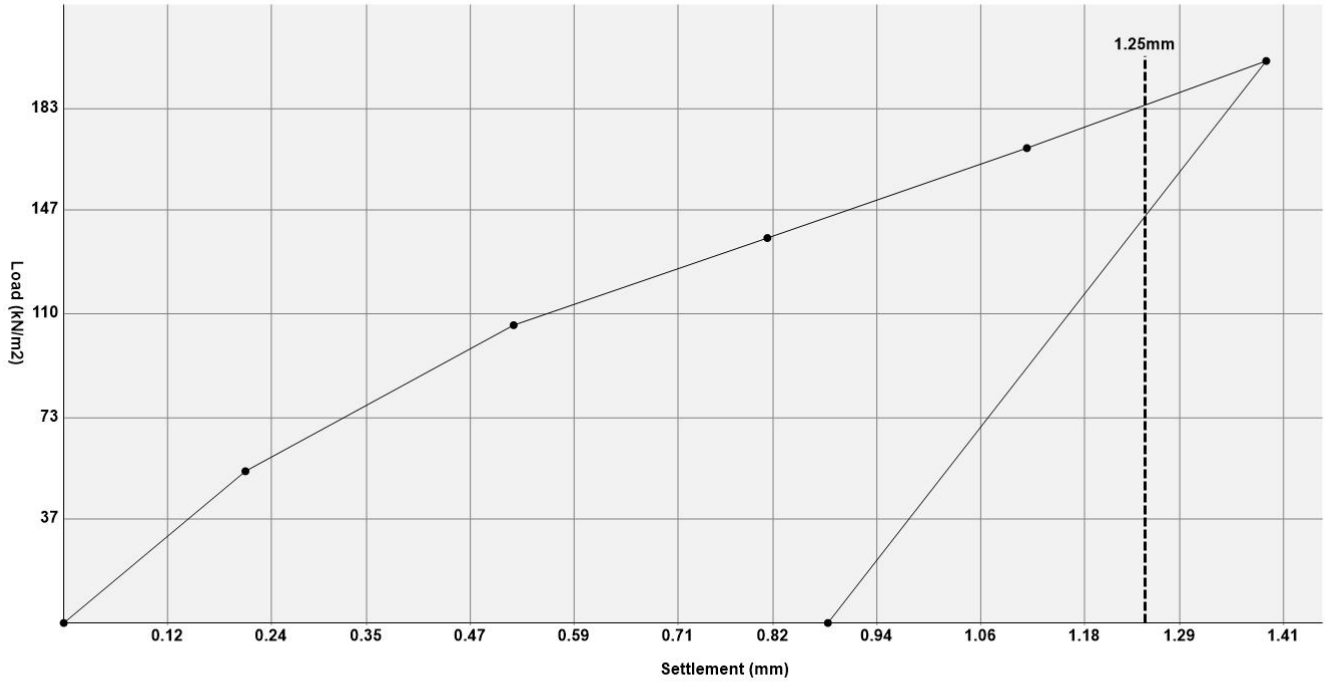
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Recycled Aggregate
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR3(E22,Final,6F2)
		^ **Test Location:**	E22 Final Layer 6F2
Lab Ref.:	030920-02	**Layer:**	Capping
Kentledge:	13t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
54	0.21
106	0.52
137	0.81
169	1.11
200	1.39
0	0.88



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **91891 kN/m2/m**
Equivalent CBR = **24.4 %**

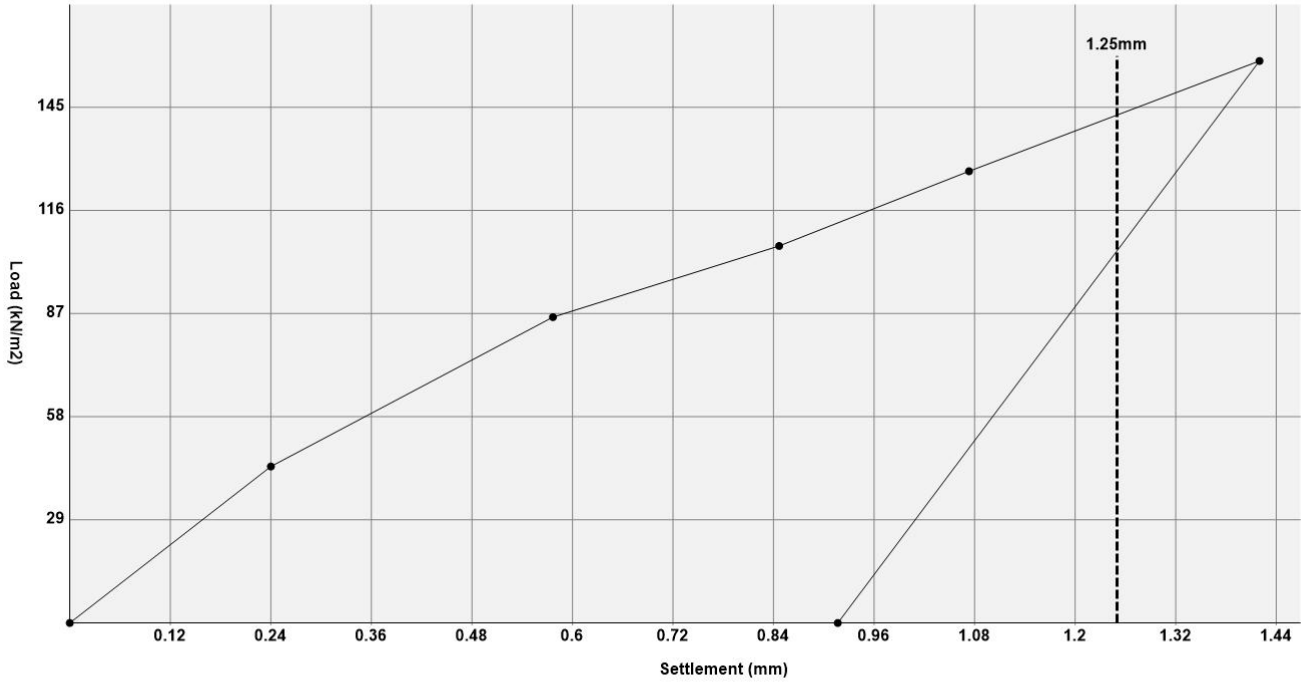
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Recycled Aggregate
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR4(E16,Final,6F2)
		^ **Test Location:**	E16 Final Layer 6F2
Lab Ref.:	030920-02	**Layer:**	Capping
Kentledge:	13t Ex	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
44	0.24
86	0.58
106	0.85
127	1.07
158	1.42
0	0.92



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **71415 kN/m2/m**
Equivalent CBR = **15.7 %**

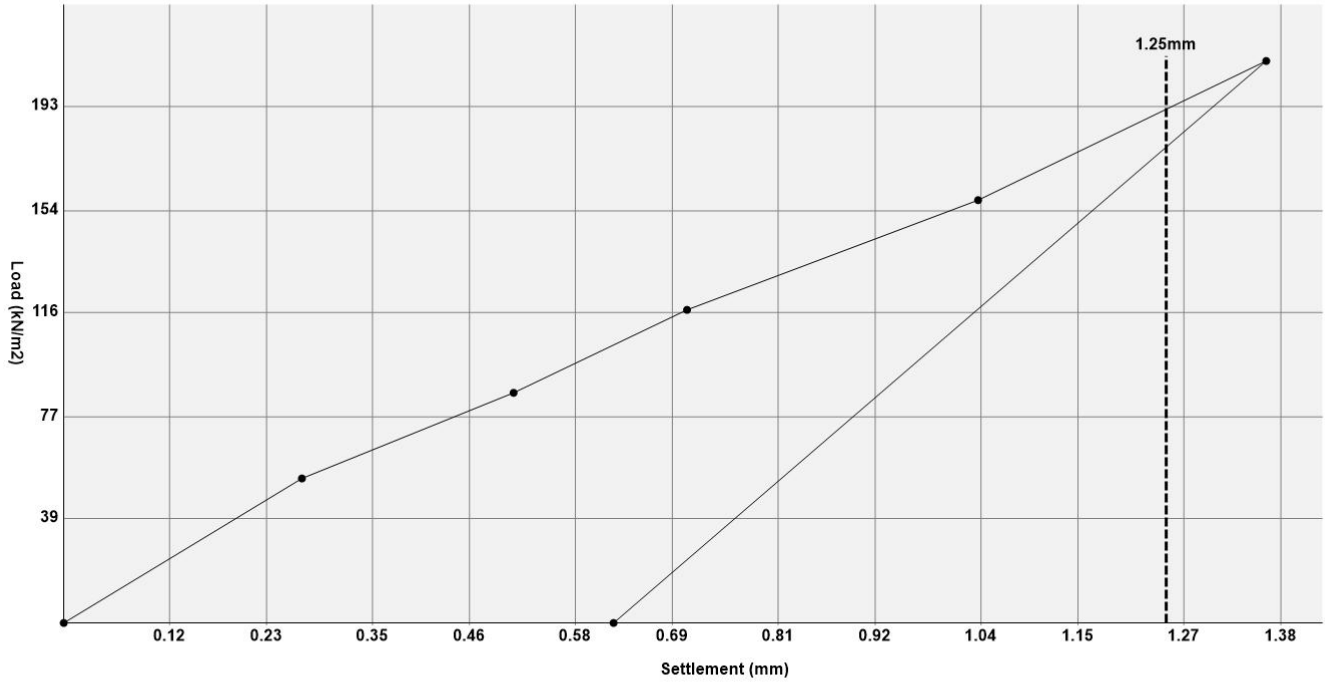
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR5(E63,Final,Grey/YellowType1)
		^ **Test Location:**	E63 Final Layer Grey/Yelow Type 1
Lab Ref.:	030920-02	**Layer:**	Sub Base
Kentledge:	Dozzer	^ **Road No:**	^ **Chainage:**
Conditions:	Wet	**Date of Test:**	03/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
54	0.27
86	0.51
117	0.71
158	1.04
210	1.36
0	0.62



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **95886 kN/m2/m**
Equivalent CBR = **26.2 %**

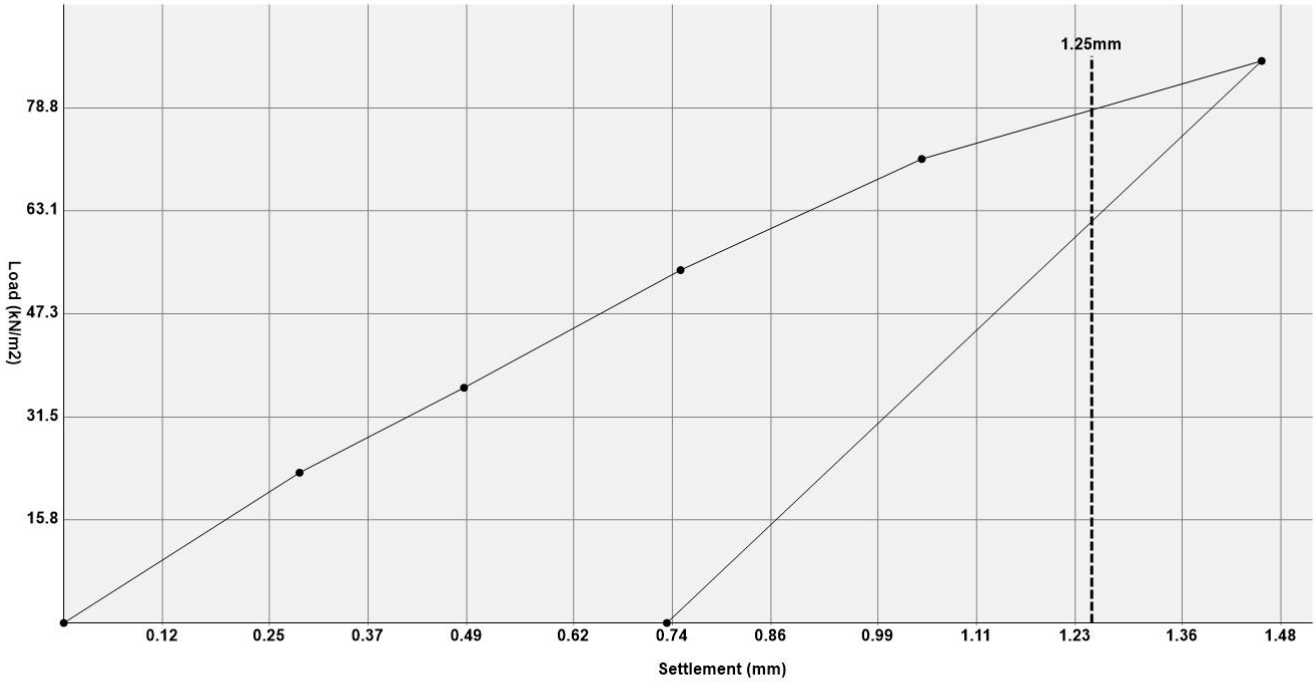
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR6(E64,Final,YellowType1)
		^ **Test Location:**	E64 Final Layer Yellow Type 1
Lab Ref.:	030920-02	**Layer:**	Sub Base
Kentledge:	9t Dozzer	^ **Road No:**	^ **Chainage:**
Conditions:	Wet	**Date of Test:**	03/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
23	0.29
36	0.49
54	0.75
71	1.04
86	1.46
0	0.73



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **38954 kN/m2/m**
Equivalent CBR = **5.5 %**

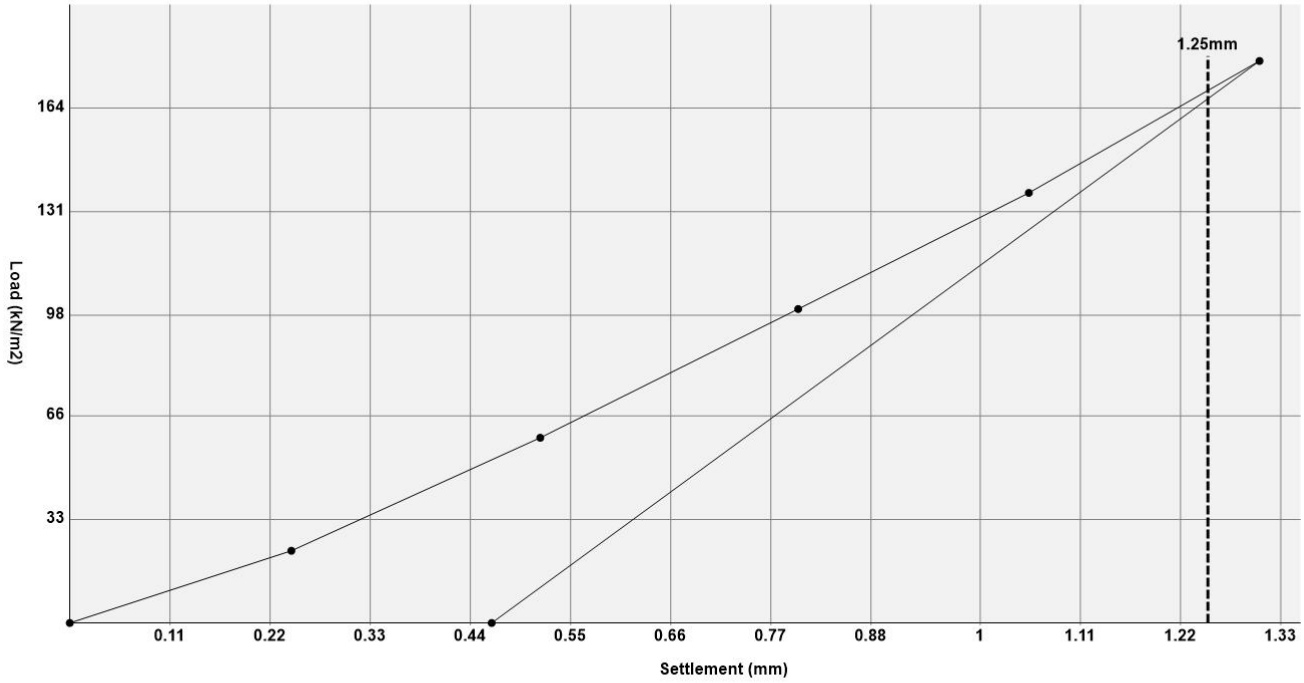
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR7(E56,Final,GreyType1)
		^ **Test Location:**	E56 Final Layer Grey Type1
Lab Ref.:	030920-02	**Layer:**	Capping
Kentledge:	9t Dozzer	^ **Road No:**	^ **Chainage:**
Conditions:	Wet	**Date of Test:**	03/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
23	0.24
59	0.52
100	0.80
137	1.05
179	1.31
0	0.46



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **84899 kN/m2/m**
Equivalent CBR = **21.2 %**

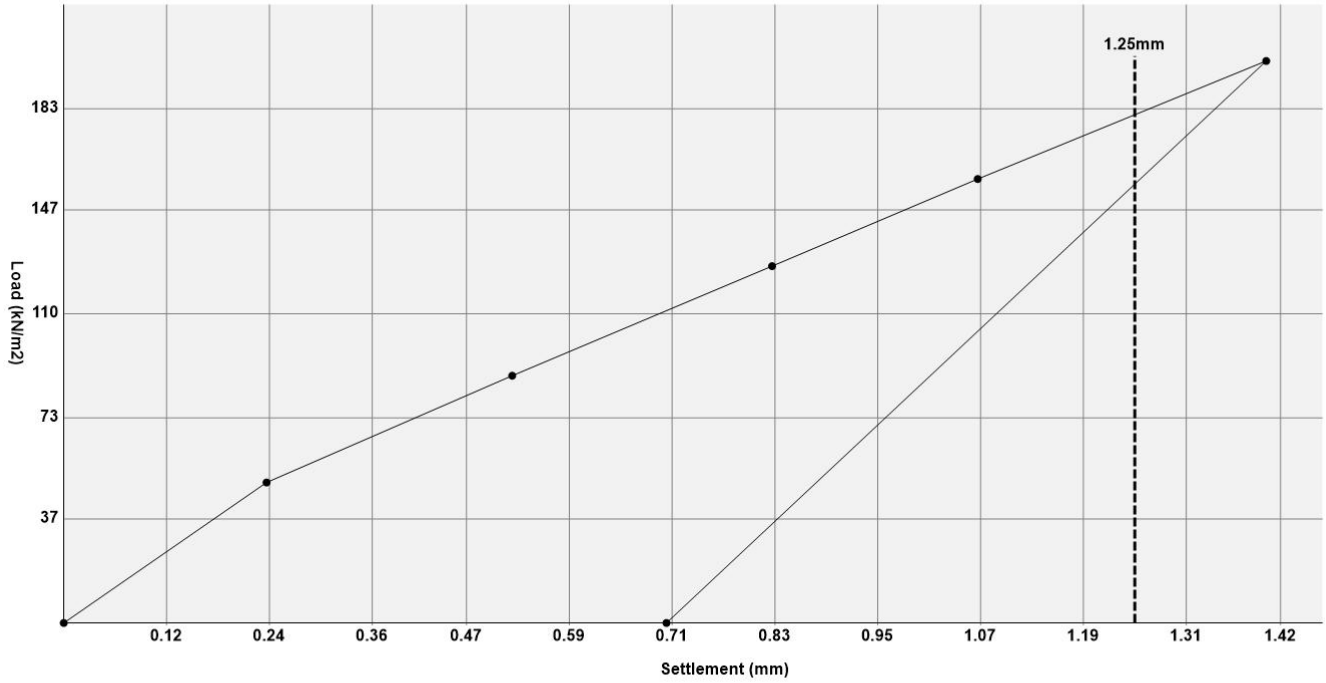
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR8(E57,Final,GreyType1)
		^ **Test Location:**	E57 Final Layer Grey Type 1
Lab Ref.:	030920-02	**Layer:**	Sub Base
Kentledge:	9t Dozzer	^ **Road No:**	^ **Chainage:**
Conditions:	Wet	**Date of Test:**	03/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
50	0.24
88	0.52
127	0.83
158	1.07
200	1.40
0	0.70



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **90393 kN/m2/m**
Equivalent CBR = **23.7 %**

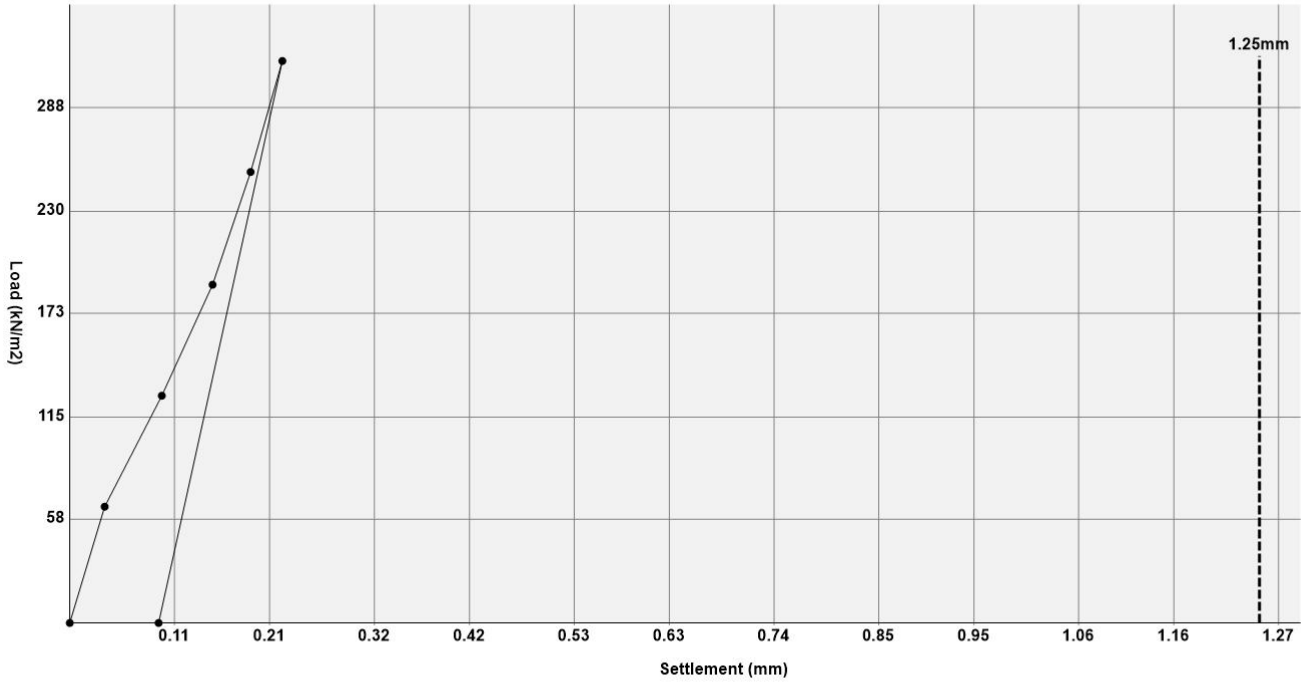
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR9(E1,Form)
		^ **Test Location:**	E1 Formation
Lab Ref.:	030920-02	**Layer:**	Formation
Kentledge:	22t Dozzer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	03/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.04
127	0.10
189	0.15
252	0.19
314	0.22
0	0.09



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>156814 kN/m2/m**
Equivalent CBR = **>61.5 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

Kiwa CMT Testing
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Derby
DE1 3QB

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E uk.cmtenquiries@kiwa.com

www.kiwa.co.uk/cmt

Client: Ivy House Environmental Ltd
Scotland Farm
Far Lane
Ockbrook, Derby
Derbyshire
DE72 3RX

Date: 15/09/2020

Lab Ref: 150920-05

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just before Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 15/09/2020 in order to carry out 7 Plate bearings for equivalent CBR% tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

Results:

The individual result sheets may be viewed on pages 2 to 8 of this report.

Kiwa CMT Testing

Checked and Authorised by: R Cartlidge
Manager Geotechnical Department

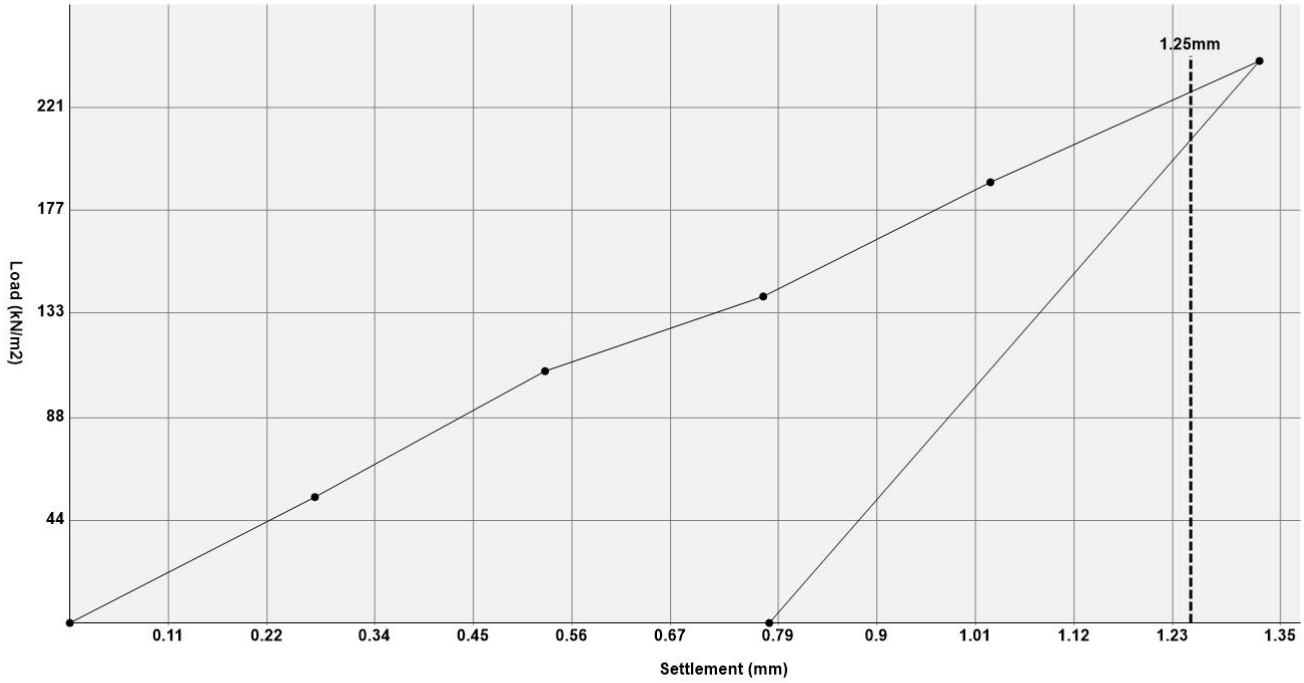
UKAS TESTING
0529

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	brown clay/recycled agg
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 1
		^ **Test Location:**	- E23 final site won
Lab Ref.:	150920-05	**Layer:**	Formation
Kentledge:	8t digger	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	15/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
54	0.27
108	0.53
140	0.77
189	1.03
241	1.33
0	0.78



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **113865 kN/m2/m**
Equivalent CBR = **35.3 %**

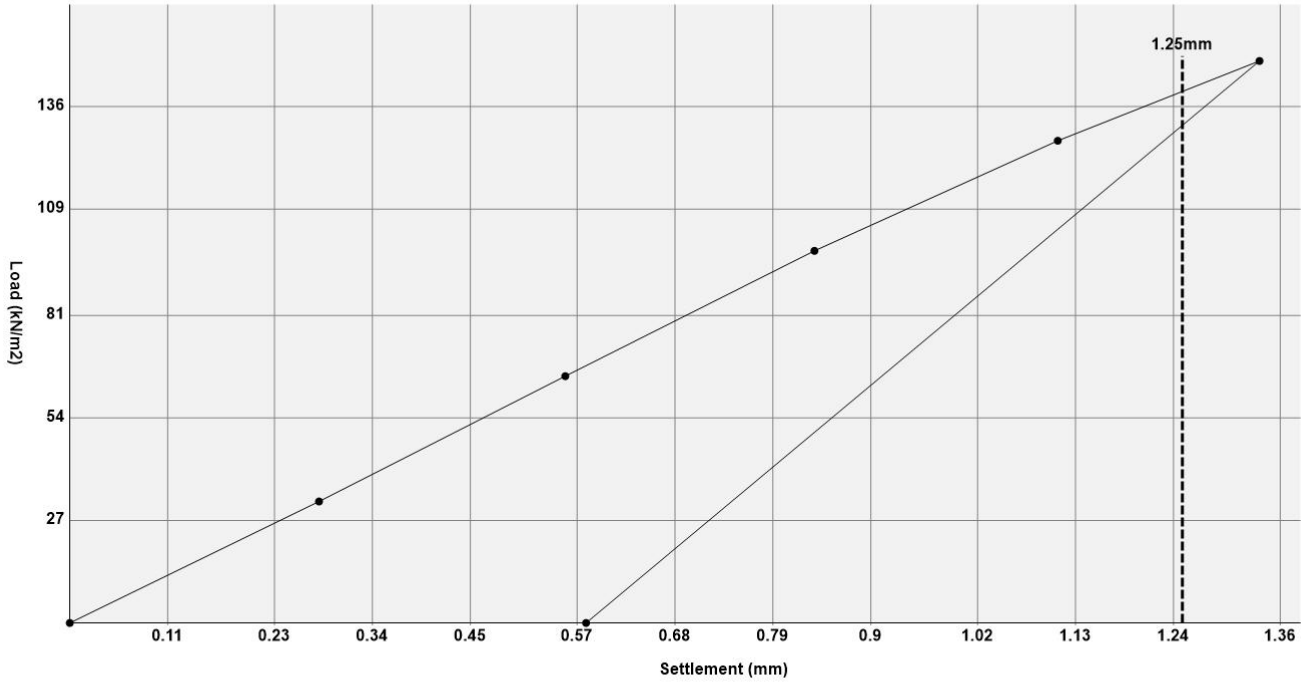
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	type 1
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 2
		^ **Test Location:**	- E70
Lab Ref.:	150920-05	**Layer:**	Sub Base
Kentledge:	8t digger	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	15/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
32	0.28
65	0.56
98	0.84
127	1.11
148	1.34
0	0.58



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **69917 kN/m2/m**
Equivalent CBR = **15.2 %**

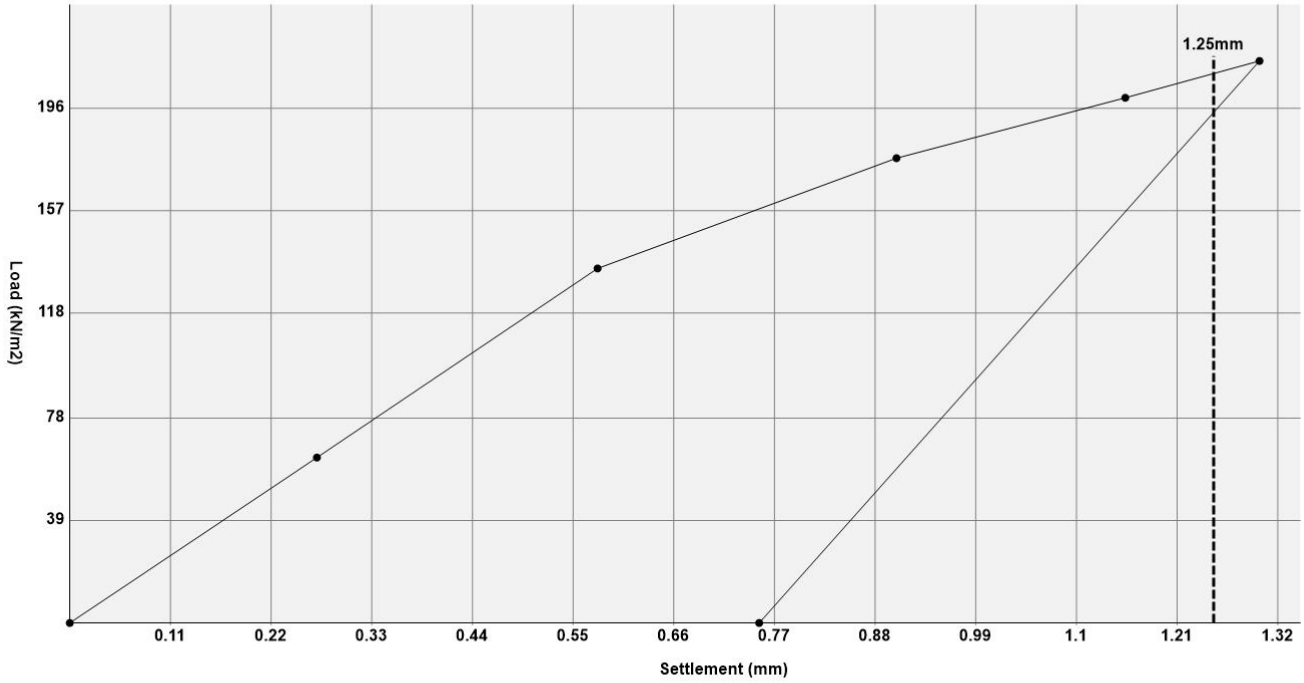
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	type1
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 3
		^ **Test Location:**	- E53
Lab Ref.:	150920-05	**Layer:**	Sub Base
Kentledge:	8t digger	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	15/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
63	0.27
135	0.58
177	0.90
200	1.15
214	1.30
0	0.75



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **104376 kN/m2/m**
Equivalent CBR = **30.4 %**

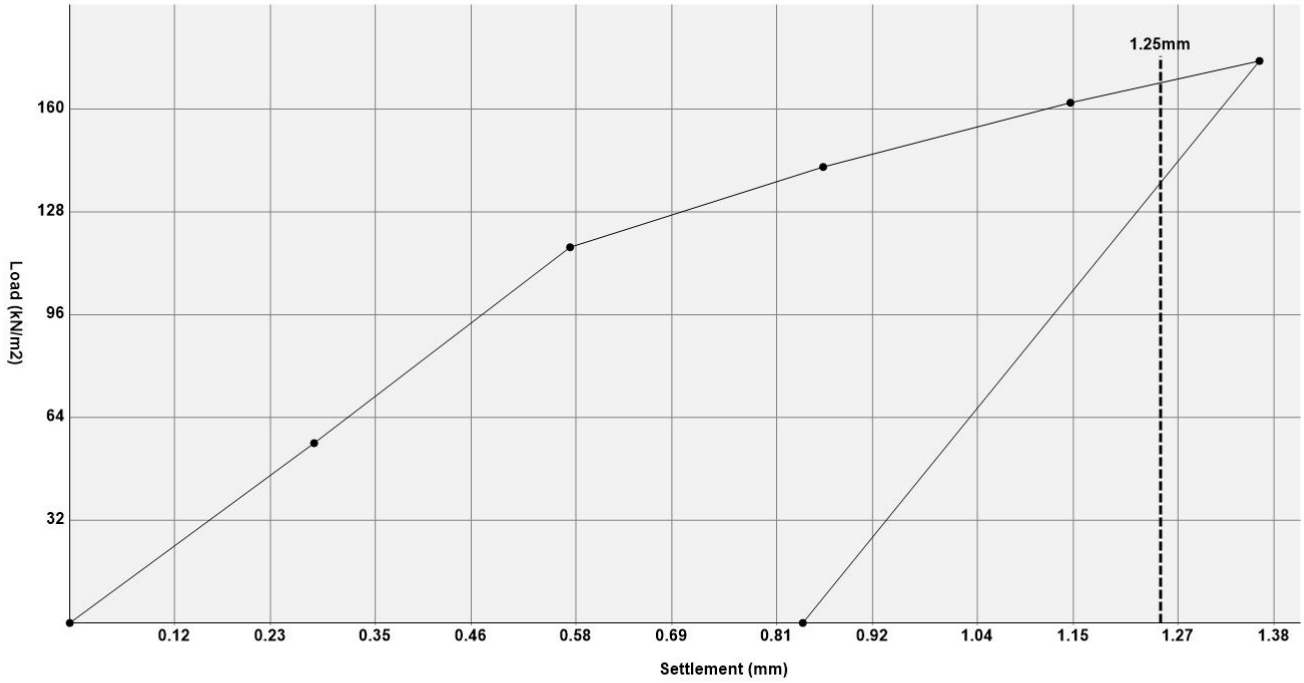
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	type1
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:** ^ **Test Location:**	CBR Test 4 - E52
Lab Ref.:	150920-05	**Layer:**	Sub Base
Kentledge:	8t digger	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	15/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
56	0.28
117	0.57
142	0.86
162	1.15
175	1.36
0	0.84



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **83900 kN/m2/m**
Equivalent CBR = **20.8 %**

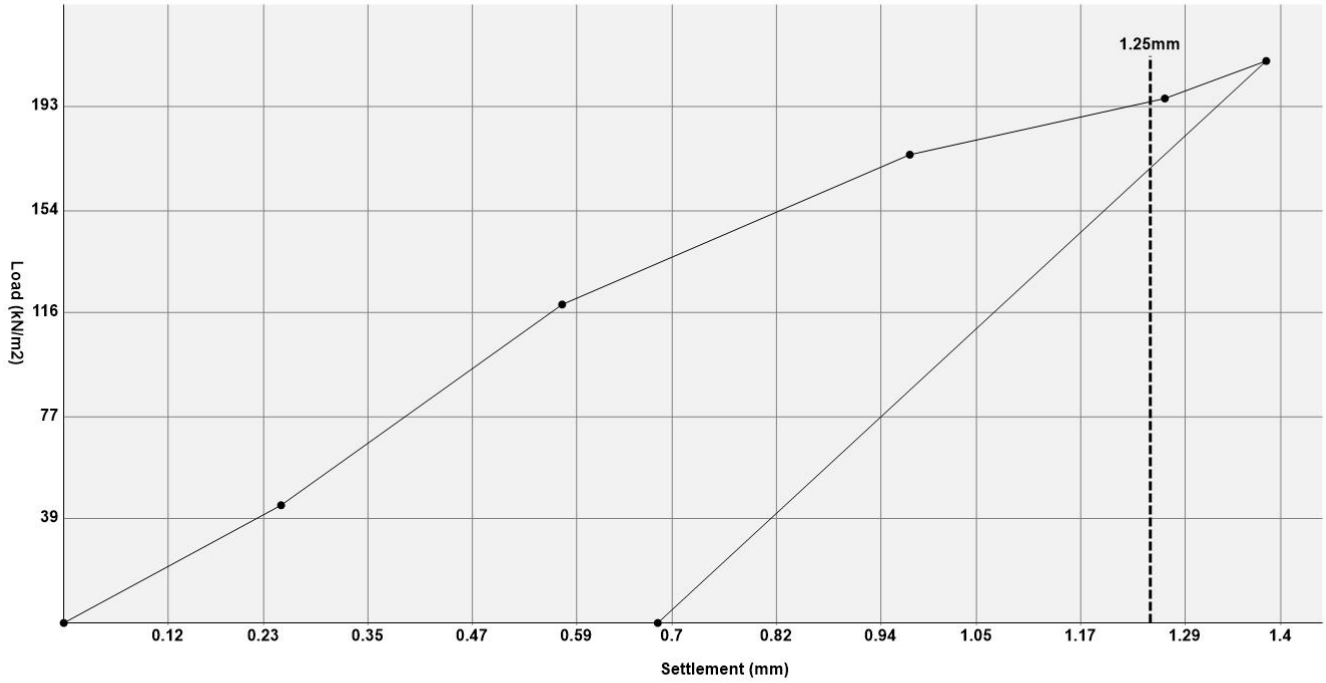
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	type1
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 5
		^ **Test Location:**	- E51
Lab Ref.:	150920-05	**Layer:**	Sub Base
Kentledge:	8t digger	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	15/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
44	0.25
119	0.57
175	0.97
196	1.27
210	1.38
0	0.68



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **97384 kN/m2/m**
Equivalent CBR = **26.9 %**

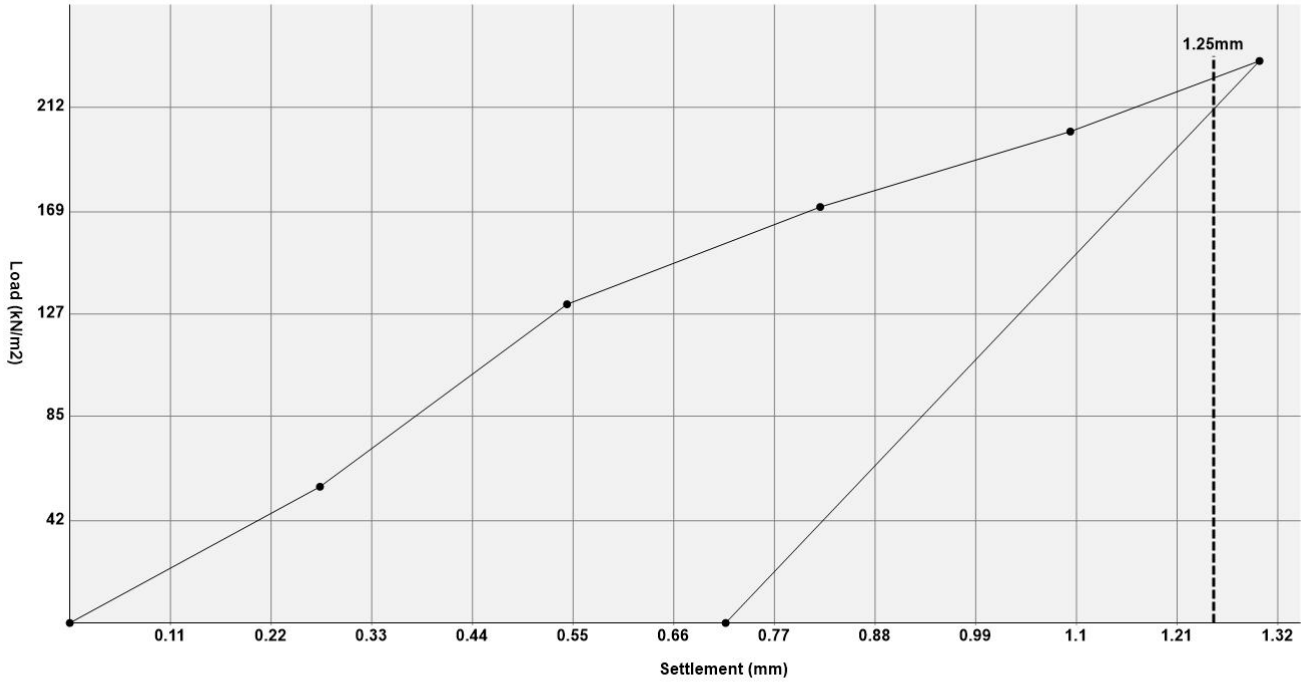
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	type1
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 6
		^ **Test Location:**	- E50
Lab Ref.:	150920-05	**Layer:**	Sub Base
Kentledge:	8t digger	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	15/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
56	0.27
131	0.54
171	0.82
202	1.09
231	1.30
0	0.72



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **111867 kN/m2/m**
Equivalent CBR = **34.3 %**

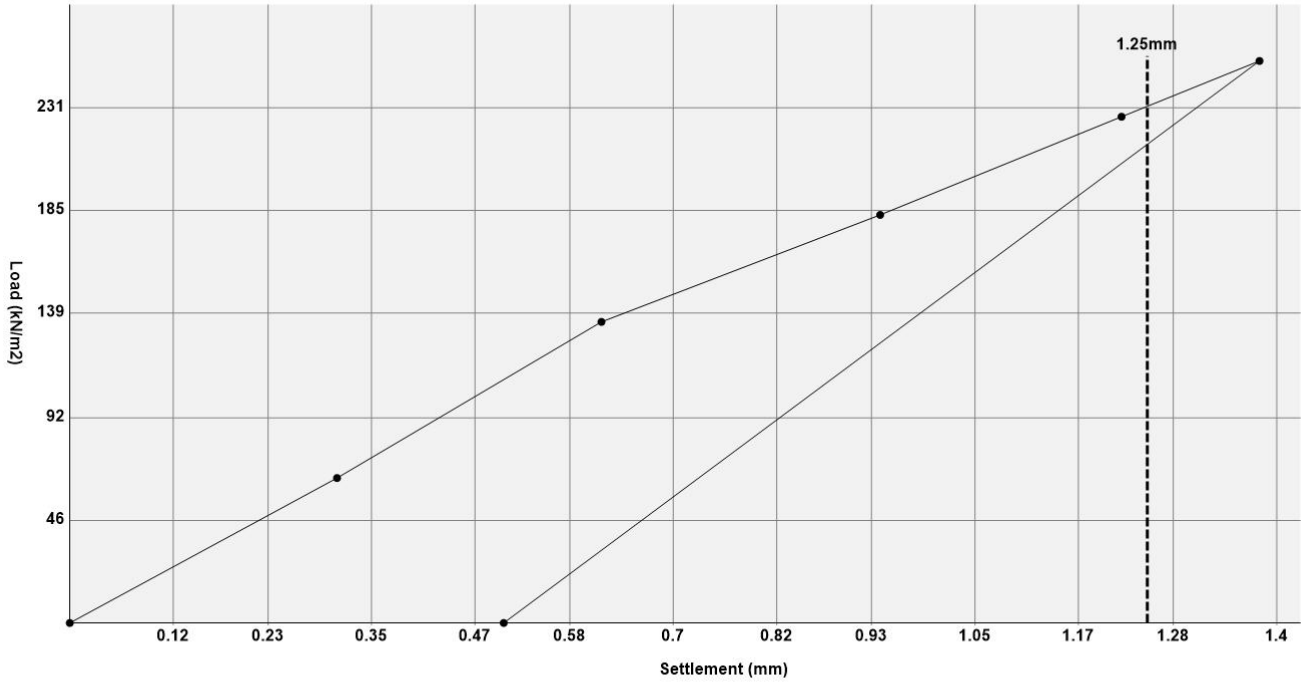
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	type1
Site:	Mitchell Road Corby Just before Rockingham Speedway	**Test No:**	CBR Test 7
		^ **Test Location:**	- E70 retest
Lab Ref.:	150920-05	**Layer:**	Sub Base
Kentledge:	8t digger	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	15/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.31
135	0.62
183	0.94
227	1.22
252	1.38
0	0.50



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **115862 kN/m2/m**
Equivalent CBR = **36.4 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

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www.kiwa.co.uk/cmt

Client: Ivy House Environmental Ltd
Scotland Farm
Far Lane
Ockbrook, Derby
Derbyshire
DE72 3RX

Date: 28/09/2020

Lab Ref: 280920-05

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just befor Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 28/09/2020 in order to carry out 15 Plate bearings for equivalent CBR% tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

Results:

The individual result sheets may be viewed on pages 2 to 16 of this report.

Kiwa CMT Testing

Checked and Authorised by: R Cartlidge
Manager Geotechnical Department

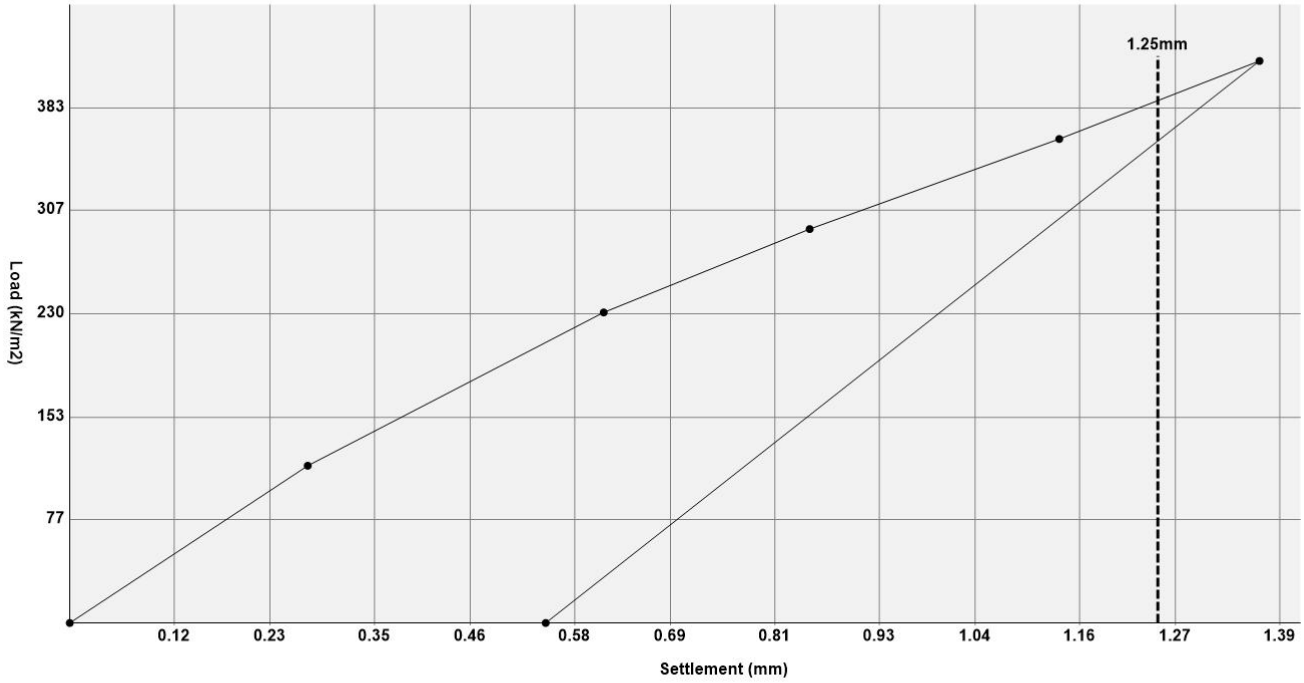
UKAS TESTING
0529

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 1
		^ **Test Location:**	-loc 1 E33 type 1
Lab Ref.:	280920-05	**Layer:**	Sub Base
Kentledge:	15t machine	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	28/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
117	0.27
231	0.61
293	0.85
360	1.14
418	1.37
0	0.55



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **194269 kN/m2/m**
Equivalent CBR = **89.2 %**

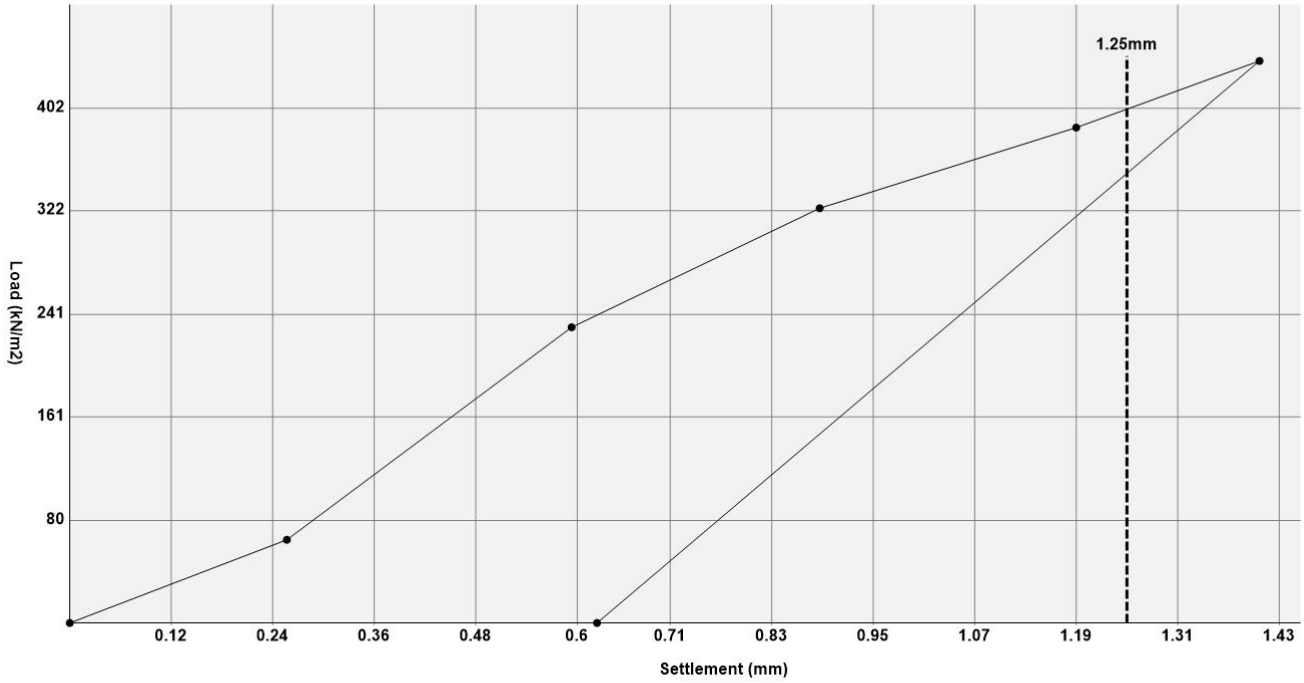
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 2
		^ **Test Location:**	loc 2-E39 type 1
Lab Ref.:	280920-05	**Layer:**	Sub Base
Kentledge:	15t machine	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	28/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
65	0.26
231	0.59
324	0.89
387	1.19
439	1.41
0	0.62



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **200262 kN/m2/m**
Equivalent CBR = **94 %**

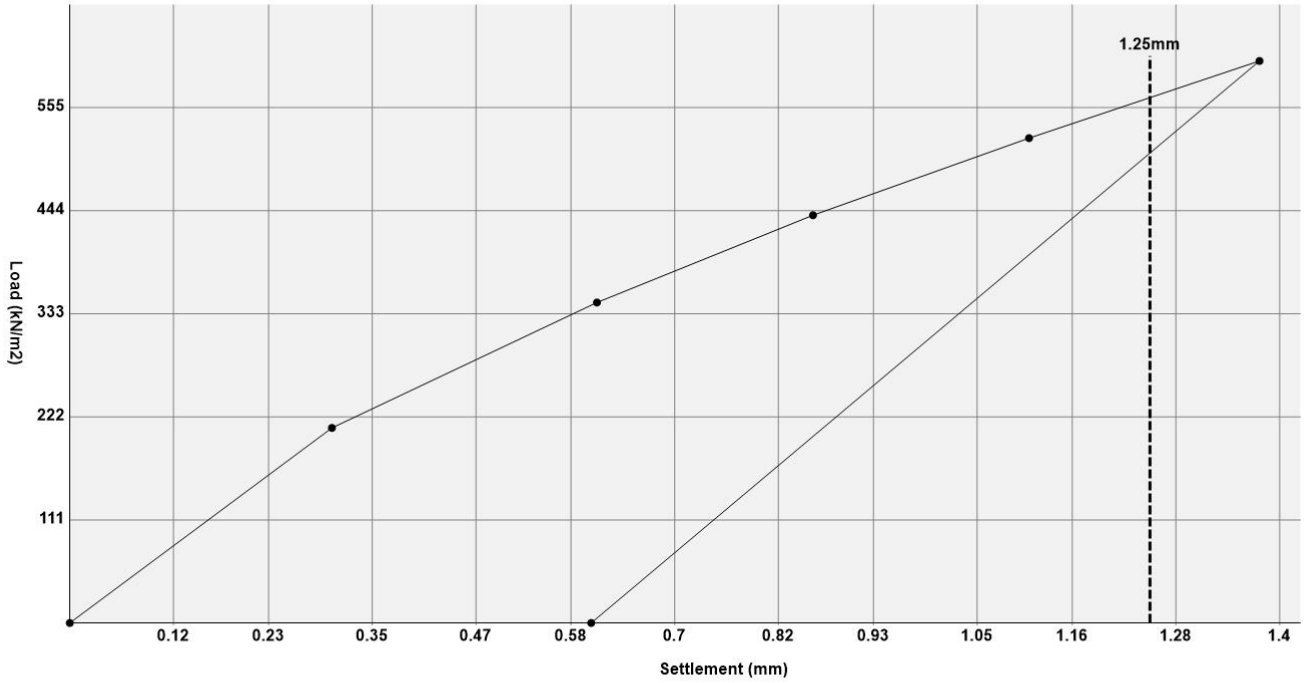
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 3
		^ **Test Location:**	-loc 3 E45 type 1
Lab Ref.:	280920-05	**Layer:**	Sub Base
Kentledge:	15t machine	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	28/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
210	0.30
345	0.61
439	0.86
522	1.11
605	1.38
0	0.60



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **282664 kN/m2/m**
Equivalent CBR = **> 99 %**

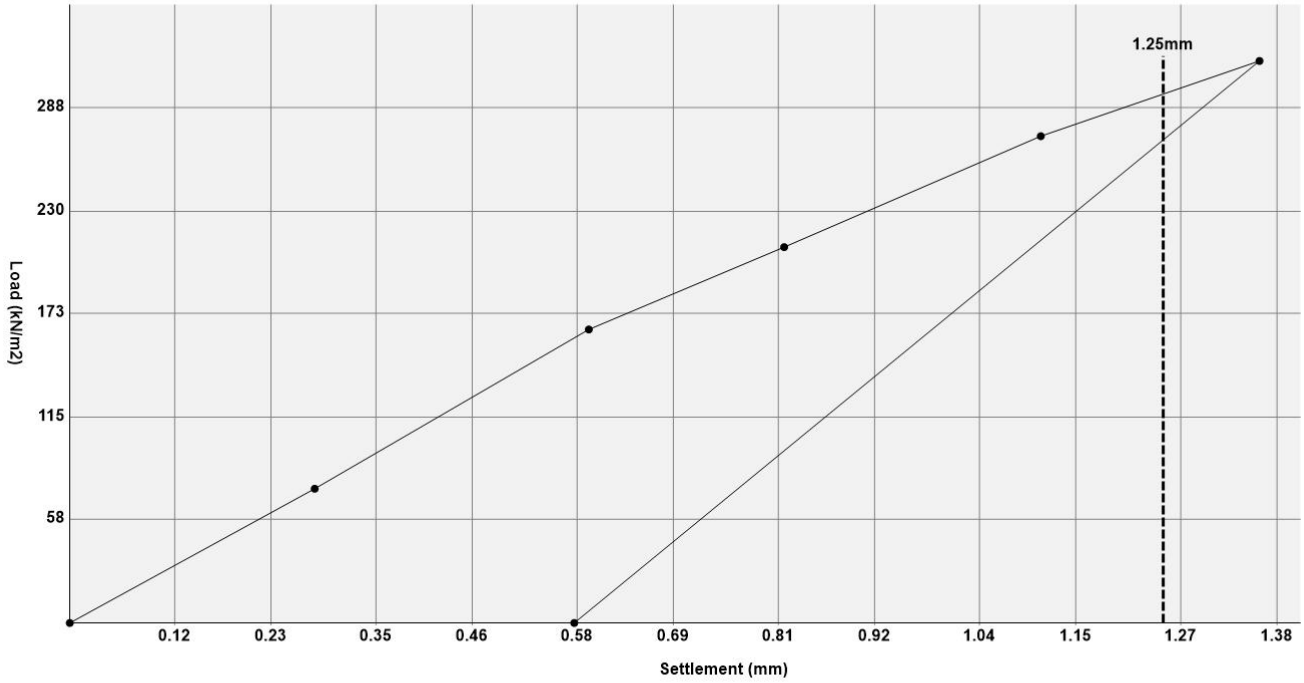
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 4
		^ **Test Location:**	-loc 4 E 44
Lab Ref.:	280920-05	**Layer:**	Sub Base
Kentledge:	15t machine	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	28/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
75	0.28
164	0.59
210	0.82
272	1.11
314	1.36
0	0.58



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **147825 kN/m2/m**
Equivalent CBR = **55.5 %**

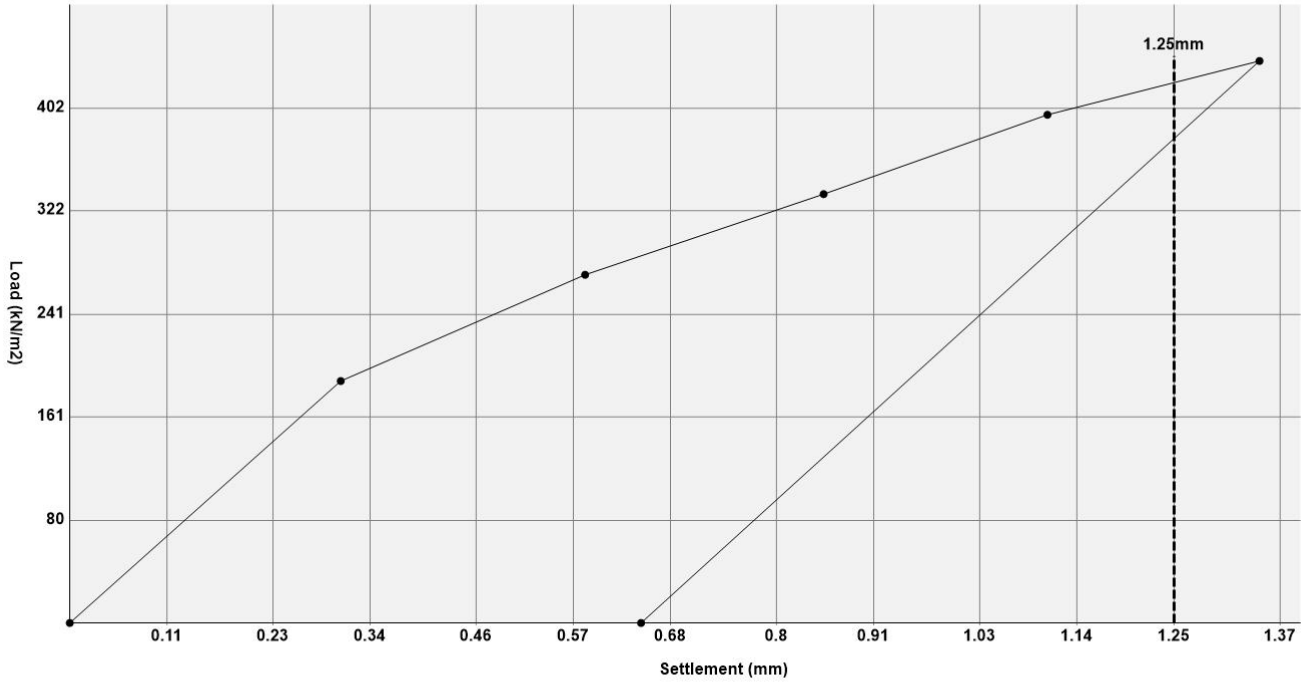
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 5
		^ **Test Location:**	-loc 5 E38
Lab Ref.:	280920-05	**Layer:**	Sub Base
Kentledge:	15t machine	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	28/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
189	0.31
272	0.58
335	0.85
397	1.11
439	1.35
0	0.65



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **210750 kN/m2/m**
Equivalent CBR = **> 99 %**

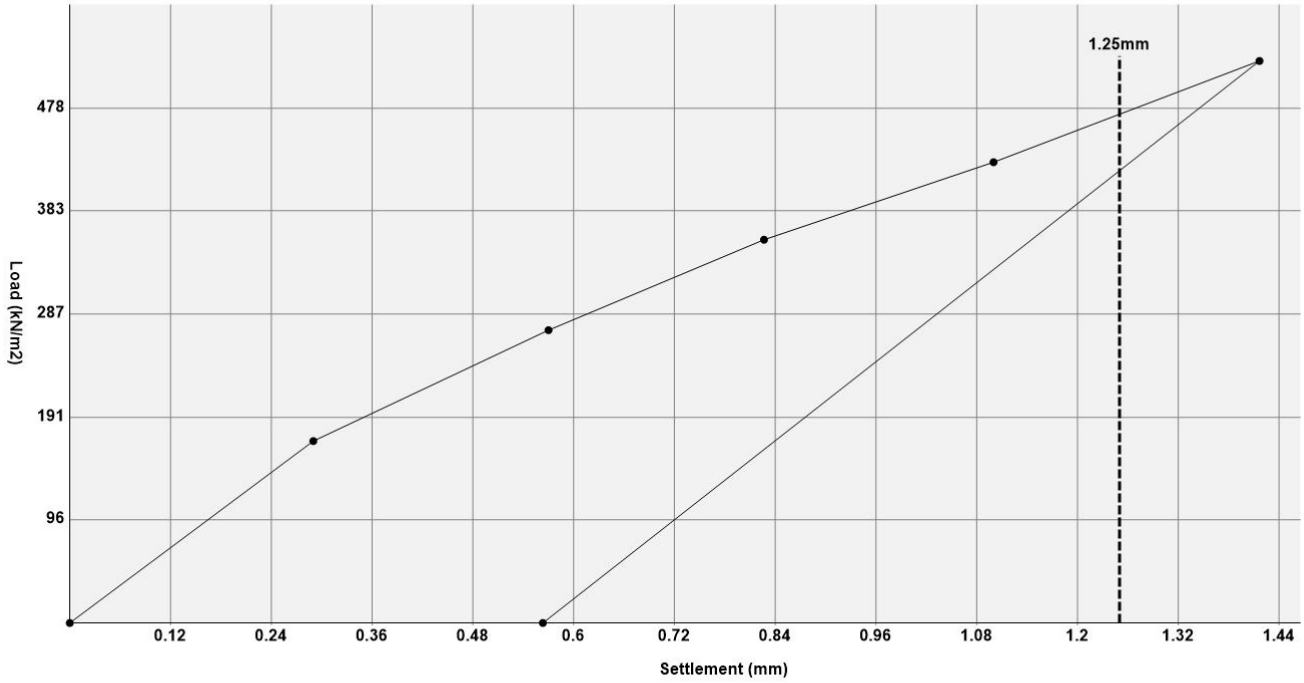
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 6
		^ **Test Location:**	-loc 6 E32
Lab Ref.:	280920-05	**Layer:**	Sub Base
Kentledge:	15t machine	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	28/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
169	0.29
272	0.57
356	0.83
428	1.10
522	1.42
0	0.56



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **236220 kN/m2/m**
Equivalent CBR = **> 99 %**

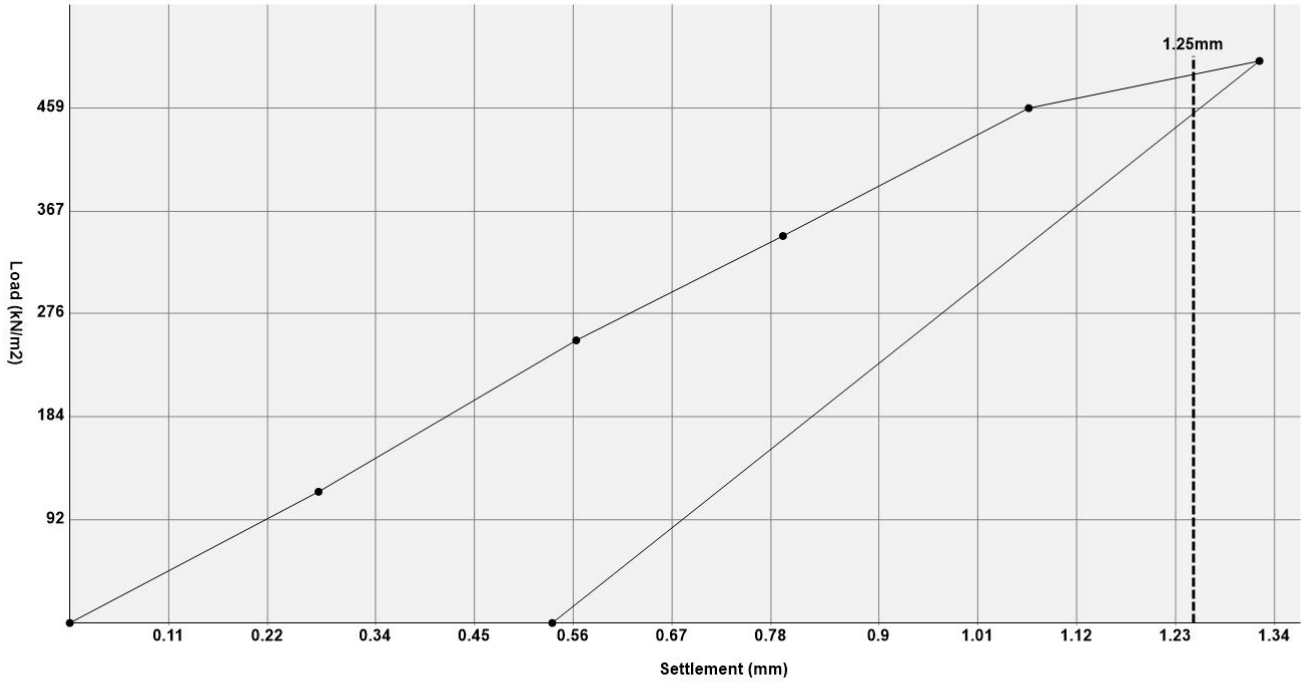
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 7
		^ **Test Location:**	-loc 7 E26 type 1
Lab Ref.:	280920-05	**Layer:**	Sub Base
Kentledge:	16t dozzer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	28/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
117	0.28
252	0.56
345	0.79
459	1.07
501	1.32
0	0.54



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **244210 kN/m2/m**
Equivalent CBR = **> 99 %**

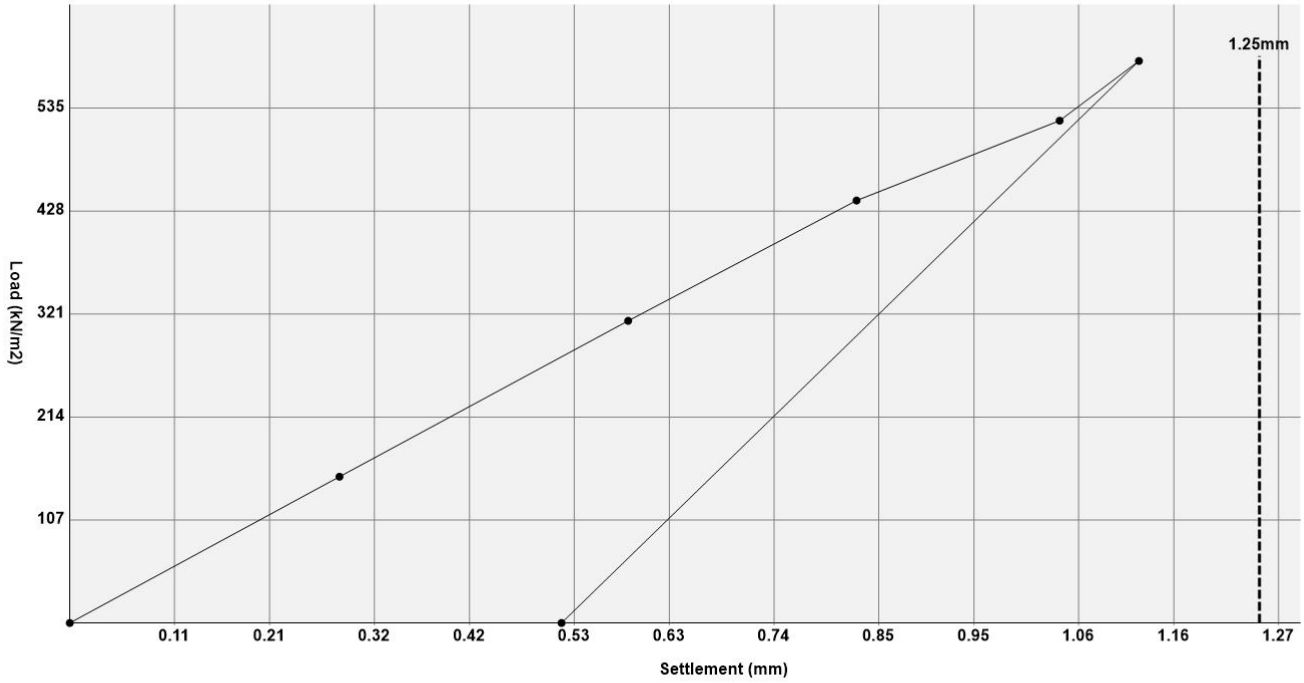
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 8
		^ **Test Location:**	-loc 8 E20
Lab Ref.:	280920-05	**Layer:**	Sub Base
Kentledge:	16t dozzer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	28/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
152	0.28
314	0.59
439	0.83
522	1.04
584	1.12
0	0.52



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>291654 kN/m2/m**
Equivalent CBR = **> 99 %**

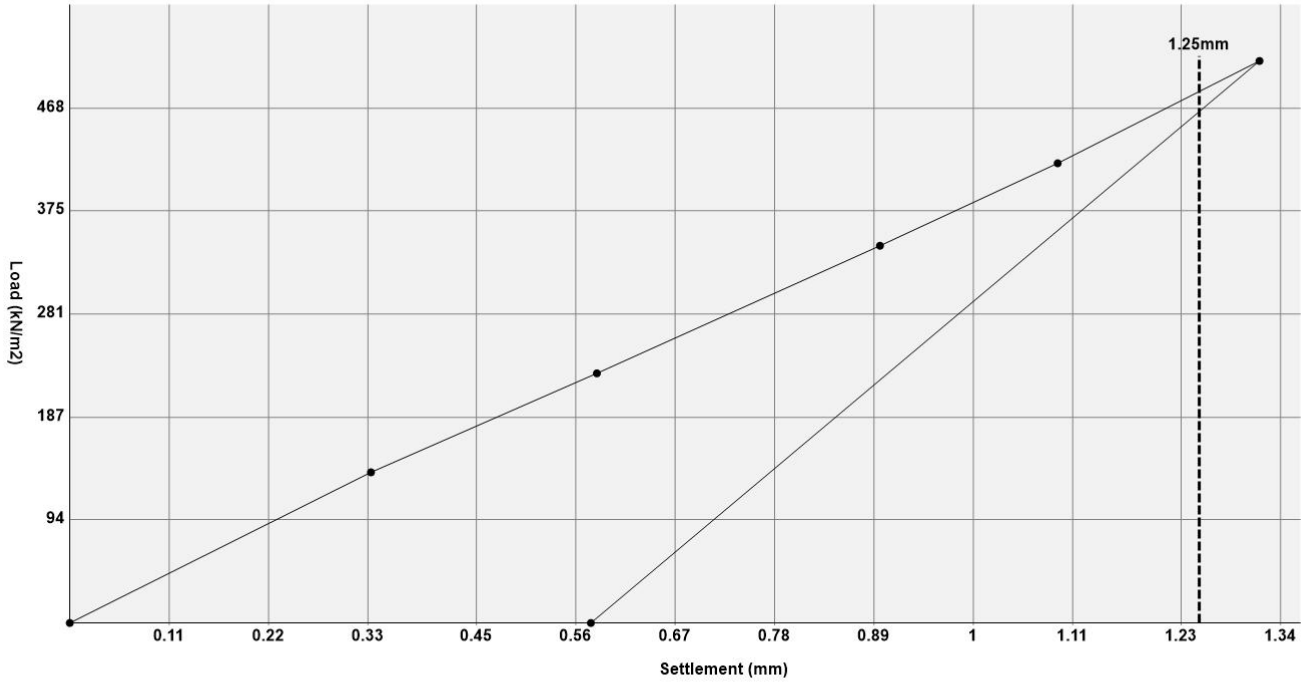
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 9
		^ **Test Location:**	-loc 9 E14 type 1
Lab Ref.:	280920-05	**Layer:**	Sub Base
Kentledge:	16t dozzer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	28/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
137	0.33
227	0.58
343	0.90
418	1.09
511	1.32
0	0.58



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **241214 kN/m2/m**
Equivalent CBR = **> 99 %**

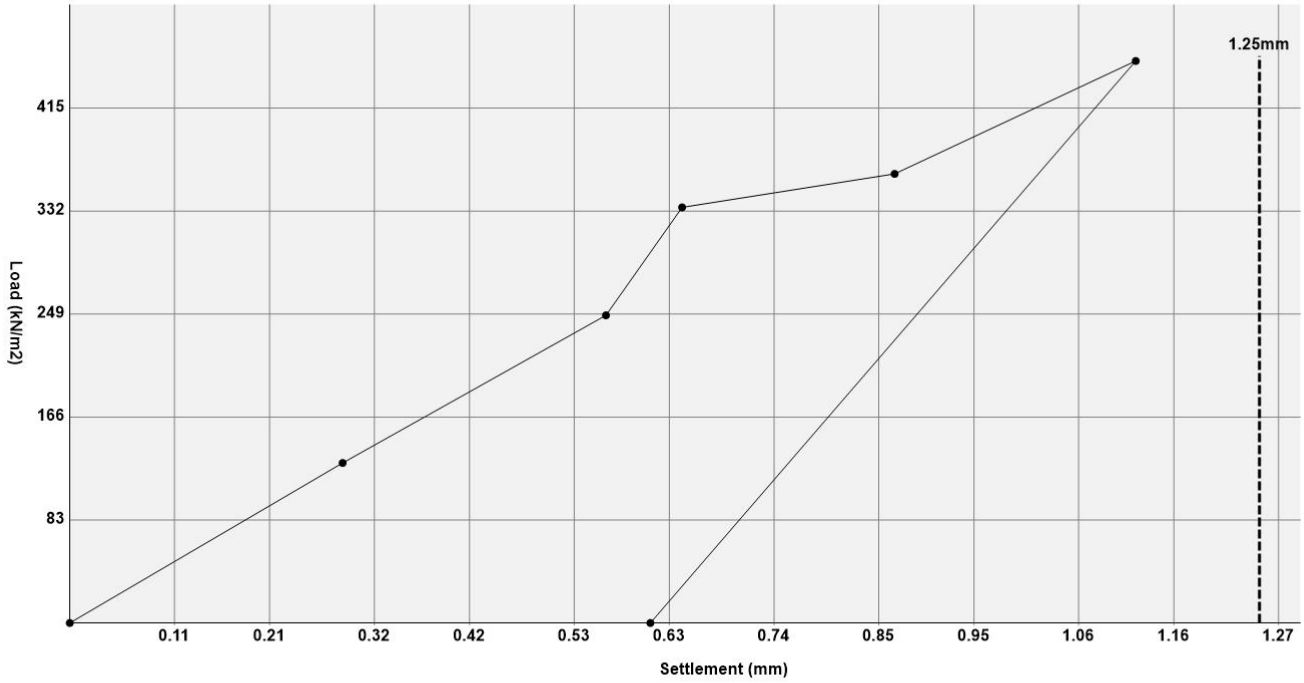
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 10
		^ **Test Location:**	-loc 10 E15 type 1
Lab Ref.:	280920-05	**Layer:**	Sub Base
Kentledge:	16t dozzer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	28/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
129	0.29
248	0.56
335	0.64
362	0.87
453	1.12
0	0.61



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>226231 kN/m2/m**
Equivalent CBR = **> 99 %**

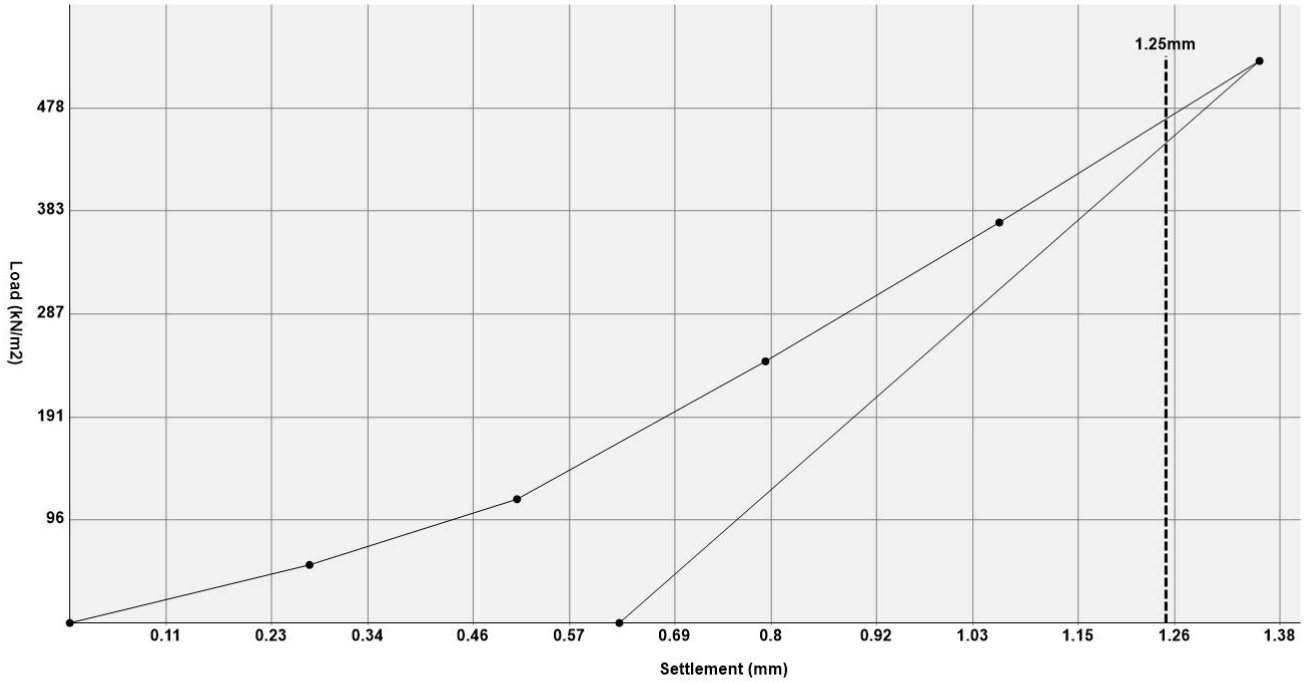
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 11
		^ **Test Location:**	-loc 11 E21 type 1
Lab Ref.:	280920-05	**Layer:**	Sub Base
Kentledge:	16t dozzer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	28/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
54	0.27
115	0.51
243	0.79
372	1.06
522	1.36
0	0.63



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **233723 kN/m2/m**
Equivalent CBR = **> 99 %**

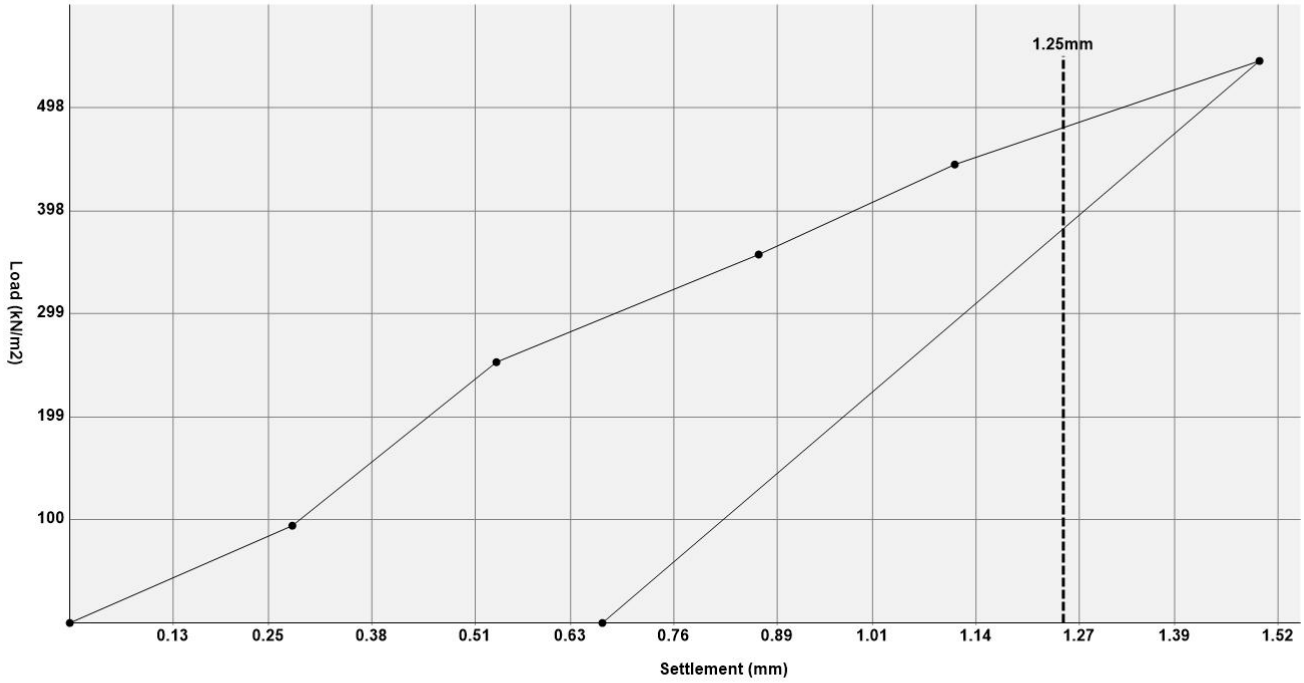
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 12
		^ **Test Location:**	-loc 12 E28 type 1
Lab Ref.:	280920-05	**Layer:**	Sub Base
Kentledge:	16t dozzer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	28/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
94	0.28
252	0.54
356	0.87
443	1.11
543	1.50
0	0.67



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **239216 kN/m2/m**
Equivalent CBR = **> 99 %**

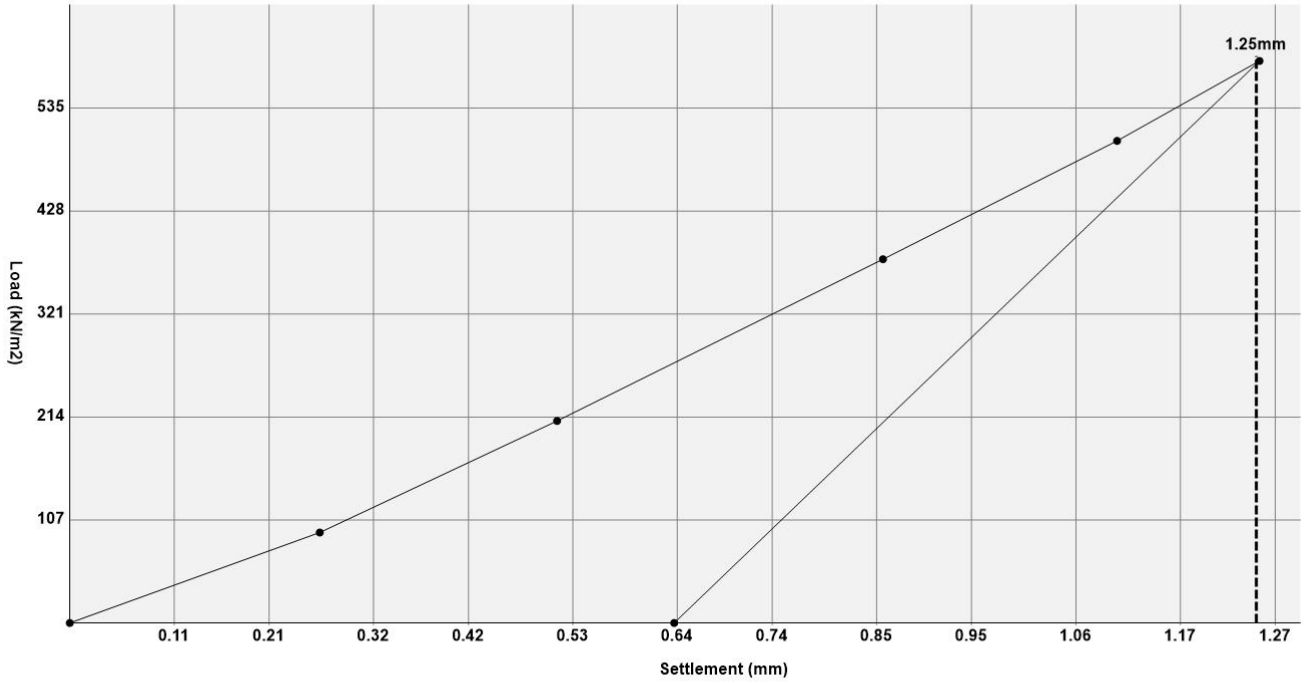
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 13
		^ **Test Location:**	-loc 13 E27 type 1
Lab Ref.:	280920-05	**Layer:**	Sub Base
Kentledge:	16t dozzer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	28/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
94	0.26
210	0.51
378	0.86
501	1.10
584	1.25
0	0.64



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **290655 kN/m2/m**
Equivalent CBR = **> 99 %**

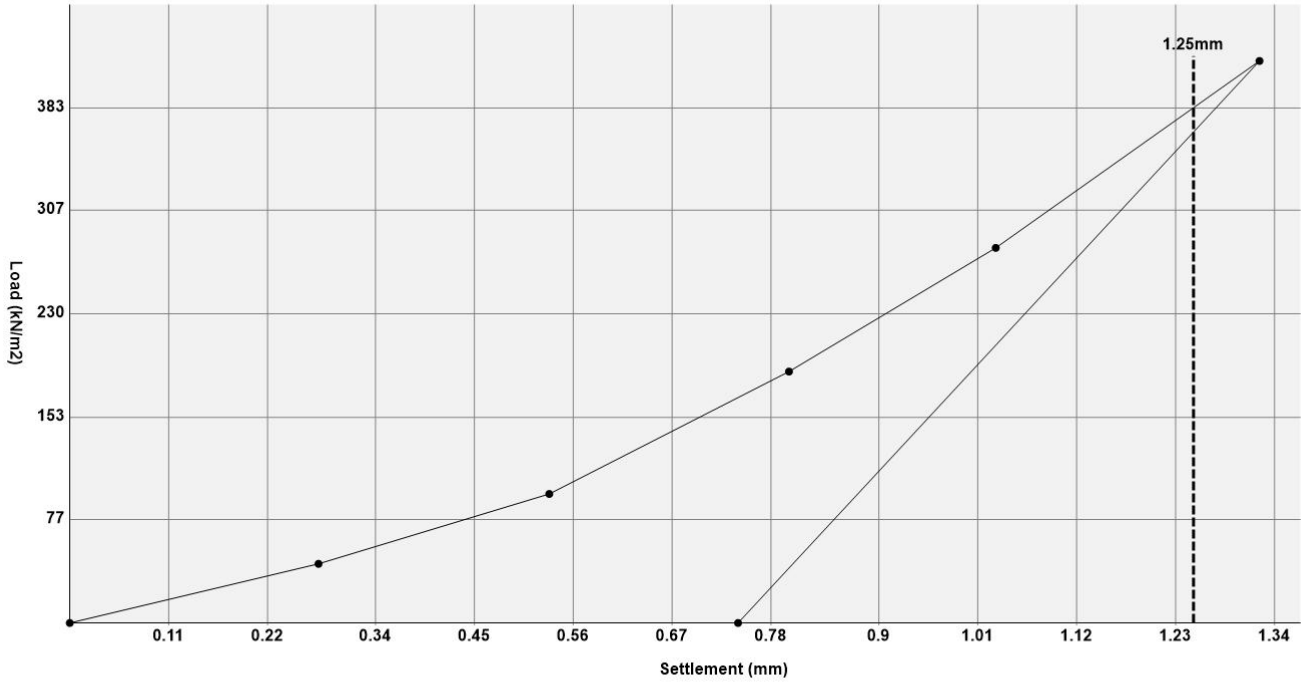
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 14
		^ **Test Location:**	-loc 14 E22 type 1
Lab Ref.:	280920-05	**Layer:**	Sub Base
Kentledge:	16t dozzer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	28/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
44	0.28
96	0.53
187	0.80
279	1.03
418	1.32
0	0.74



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **191273 kN/m2/m**
Equivalent CBR = **86.8 %**

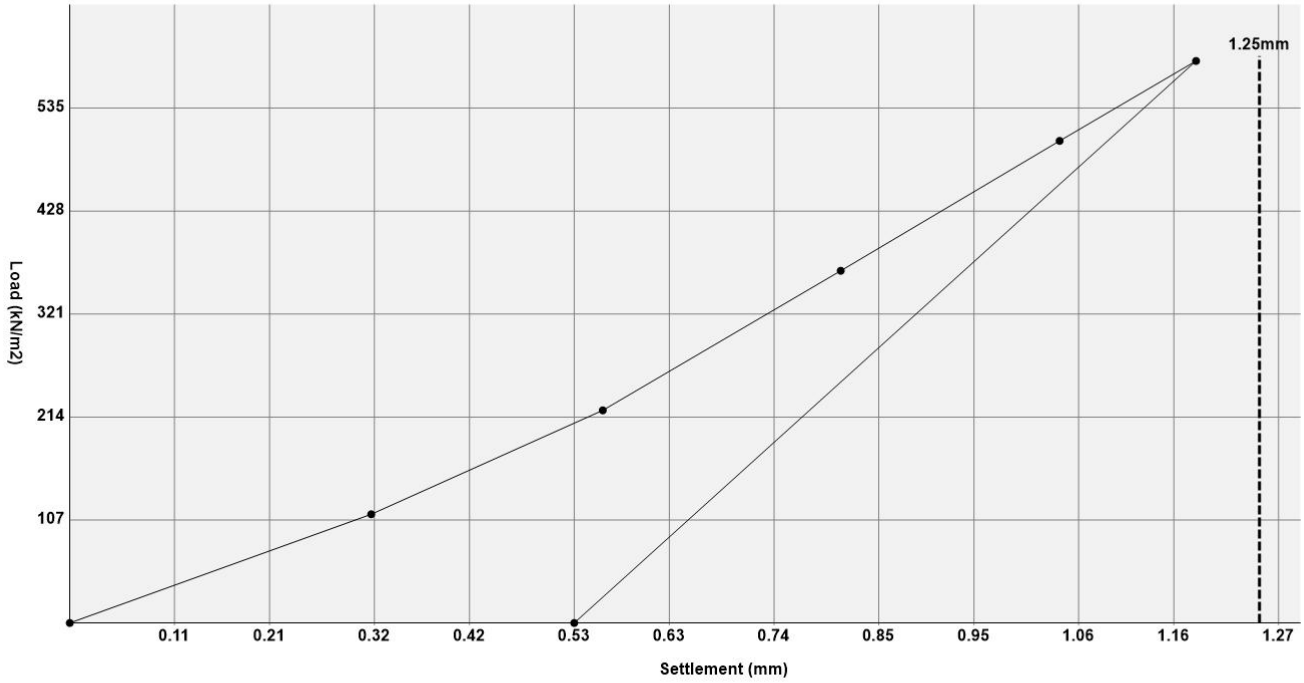
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	crushed stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 15
		^ **Test Location:**	-loc 15 E16 type 1
Lab Ref.:	280920-05	**Layer:**	Sub Base
Kentledge:	16t dozzer	^ **Road No:**	^ **Chainage:**
Conditions:	Dry	**Date of Test:**	28/09/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
113	0.32
221	0.56
366	0.81
501	1.04
584	1.18
0	0.53



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **>291654 kN/m2/m**
Equivalent CBR = **> 99 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

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www.kiwa.co.uk/cmt

Client: Ivy House Environmental Ltd
Scotland Farm
Far Lane
Ockbrook, Derby
Derbyshire
DE72 3RX

Date: 20/10/2020

Lab Ref: 201020-03

Originator: Scott

Order Ref: IV.131.20

Site: Mitchell Road
Corby
Just befor Rockingham Speedway
NN17 5AF

Requirements:

Attend the above site on 20/10/2020 in order to carry out 14 Plate bearings for equivalent CBR% tests to evaluate the modulus of sub-grade reaction 'k' and estimate the equivalent CBR percentage in accordance with Interim Advice Note (IAN) 73/06 Revision 1 (2009).

Results:

The individual result sheets may be viewed on pages 2 to 15 of this report.

Kiwa CMT Testing

Checked and Authorised by: R Cartlidge
Manager Geotechnical Department

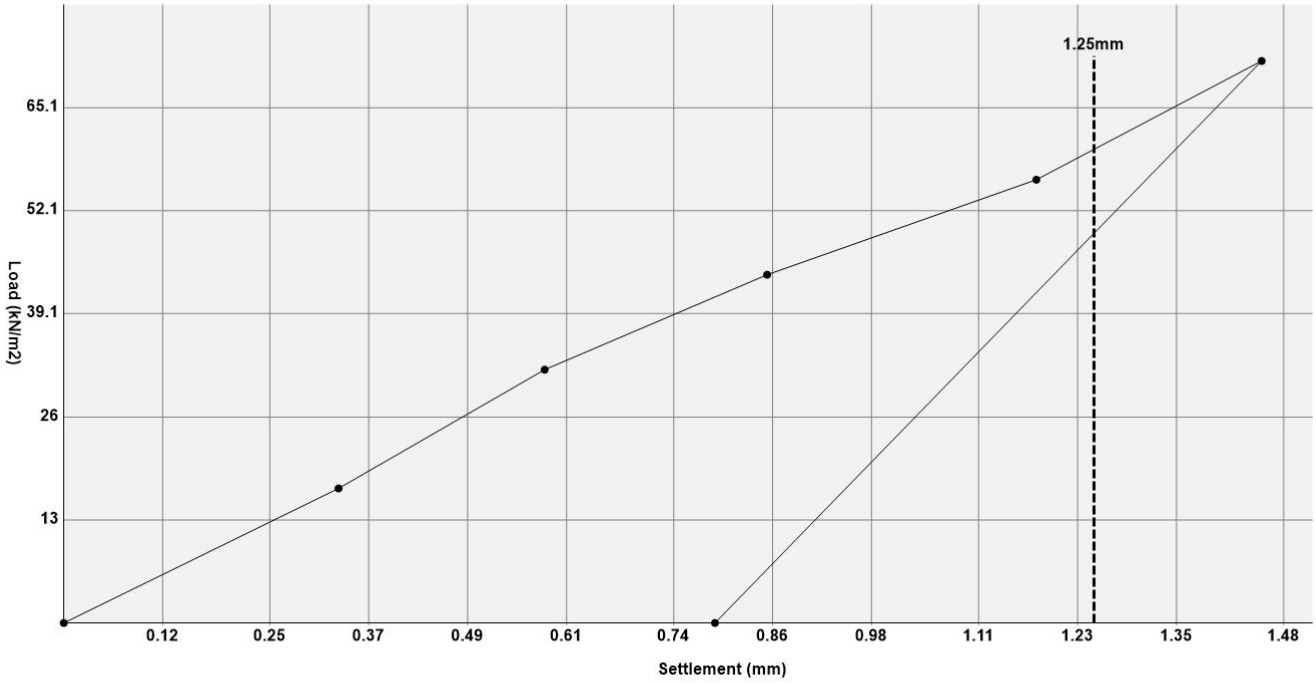
UKAS TESTING
0529

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone (G)
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 1
		^ **Test Location:**	E 46
Lab Ref.:	201020-03	**Layer:**	Sub Base
Kentledge:	22 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	20/10/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
17	0.33
32	0.58
44	0.85
56	1.18
71	1.45
0	0.79



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **29964 kN/m2/m**
Equivalent CBR = **3.5 %**

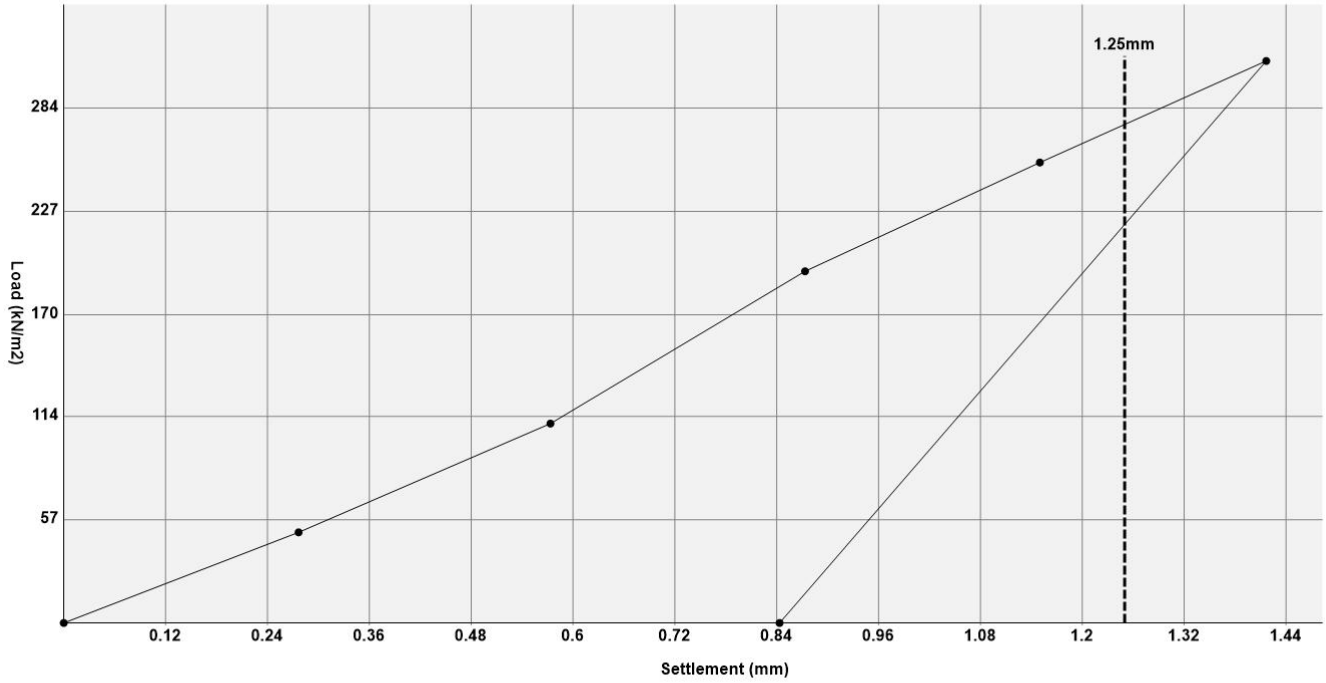
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone (G)
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 2
		^ **Test Location:**	E 52
Lab Ref.:	201020-03	**Layer:**	Sub Base
Kentledge:	22 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	20/10/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
50	0.28
110	0.57
194	0.87
254	1.15
310	1.42
0	0.84



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **137337 kN/m2/m**
Equivalent CBR = **48.9 %**

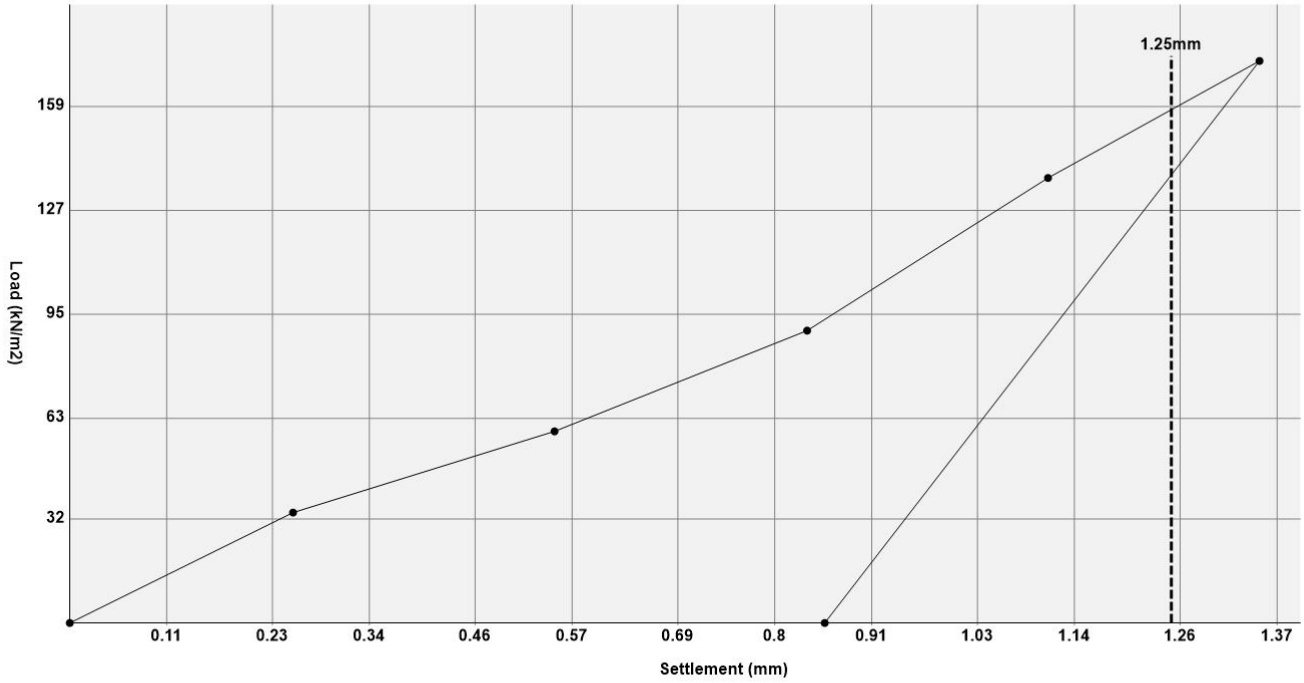
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone (G)
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 3
		^ **Test Location:**	E 40
Lab Ref.:	201020-03	**Layer:**	Sub Base
Kentledge:	22 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	20/10/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.25
59	0.55
90	0.84
137	1.11
173	1.35
0	0.86



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **78906 kN/m2/m**
Equivalent CBR = **18.7 %**

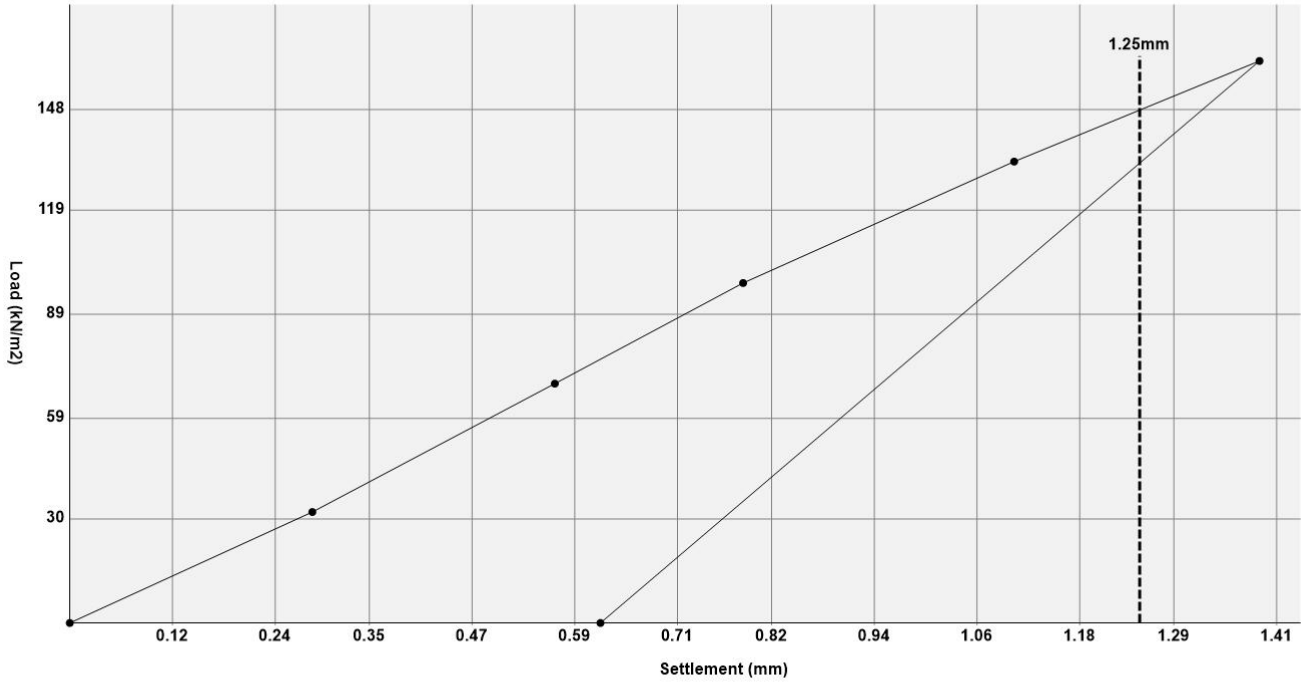
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone (G)
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 4
		^ **Test Location:**	E 34
Lab Ref.:	201020-03	**Layer:**	Sub Base
Kentledge:	22 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	20/10/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
32	0.28
69	0.57
98	0.79
133	1.10
162	1.39
0	0.62



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **73912 kN/m2/m**
Equivalent CBR = **16.7 %**

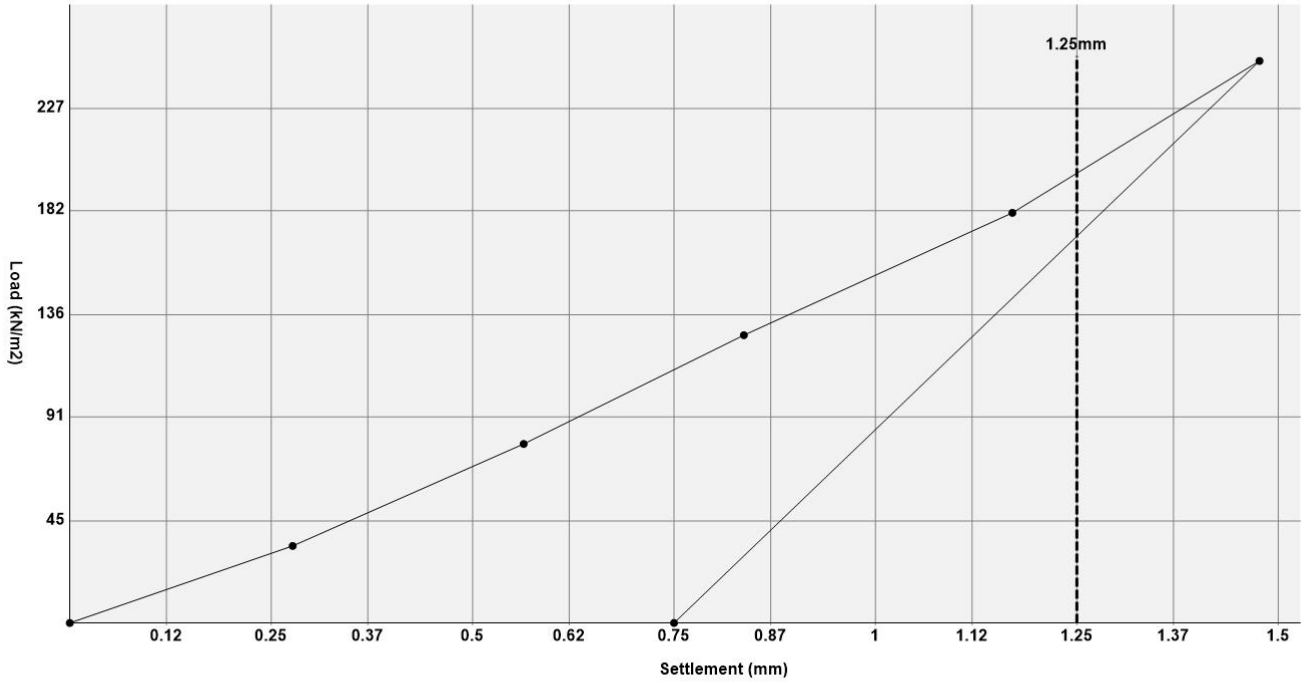
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone (G)
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 5
		^ **Test Location:**	E 40 Re-Test
Lab Ref.:	201020-03	**Layer:**	Sub Base
Kentledge:	22 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	20/10/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.28
79	0.56
127	0.84
181	1.17
248	1.48
0	0.75



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **98883 kN/m2/m**
Equivalent CBR = **27.7 %**

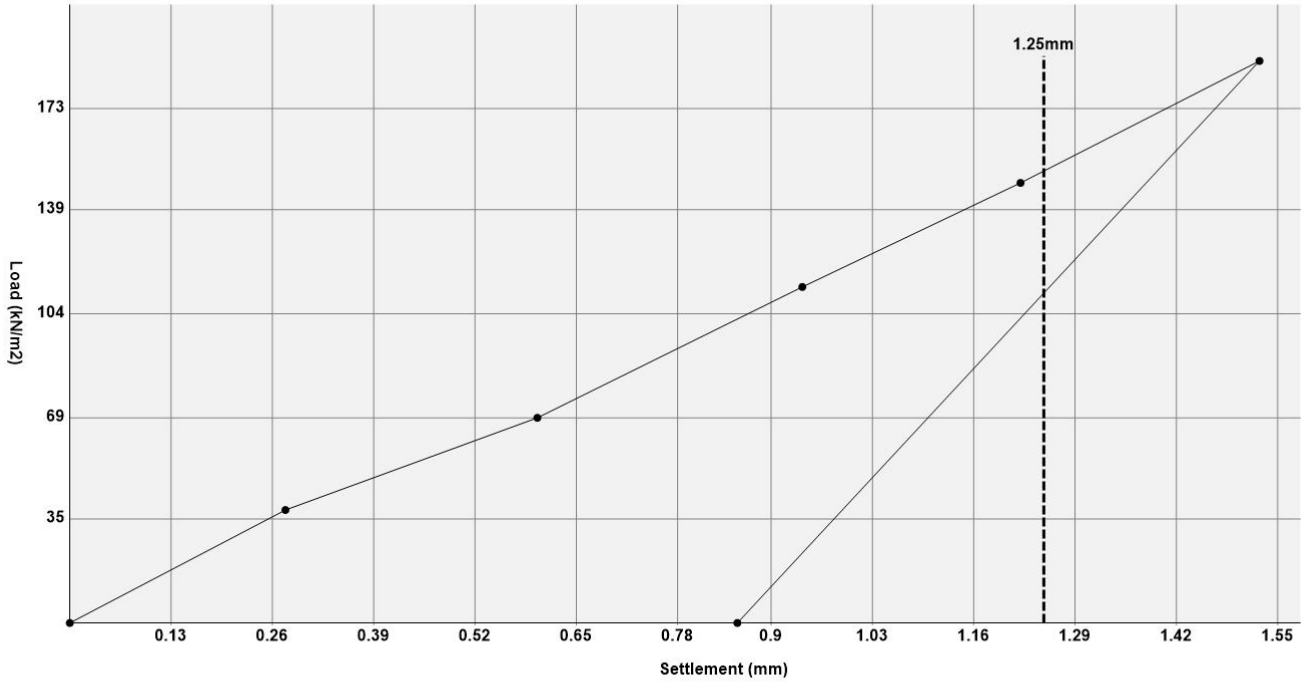
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone (G)
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 6
		^ **Test Location:**	E 34 Re-Test
Lab Ref.:	201020-03	**Layer:**	Sub Base
Kentledge:	22 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	20/10/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
38	0.28
69	0.60
113	0.94
148	1.22
189	1.53
0	0.86



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **75910 kN/m2/m**
Equivalent CBR = **17.5 %**

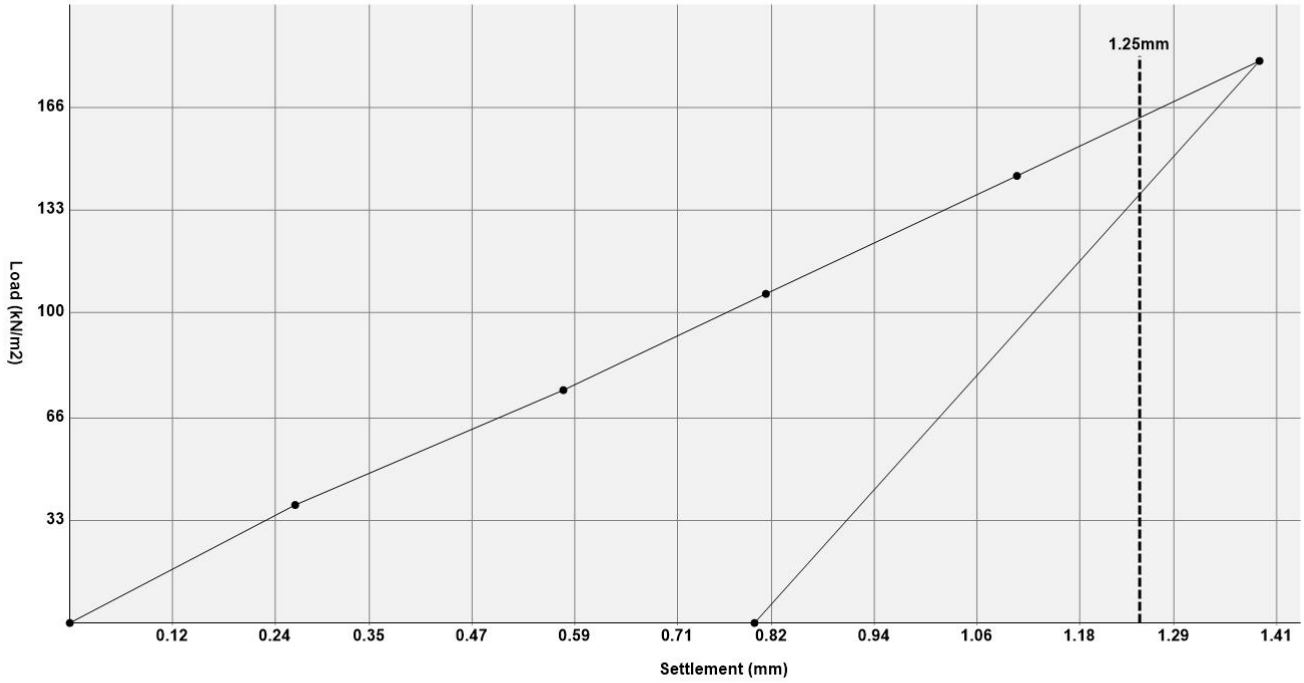
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone (G)
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 7
		^ **Test Location:**	E 46 Re-Test
Lab Ref.:	201020-03	**Layer:**	Sub Base
Kentledge:	22 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	20/10/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
38	0.26
75	0.58
106	0.81
144	1.11
181	1.39
0	0.80



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **81403 kN/m2/m**
Equivalent CBR = **19.7 %**

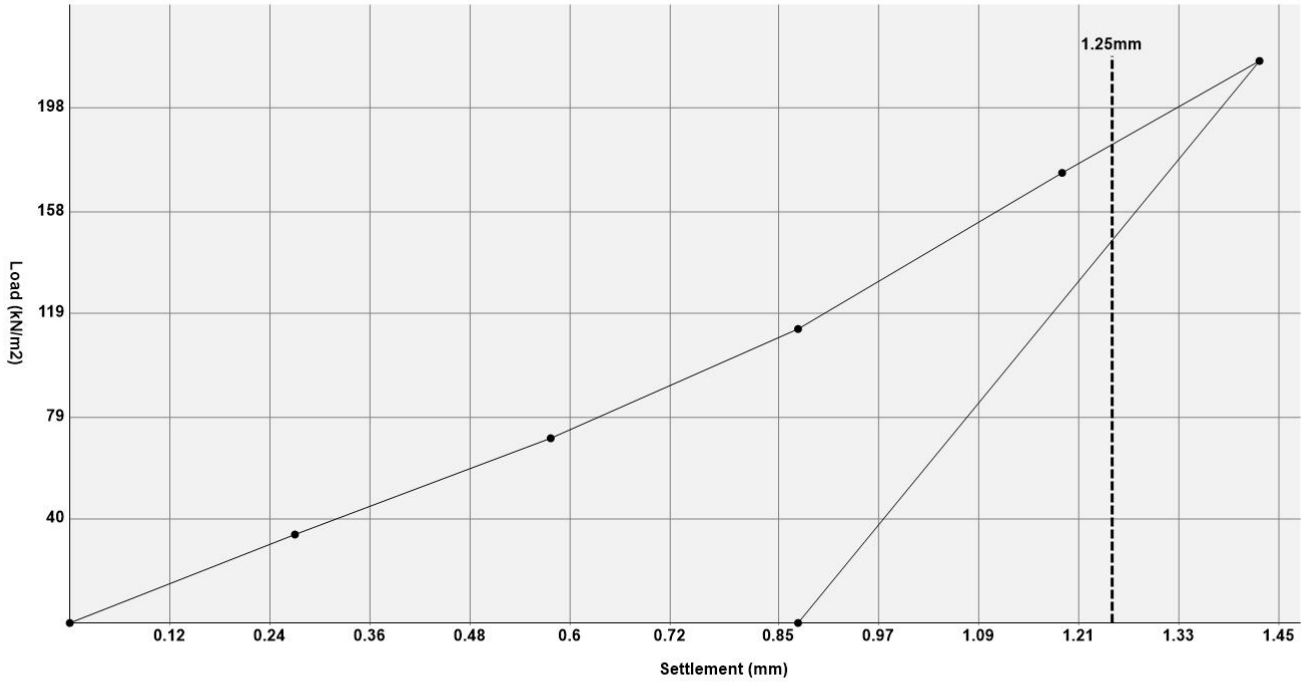
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone (G)
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 8
		^ **Test Location:**	E 11
Lab Ref.:	201020-03	**Layer:**	Sub Base
Kentledge:	22 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	20/10/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
34	0.27
71	0.58
113	0.87
173	1.19
216	1.43
0	0.87



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **91891 kN/m2/m**
Equivalent CBR = **24.4 %**

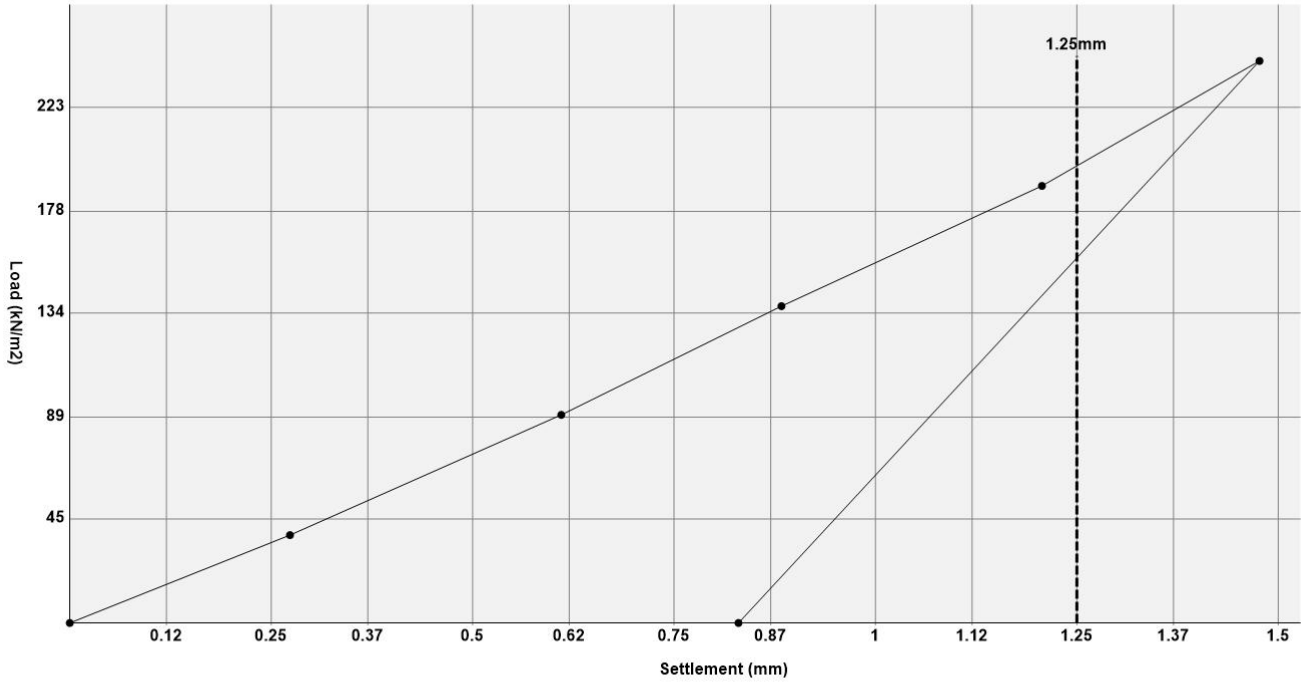
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone (G)
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 9
		^ **Test Location:**	E 5
Lab Ref.:	201020-03	**Layer:**	Sub Base
Kentledge:	22 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	20/10/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
38	0.27
90	0.61
137	0.88
189	1.21
243	1.48
0	0.83



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **98883 kN/m2/m**
Equivalent CBR = **27.7 %**

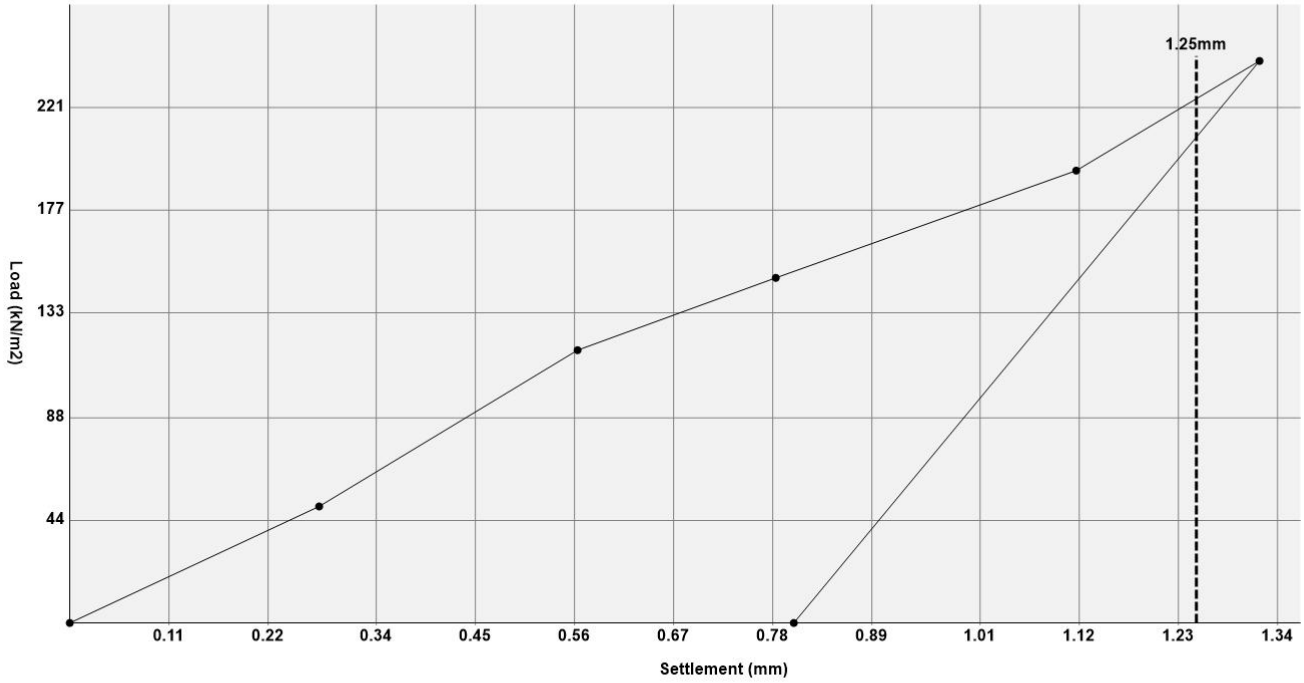
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone (G)
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 10
		^ **Test Location:**	E 4
Lab Ref.:	201020-03	**Layer:**	Sub Base
Kentledge:	22 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	20/10/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
50	0.28
117	0.56
148	0.78
194	1.12
241	1.32
0	0.80



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **112367 kN/m2/m**
Equivalent CBR = **34.5 %**

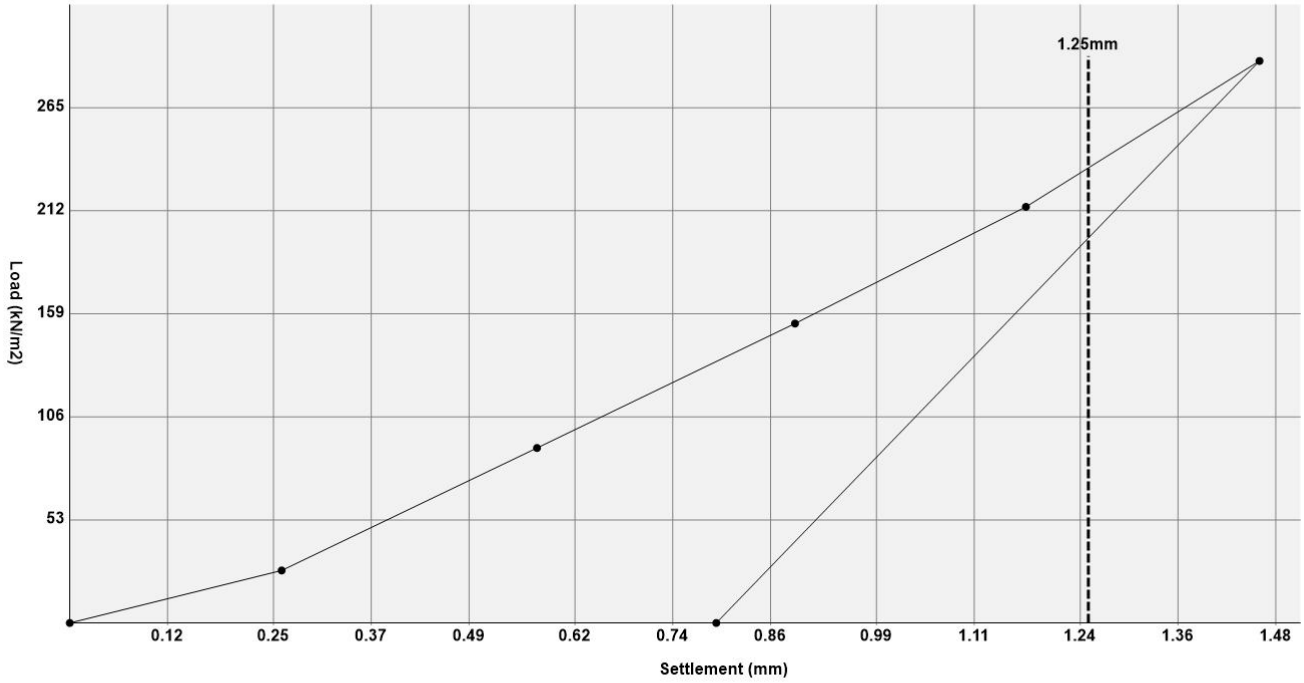
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Yellow Crushed Stone
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 11
		^ **Test Location:**	E 10
Lab Ref.:	201020-03	**Layer:**	Sub Base
Kentledge:	22 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	20/10/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
27	0.26
90	0.57
154	0.89
214	1.17
289	1.46
0	0.79



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **116861 kN/m2/m**
Equivalent CBR = **36.9 %**

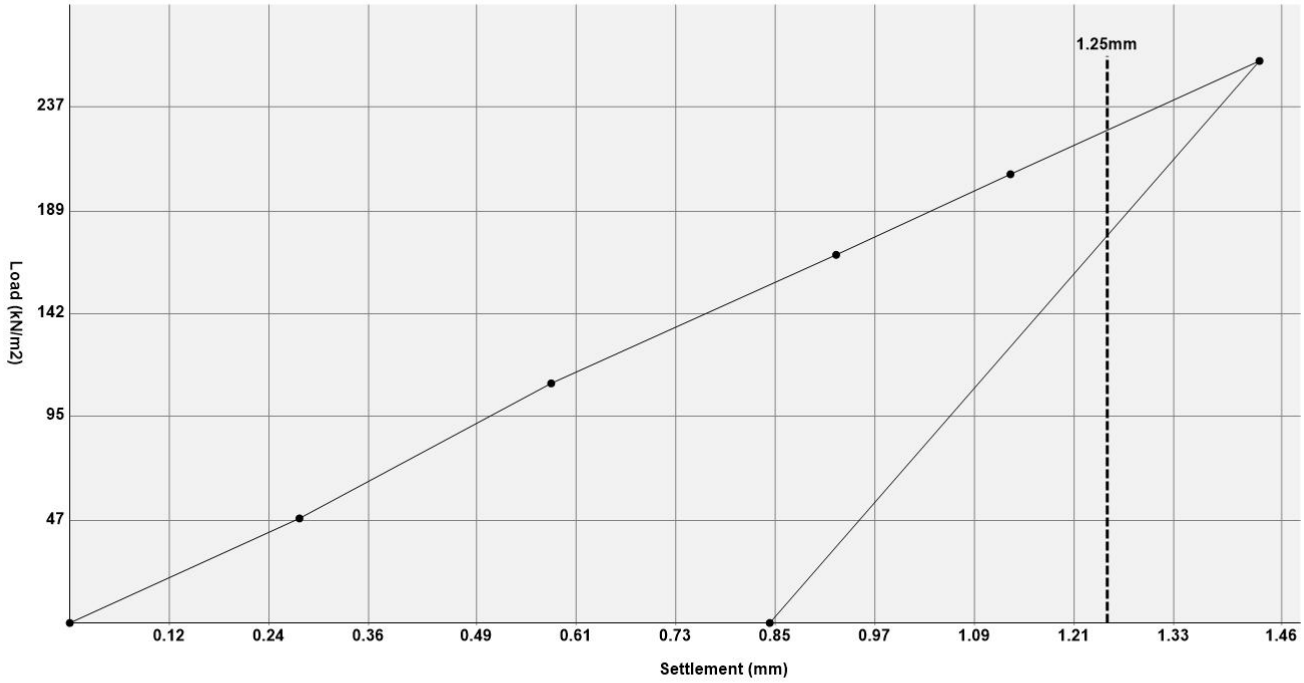
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone (G)
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 12
		^ **Test Location:**	E 3
Lab Ref.:	201020-03	**Layer:**	Sub Base
Kentledge:	22 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	20/10/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
48	0.28
110	0.58
169	0.92
206	1.13
258	1.43
0	0.84



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **112866 kN/m2/m**
Equivalent CBR = **34.8 %**

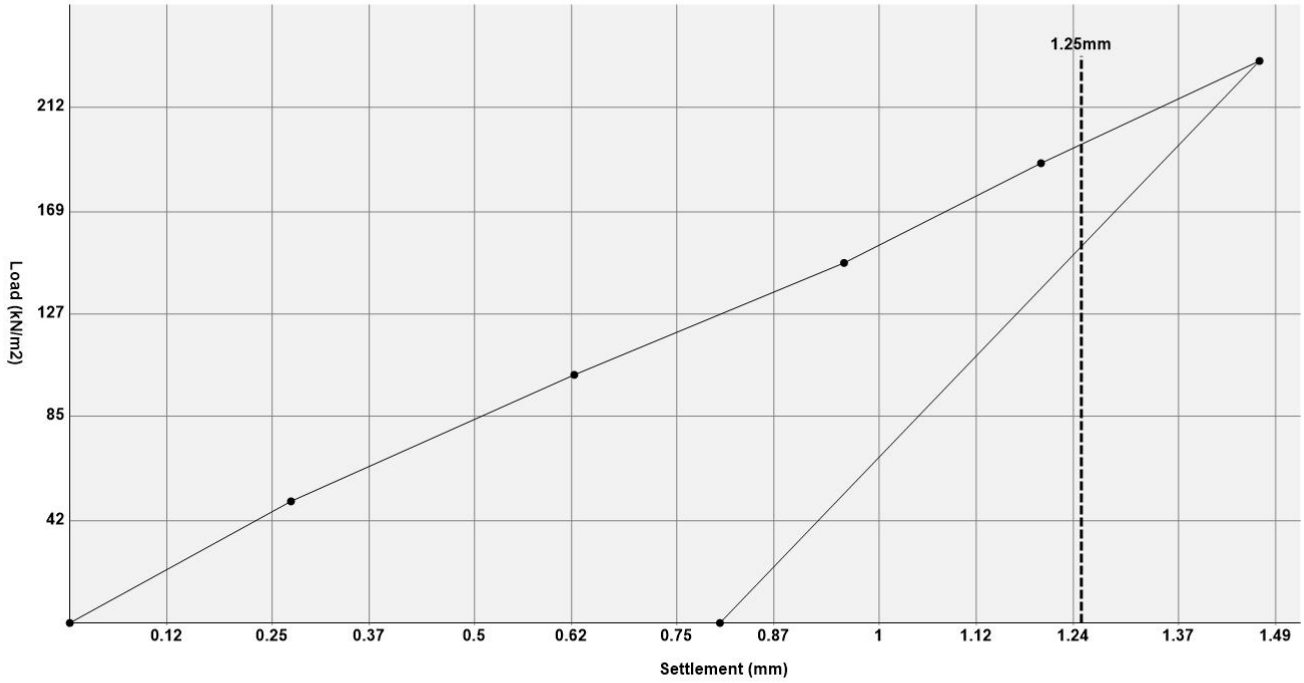
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone (G)
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 13
		^ **Test Location:**	E 34 2nd Re-Test
Lab Ref.:	201020-03	**Layer:**	Sub Base
Kentledge:	22 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	20/10/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
50	0.27
102	0.62
148	0.96
189	1.20
231	1.47
0	0.80



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **98383 kN/m2/m**
Equivalent CBR = **27.4 %**

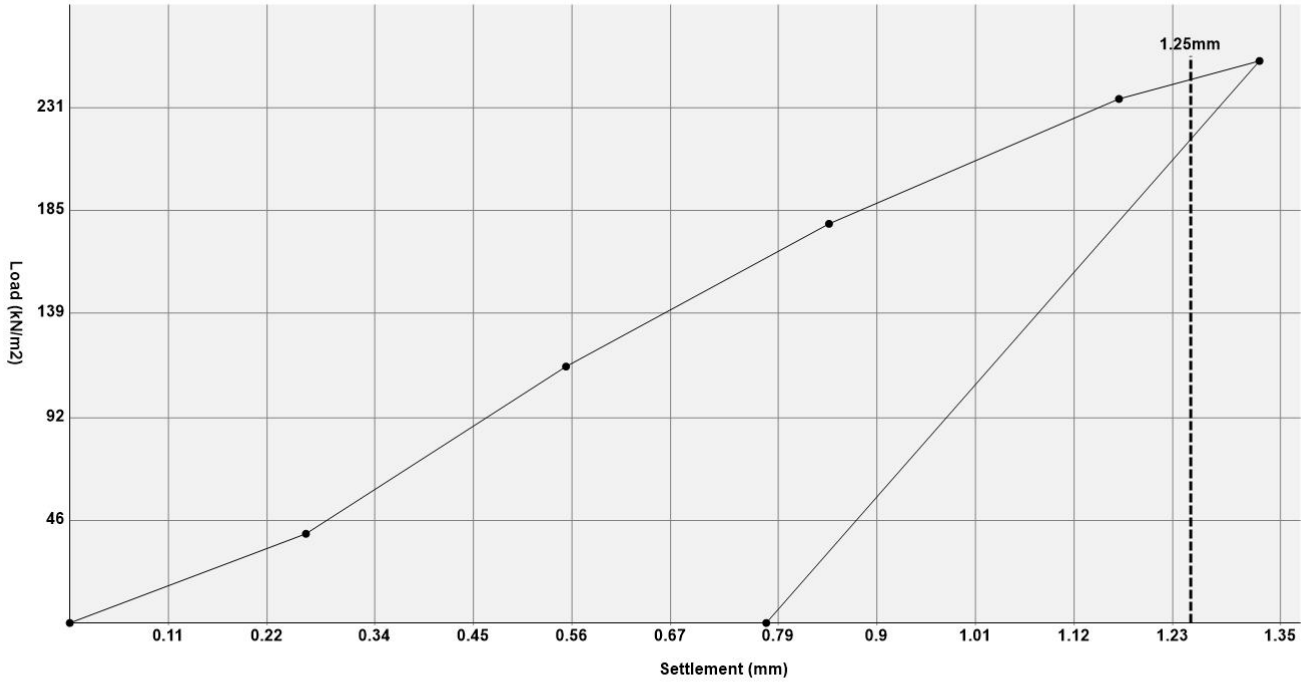
Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Kiwa CMT

450mm Diameter Plate Test

Client:	Ivy House Environmental Ltd	**Material Type:**	Crushed Stone (G)
Site:	Mitchell Road Corby Just befor Rockingham Speedway	**Test No:**	CBR Test 14
		^ **Test Location:**	E 17
Lab Ref.:	201020-03	**Layer:**	Sub Base
Kentledge:	22 Tonne Digger	^ **Road No:** -	^ **Chainage:** -
Conditions:	Dry	**Date of Test:**	20/10/2020

Pressure (kN/m2)	Settlement (mm)
0	0.00
40	0.26
115	0.55
179	0.85
235	1.17
252	1.33
0	0.78



Test Method: Interim Advice Note (IAN) 73/06 Revision 1 (2009)

Result: Modulus of Sub grade Reaction k762 = **121855 kN/m2/m**
Equivalent CBR = **39.7 %**

Comments: Information marked by ^ supplied by the client can affect the validity of the results, these apply only to the locations provided.

Nicholls Colton Group

Cover Sheet

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

Ivy House Environmental
Scotland Farm
Ockbrook
Derby
DE72 3RX

Analytical Test Report: J20/0085/IVY/001

Your Project Reference:	**Rockingham Speedway, Corby**	Date of testing:	08/07/2020
Your Order Number:	IVY:131.20	Number of locations tested:	6 Locations
Report Issue Number:	1	Report issued:	15/07/2020

Signed

James Browne
Manager - GCM Testing Services
Nicholls Colton Group

Notes:

Sampling was undertaken by NC

Nuclear Density Testing

Testing was carried out in accordance with BS 1377 : Part 9 : 1990 : clause 2.5 Nuclear method.

The mode of operation used during testing was direct transmission.

Calibration was in accordance with BS 1377 : Part 9 : 1990 : clause 2.5.5.2 Initial site calibration for bulk density.

Core Cutter

Testing was carried out in accordance with BS 1377 : Part 9 : 1990 : clause 2.4 core cutter method.

Moisture contents were determined in accordance with BS 1377 : Part 2 : 1990.

Date of Issue 05.01.2017

Owned by Emily Blissett - Customer Services Supervisor

Authorised by Will Elson - Testing Services

J:\Public\Projects\2020\J20\IVY - Ivey House\J20-0085-IVY - Rockingham Speedway, Corby\[J20-0085-IVY-001.xlsx]Core Cutters

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

J20/0085/IVY/001

Project Reference: Rockingham Speedway, Corby

In-Situ Density Using a Nuclear Density Gauge

Date of Testing:	**08/07/2020**

Make and model of gauge:	Troxler 3440	Serial Number:	15661	
Supplier/ Source:	Site Won	Density/ Moisture Bias (+/-):	Density:	Moisture:
			-0.12 Mg/m³	+1.83
Material Description:	Brown/grey occasionally gravelly clay	Weather Conditons:	Wind, rain	

Test Reference	Location	Field Moisture Content (%)	Field Bulk Density (Mg/m^3)	Corrected Moisture Content (%)	Corrected Bulk Density (Mg/m^3)	Dry Density (Mg/m^3)	Maximum Dry Density (Mg/m^3)	Relative Compaction (%)
1	E35	19	2.130	21.1	2.01	1.66	1.82	91
		19	2.113	21.1	1.99	1.65	1.82	90
2	E41	13	2.209	14.8	2.09	1.82	1.82	100
		13	2.241	14.6	2.12	1.85	1.82	102
3	E47	20	2.099	22.2	1.98	1.62	1.82	89
		21	2.112	23.0	1.99	1.62	1.82	89
4	E54	20	2.036	21.5	1.92	1.58	1.82	87
		18	2.030	20.1	1.91	1.59	1.82	87
5	E48	16	2.119	17.9	2.00	1.70	1.82	93
		17	2.126	19.0	2.01	1.69	1.82	93
6	E53	19	2.090	20.4	1.97	1.64	1.82	90
		17	2.079	18.9	1.96	1.65	1.82	91

Notes:

The gauge depth during test was between 50 and 300mm as required by BS 1377-9:1990

Relative compaction is calculated using a maximum dry density of 1.82Mg/m^3 as determined by BS 1377 Part 4 1990 (Info provided by the client)

Bulk densities corrected using CC 01-03 - 08/07/20

TERRA TEK
SITE INVESTIGATION & LABORATORY SERVICES

Ivy House Environmental
Scotland Farm
Far Lane
Ockbrook
Derbyshire
DE72 3RX
For the attention of Scott Spencer

Report No: B24526
Issue No 01

LABORATORY TEST REPORT

Project Name	**ROCKINGHAM**		
Project Number	**B24526**	Date samples received	26/06/2020
Your Ref		Date written instructions received	26/06/2020
Purchase Order		Date testing commenced	26/06/2020

Please find enclosed the results as summarised below

Figure / Table	Test Quantity	Description	ISO 17025 Accredited
1	10	Summary of Geotechnical Tests	Yes
2-11	10	Atterberg Limit	Yes
12-21	10	Particle Size Distribution	Yes
22-31	10	Moisture Content/Dry Density Relationship	Yes

Remarks :

Issued by : Stephen Langman Date of Issue : 09/07/2020

Approved Signatories : S. Langman 09/07/2020
G Wilson (JMD/Laboratories Director), S Langman (Laboratory Coordinator)

Key to symbols used in this report
S/C : Testing was sub-contracted

Unless we are notified to the contrary, samples will be disposed after a period of one month from this date.
The results reported relate to samples received in the laboratory only.
All results contained in this report are provisional unless signed by an approved signatory
This report should not be reproduced except in full without the written approval of the laboratory.
Under multisite accreditation the testing contained in this report may have been performed at another Terra Tek laboratory.
The enclosed results remain the property of Terra Tek Limited and we reserve the right to withdraw
our report if we have not received cleared funds in accordance with our standard terms and conditions
Only those results indicated in this report are UKAS accredited and any opinions or interpretations expressed are outside the scope of UKAS accreditation.
Feedback on the this report may be left via our website www.terratek.co.uk/contact-us

mCERTS
UKAS TESTING 0126
25 YEARS 1990-2015

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Head Office : 62 Rochsolloch Road, Airdrie, ML6 9BG

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site: ROCKINGHAM

Client:

Engineer:

Contract No B24526

Sample Identification							Atterberg limits						Density		Total Stress			
Exploratory Hole	Depth m	Sample Ref	Sample Type	Lab Sample ID	Non Engineering Sample Description	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	Percentage retained 425µm %	Atterberg Classification	Particle Density Mg/m³	Bulk Mg/m³	Dry Mg/m³	Shear Strength kPa	Apparent Cohesion C kPa	Angle of Shearing Resistance Phi	Other Tests
Formation 1	0.50		B	736523	Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.	18	45	17	28	21	CI	2.62						PSD,2.5kg Compaction,BRE SD1 Suite
Formation 2	0.36		B	736524	Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse with one cobble.	18	45	18	27	27	CI	2.64						PSD,2.5kg Compaction,BRE SD1 Suite
Formation 3	0.30		B	736525	Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.	16	45	18	27	27	CI	2.64						PSD,2.5kg Compaction,BRE SD1 Suite
Formation 4	0.50		B	736526	Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse with one cobble.	17	44	19	25	35	CI	2.64						PSD,2.5kg Compaction,BRE SD1 Suite
Pond 1	1.00-1.50		B	736527	Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.	17	39	15	24	14	CI	2.64						PSD,2.5kg Compaction,BRE SD1 Suite
Notes	Opinions and interpretations are outside the scope of UKAS accreditation				UKAS Accredited Test Y/N	Test details are given on the 'Notes on Laboratory Procedures' sheet												See individual report sheets
						Y	Y	Y	Y	Y	-	Y	Y	Y	Y	Y	Y	

Originator	Approved
PM	S. Langran 09/07/2020

SUMMARY OF GEOTECHNICAL TESTS

Figure 1

Sheet 1 of 2

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site: ROCKINGHAM

Client:

Engineer:

Contract No B24526

Sample Identification							Atterberg limits						Density		Total Stress			
Exploratory Hole	Depth m	Sample Ref	Sample Type	Lab Sample ID	Non Engineering Sample Description	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	Percentage retained 425µm %	Atterberg Classification	Particle Density Mg/m³	Bulk Mg/m³	Dry Mg/m³	Shear Strength kPa	Apparent Cohesion C kPa	Angle of Shearing Resistance Phi	Other Tests
Pond 1	2.50-3.00		B	736573	Grey very clayey SAND with much gravel. Gravel is fine to coarse with one cobble.	14	40	18	22	60	CI	2.59						PSD,2.5kg Compaction
Pond 1	3.00-3.50		B	736528	Grey fine to coarse GRAVEL with much very sandy clay and one cobble.	13	39	15	24	59	CI	2.62						PSD,2.5kg Compaction,BRE SD1 Suite
Pond 2	0.50-1.00		B	736529	Light brown very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.	16	40	15	25	18	CI	2.65						PSD,2.5kg Compaction,BRE SD1 Suite
Pond 2	1.50-2.00		B	736530	Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse.	15	35	14	21	37	CL	2.60						PSD,2.5kg Compaction,BRE SD1 Suite
Pond 2	2.50-3.00		B	736531	Grey very clayey silty SAND with much gravel. Gravel is fine to coarse with one cobble.	14	33	19	14	50	CL	2.61						PSD,2.5kg Compaction,BRE SD1 Suite
Notes	Opinions and interpretations are outside the scope of UKAS accreditation				UKAS Accredited Test Y/N	Test details are given on the 'Notes on Laboratory Procedures' sheet												See individual report sheets
						Y	Y	Y	Y	Y	-	Y	Y	Y	Y	Y	Y	

Originator	Approved
PM	S. Langran 09/07/2020

SUMMARY OF GEOTECHNICAL TESTS

Figure 1

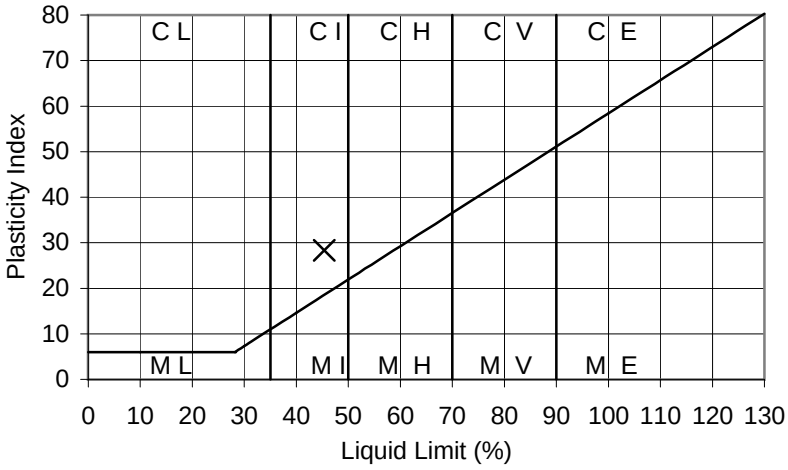
Sheet 2 of 2

Version 051 - 08/11/2013
1220 - LLPL Formation 1 00.50 B - B24526-736523.xls : Sample ID 736523

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Formation 1
		Sample Ref
		Depth (m) 0.50
	Engineer	Sample Type B

Non Engineering Description : Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	18	%
Percentage retained on 425µm sieve :	21	%
Liquid Limit :	45	%
Plastic Limit :	17	%
Plasticity Index :	28	
Equivalent moisture content of material passing 425µm sieve :	23	%
Liquidity Index :	0.21	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 2
LC	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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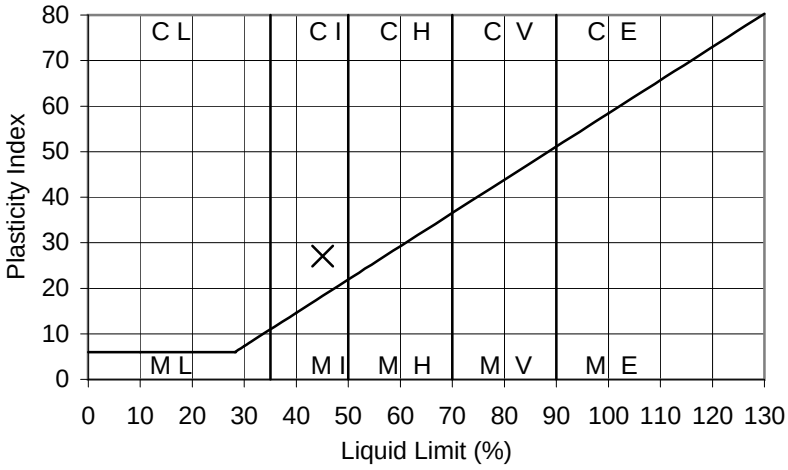
Lab Project No B24526 : 09/07/2020 11:08:41

Version 051 - 08/11/2013
1220 - LLPL Formation 2 00.36 B - B24526-736524.xls : Sample ID 736524

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Formation 2
		Sample Ref
		Depth (m) 0.36
	Engineer	Sample Type B

Non Engineering Description : Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse with one cobble.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	18 %
Percentage retained on 425µm sieve :	27 %
Liquid Limit :	45 %
Plastic Limit :	18 %
Plasticity Index :	27
Equivalent moisture content of material passing 425µm sieve :	25 %
Liquidity Index :	0.26

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 3
IG	S. Langmeu 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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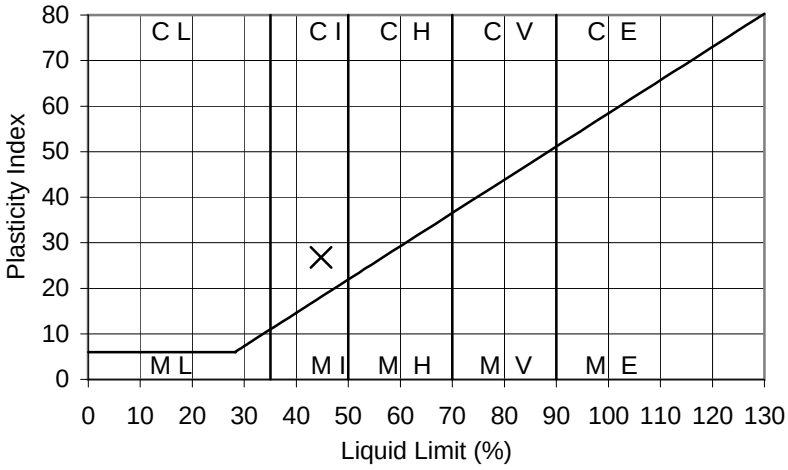
Lab Project No B24526 : 09/07/2020 11:08:44

Version 051 - 08/11/2013
1220 - LLPL Formation 3 00.30 B - B24526-736525.xls : Sample ID 736525

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Formation 3
		Sample Ref
		Depth (m) 0.30
	Engineer	Sample Type B

Non Engineering Description : Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	16	%
Percentage retained on 425µm sieve :	27	%
Liquid Limit :	45	%
Plastic Limit :	18	%
Plasticity Index :	27	
Equivalent moisture content of material passing 425µm sieve :	22	%
Liquidity Index :	0.15	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 4
IG	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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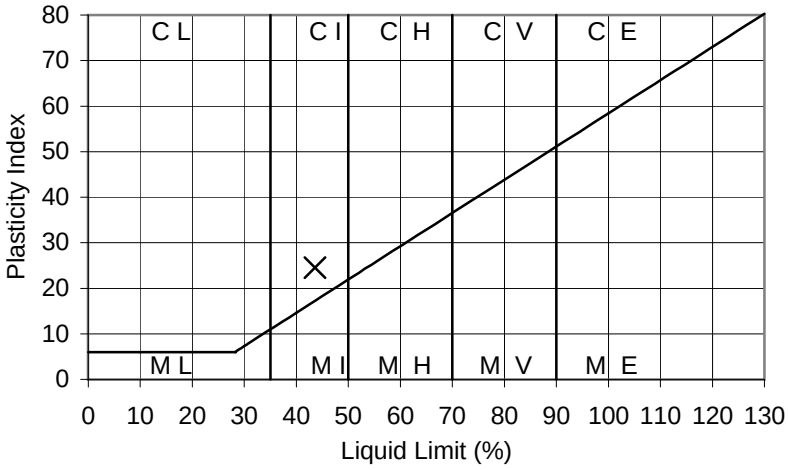
Lab Project No B24526 : 09/07/2020 11:08:47

Version 051 - 08/11/2013
1220 - LLPL Formation 4 00.50 B - B24526-736526.xls : Sample ID 736526

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Formation 4
		Sample Ref
		Depth (m) 0.50
	Engineer	Sample Type B

Non Engineering Description : Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse with one cobble.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	17 %
Percentage retained on 425µm sieve :	35 %
Liquid Limit :	44 %
Plastic Limit :	19 %
Plasticity Index :	25
Equivalent moisture content of material passing 425µm sieve :	26 %
Liquidity Index :	0.28

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 5
IG	S. Langmeu 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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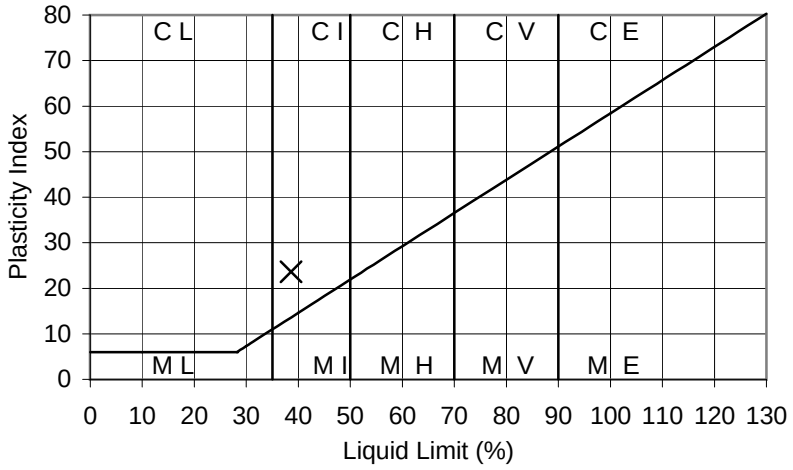
Lab Project No B24526 : 09/07/2020 11:08:50

Version 051 - 08/11/2013
1220 - LLPL Pond 1 01.00 B - B24526-736527.xls : Sample ID 736527

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 1
		Sample Ref
	Engineer	Depth (m) 1.00-1.50
		Sample Type B

Non Engineering Description : Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	17	%
Percentage retained on 425µm sieve :	14	%
Liquid Limit :	39	%
Plastic Limit :	15	%
Plasticity Index :	24	
Equivalent moisture content of material passing 425µm sieve :	20	%
Liquidity Index :	0.21	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 6
IG	S. Langmuir 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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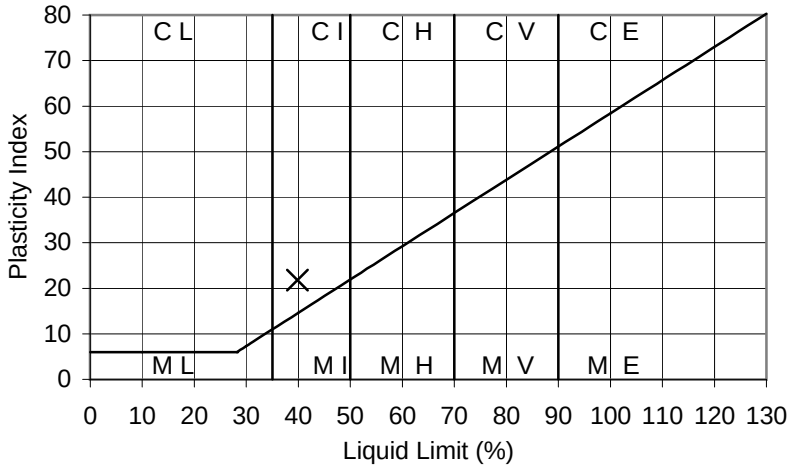
Lab Project No B24526 : 09/07/2020 11:08:53

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 1
		Sample Ref
		Depth (m) 2.50-3.00
	Engineer	Sample Type B

Non Engineering Description : Grey very clayey SAND with much gravel. Gravel is fine to coarse with one cobble.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	14 %
Percentage retained on 425µm sieve :	60 %
Liquid Limit :	40 %
Plastic Limit :	18 %
Plasticity Index :	22
Equivalent moisture content of material passing 425µm sieve :	35 %
Liquidity Index :	0.77

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 7
IG	S. Langmuir 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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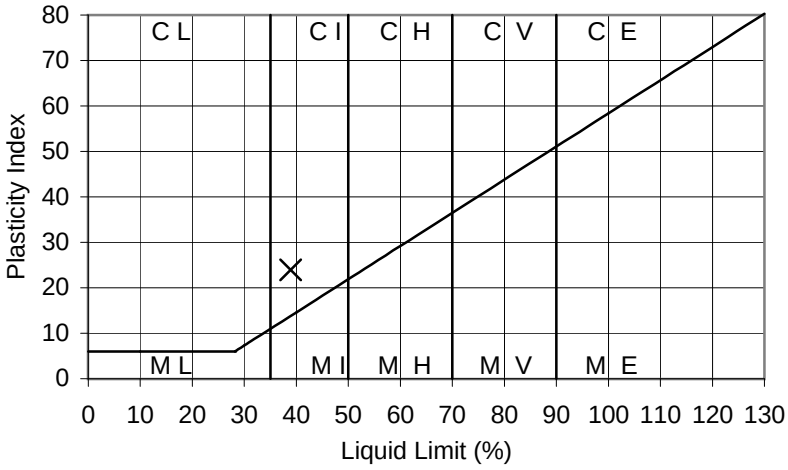
1220 - LLPL Pond 1 03.00 B - B24526-736528.xls : Sample ID 736528

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 1
		Sample Ref
		Depth (m) 3.00-3.50
	Engineer	Sample Type B

Non Engineering Description : Grey fine to coarse GRAVEL with much very sandy clay and one cobble.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	13 %
Percentage retained on 425µm sieve :	59 %
Liquid Limit :	39 %
Plastic Limit :	15 %
Plasticity Index :	24
Equivalent moisture content of material passing 425µm sieve :	32 %
Liquidity Index :	0.71

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 8
LC	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

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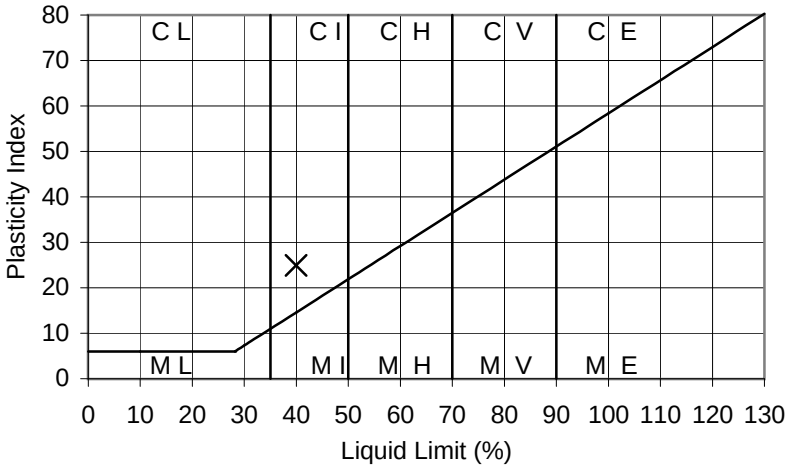
Lab Project No B24526 : 09/07/2020 11:09:00

Version 051 - 08/11/2013
1220 - LLPL Pond 2 00.50 B - B24526-736529.xls : Sample ID 736529

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 2
		Sample Ref
		Depth (m) 0.50-1.00
	Engineer	Sample Type B

Non Engineering Description : Light brown very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	16	%
Percentage retained on 425µm sieve :	18	%
Liquid Limit :	40	%
Plastic Limit :	15	%
Plasticity Index :	25	
Equivalent moisture content of material passing 425µm sieve :	20	%
Liquidity Index :	0.20	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 9
LC	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

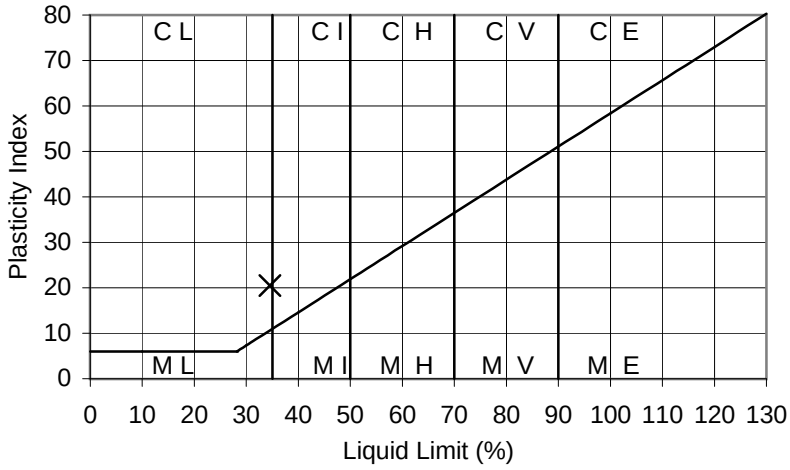
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:03

Version 051 - 08/11/2013
1220 - LLPL Pond 2 01.50 B - B24526-736530.xls : Sample ID 736530

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 2
		Sample Ref
	Engineer	Depth (m) 1.50-2.00
		Sample Type B

Non Engineering Description : Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	15	%
Percentage retained on 425µm sieve :	37	%
Liquid Limit :	35	%
Plastic Limit :	14	%
Plasticity Index :	21	
Equivalent moisture content of material passing 425µm sieve :	24	%
Liquidity Index :	0.48	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 10
LC	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

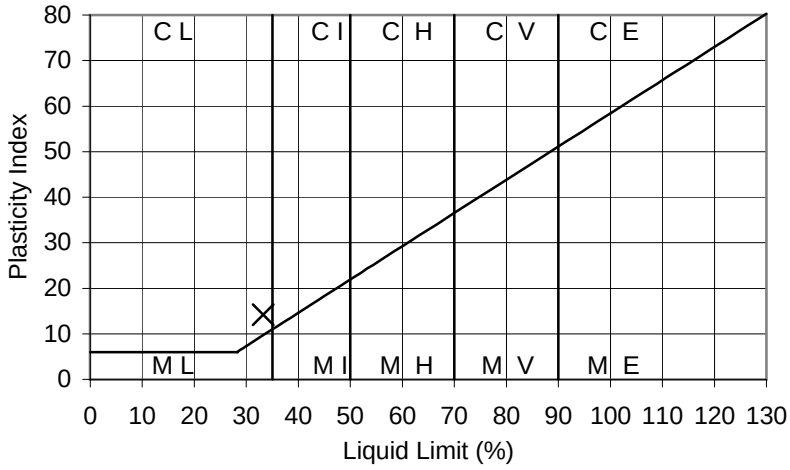
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:06

Version 051 - 08/11/2013
1220 - LLPL Pond 2 02.50 B - B24526-736531.xls : Sample ID 736531

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No. B24526
	Client	Hole ID Pond 2
		Sample Ref
		Depth (m) 2.50-3.00
	Engineer	Sample Type B

Non Engineering Description : Grey very clayey silty SAND with much gravel. Gravel is fine to coarse with one cobble.

Preparation : Sample washed and air dried



Results :

As Received Moisture Content : (BS1377:Part 2:Clause 3:1990)	14	%
Percentage retained on 425µm sieve :	50	%
Liquid Limit :	33	%
Plastic Limit :	19	%
Plasticity Index :	14	
Equivalent moisture content of material passing 425µm sieve :	28	%
Liquidity Index :	0.64	

Originator	Checked & Approved	Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index	Figure 11
IG	S. Langrean 09/07/2020	BS 1377:Part 2:Clause 4.4:1990 BS 1377:Part 2:Clause 5:1990	Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:09

Version 059 - 24/06/2013
1260 - PSD Formation 1 00.50 B - B24526-736523.xls : Sample ID 736523

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Formation 1
		Sample Ref
		Depth (m) 0.50
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	99
20.0 mm	98
14.0 mm	96
10.0 mm	94
6.30 mm	92
5.00 mm	91
3.35 mm	89
2.00 mm	87
1.18 mm	85
600 µm	81
425 µm	79
300 µm	77
212 µm	73
150 µm	70
63 µm	61

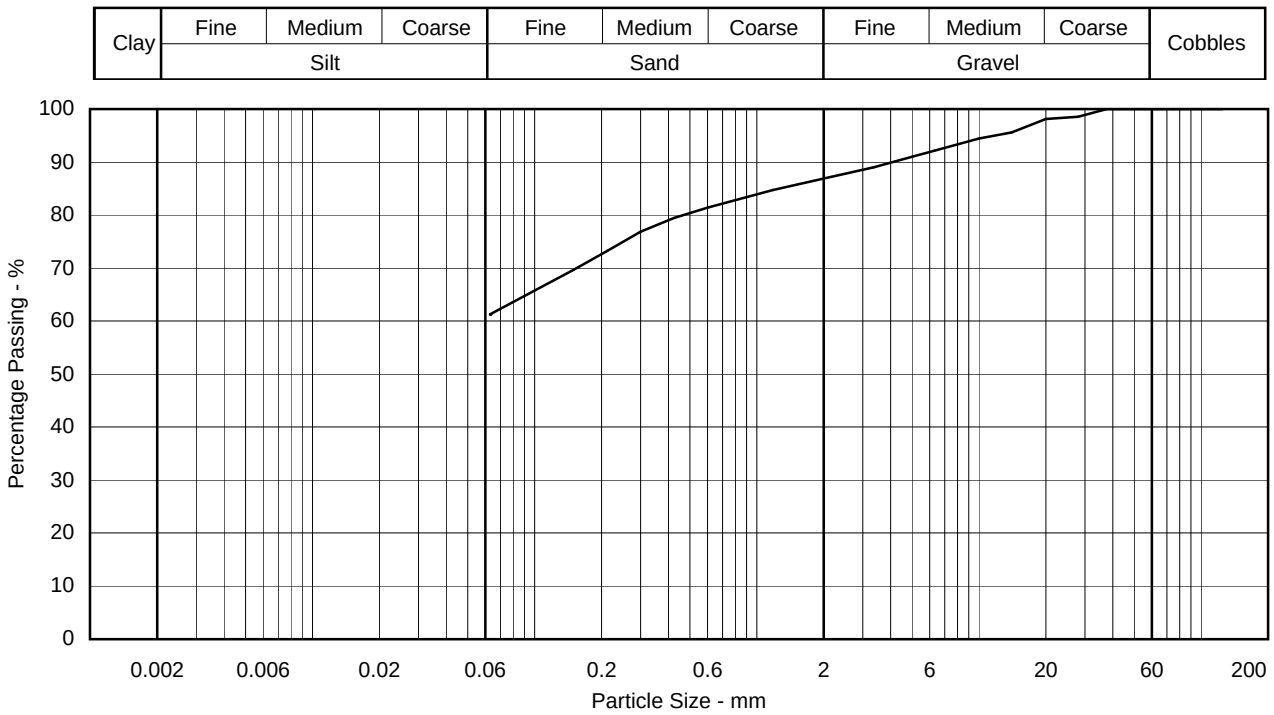
Non Engineering Description

Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Sample Proportions - %	
Cobbles	0.0
Gravel	13.1
Sand	25.6
Silt & Clay	61.3

Particle Diameter - mm	
D100	38
D60	
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 12

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:12

Version 059 - 24/06/2013
1260 - PSD Formation 2 00.36 B - B24526-736524.xls : Sample ID 736524

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Formation 2
		Sample Ref
		Depth (m) 0.36
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	94
63.0 mm	94
50.0 mm	94
37.5 mm	93
28.0 mm	92
20.0 mm	92
14.0 mm	91
10.0 mm	90
6.30 mm	87
5.00 mm	86
3.35 mm	84
2.00 mm	82
1.18 mm	80
600 µm	76
425 µm	73
300 µm	70
212 µm	65
150 µm	60
63 µm	50

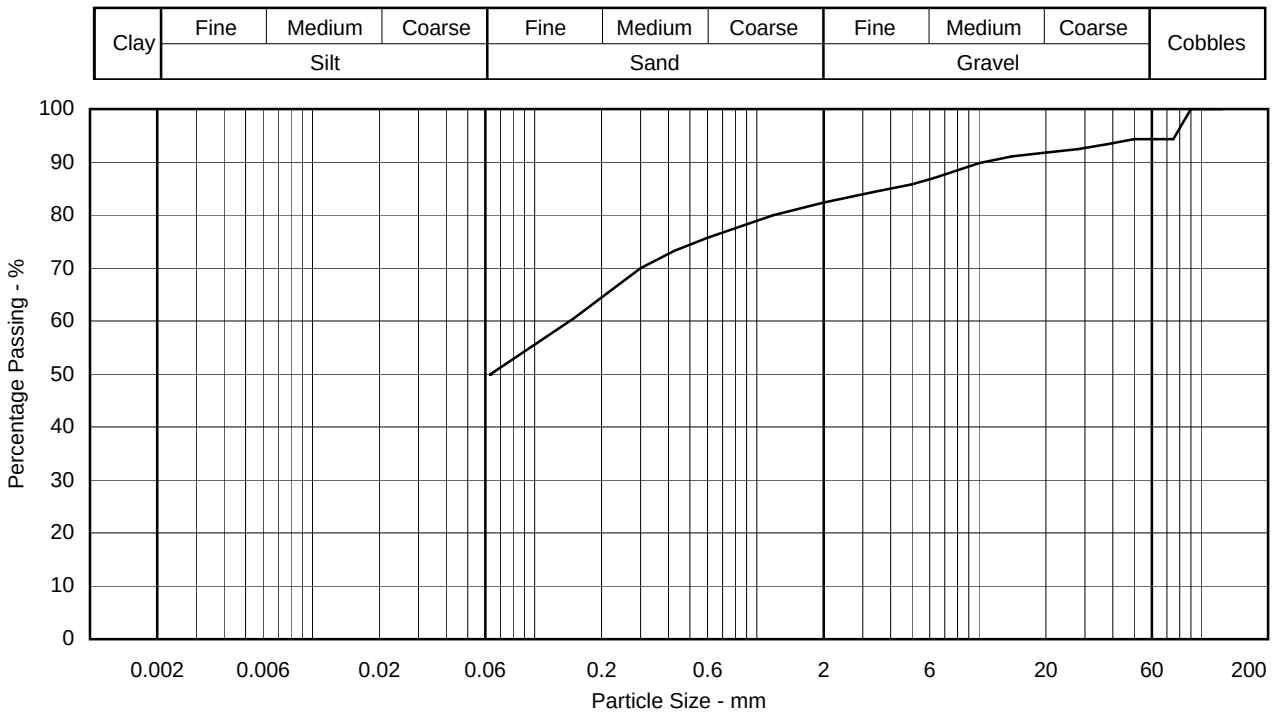
Non Engineering Description

Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse with one cobble.

Sample Proportions - %	
Cobbles	5.7
Gravel	12.0
Sand	32.5
Silt & Clay	49.9

Particle Diameter - mm	
D100	90
D60	0.14
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 13

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:15

Version 059 - 24/06/2013
1260 - PSD Formation 3 00.30 B - B24526-736525.xls : Sample ID 736525

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Formation 3
		Sample Ref
		Depth (m) 0.30
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	98
28.0 mm	97
20.0 mm	95
14.0 mm	93
10.0 mm	90
6.30 mm	86
5.00 mm	84
3.35 mm	82
2.00 mm	80
1.18 mm	78
600 µm	75
425 µm	73
300 µm	70
212 µm	67
150 µm	63
63 µm	54

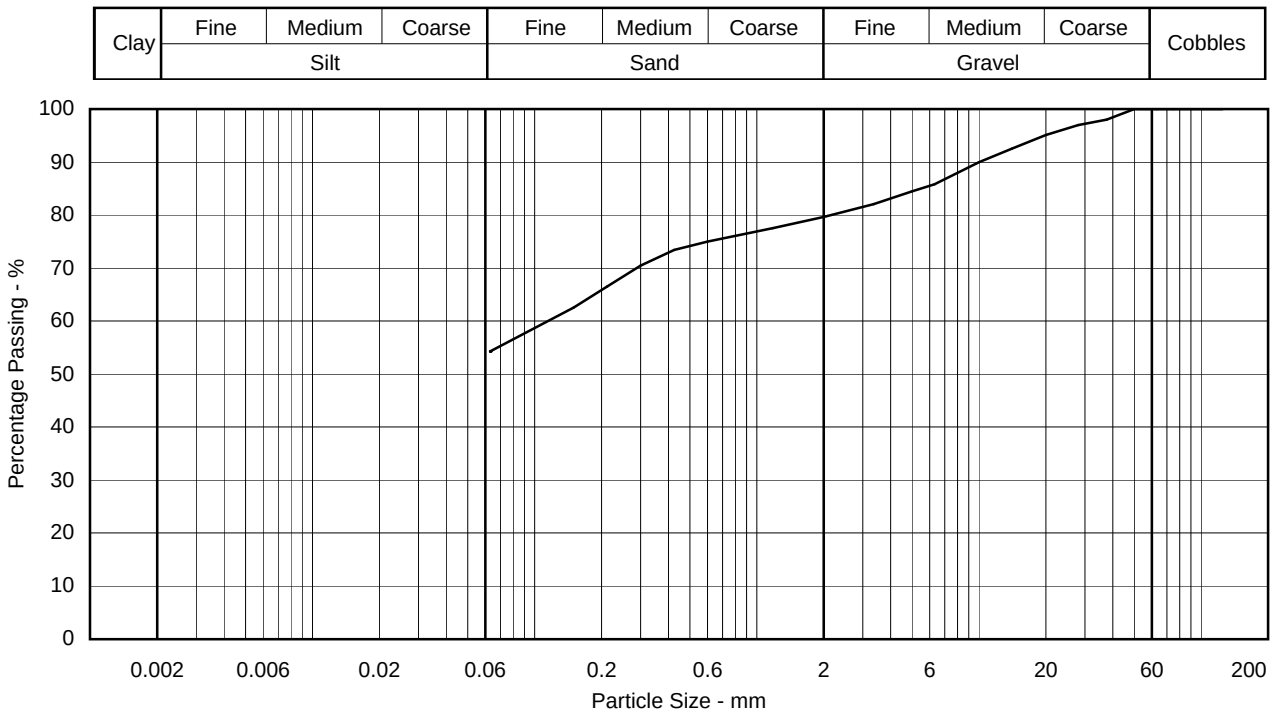
Non Engineering Description

Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Sample Proportions - %	
Cobbles	0.0
Gravel	20.4
Sand	25.4
Silt & Clay	54.3

Particle Diameter - mm	
D100	50
D60	0.12
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 14

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:18

Version 059 - 24/06/2013
1260 - PSD Formation 4 00.50 B - B24526-736526.xls : Sample ID 736526

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Formation 4
		Sample Ref
		Depth (m) 0.50
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	94
63.0 mm	94
50.0 mm	94
37.5 mm	94
28.0 mm	93
20.0 mm	89
14.0 mm	85
10.0 mm	82
6.30 mm	79
5.00 mm	77
3.35 mm	75
2.00 mm	73
1.18 mm	71
600 µm	67
425 µm	65
300 µm	63
212 µm	58
150 µm	53
63 µm	44

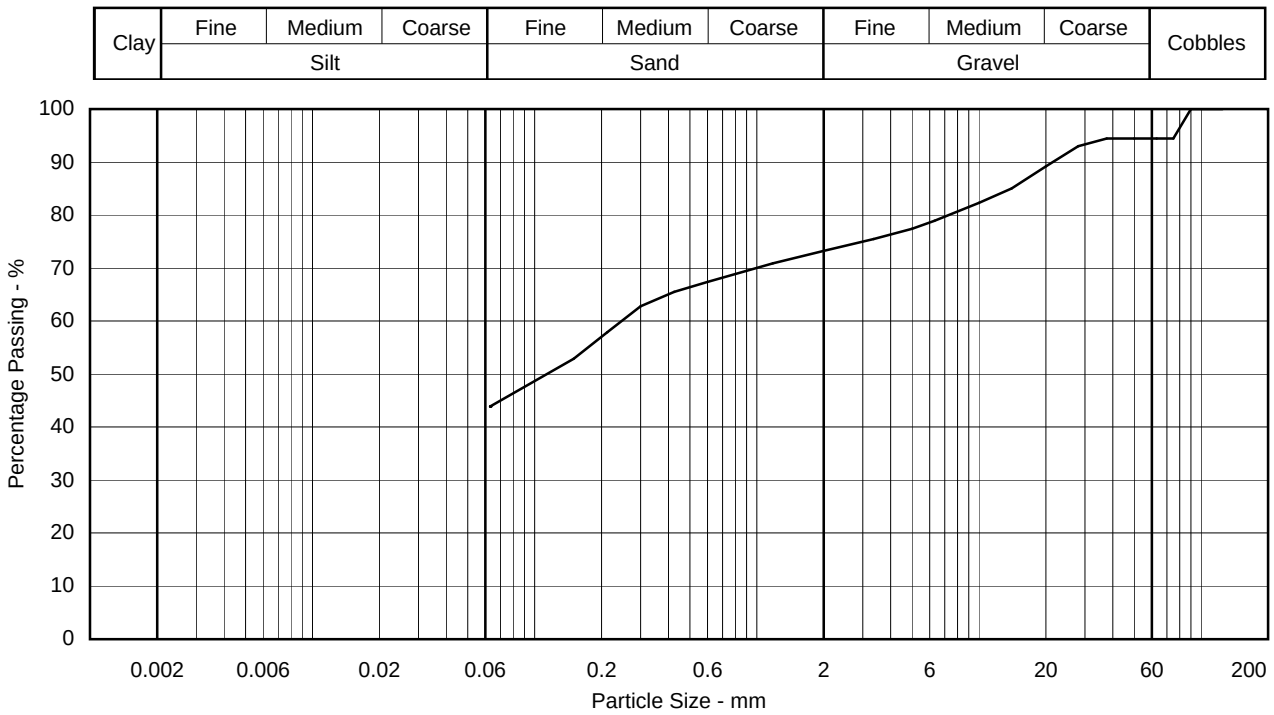
Non Engineering Description

Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse with one cobble.

Sample Proportions - %	
Cobbles	5.6
Gravel	21.2
Sand	29.3
Silt & Clay	43.9

Particle Diameter - mm	
D100	90
D60	0.25
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 15

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:21

Version 059 - 24/06/2013
1260 - PSD Pond 1 01.00 B - B24526-736527.xls : Sample ID 736527

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Pond 1
		Sample Ref
		Depth (m) 1.00-1.50
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	99
20.0 mm	99
14.0 mm	97
10.0 mm	96
6.30 mm	94
5.00 mm	94
3.35 mm	92
2.00 mm	91
1.18 mm	90
600 µm	88
425 µm	86
300 µm	84
212 µm	78
150 µm	73
63 µm	64

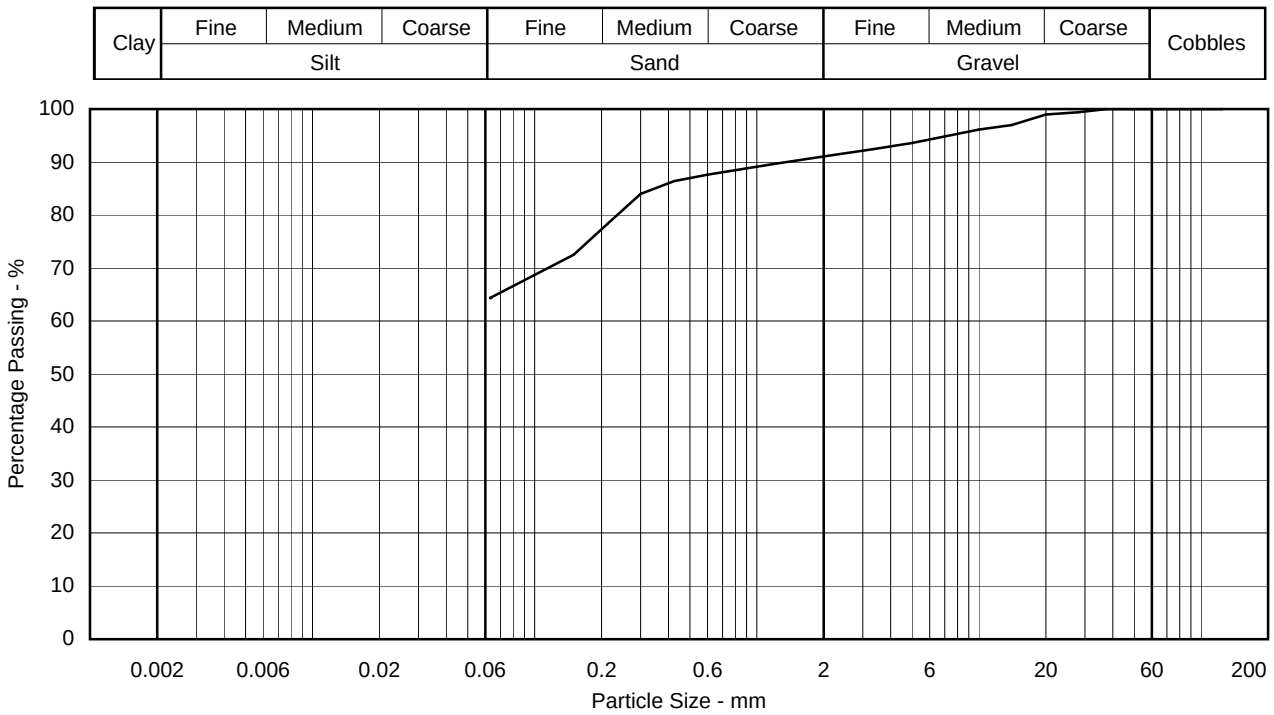
Non Engineering Description

Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Sample Proportions - %	
Cobbles	0.0
Gravel	9.0
Sand	26.7
Silt & Clay	64.4

Particle Diameter - mm	
D100	38
D60	
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 16

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:23

Version 059 - 24/06/2013
1260 - PSD Pond 1 02.50 B - B24526-736573.xls : Sample ID 736573

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Pond 1
		Sample Ref
		Depth (m) 2.50-3.00
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	97
50.0 mm	97
37.5 mm	93
28.0 mm	85
20.0 mm	76
14.0 mm	70
10.0 mm	65
6.30 mm	60
5.00 mm	57
3.35 mm	53
2.00 mm	49
1.18 mm	46
600 µm	42
425 µm	40
300 µm	39
212 µm	36
150 µm	33
63 µm	21

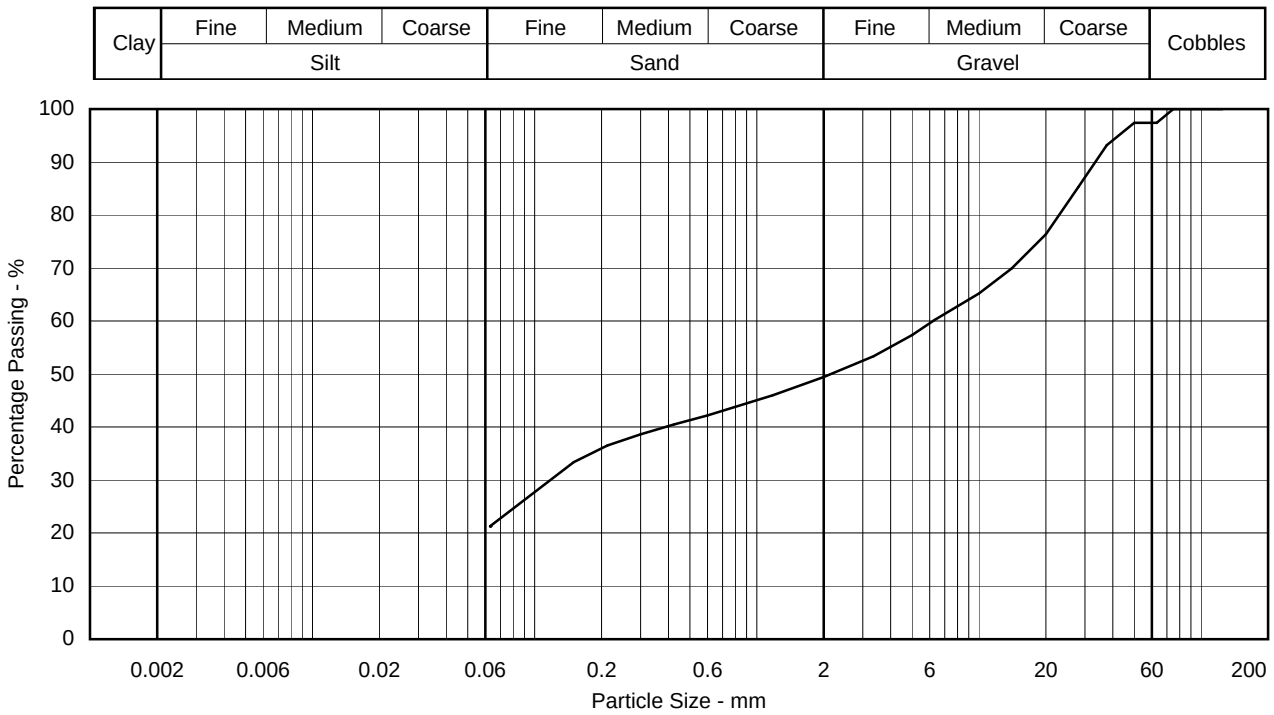
Non Engineering Description

Grey very clayey SAND with much gravel. Gravel is fine to coarse with one cobble.

Sample Proportions - %	
Cobbles	2.6
Gravel	48.0
Sand	28.2
Silt & Clay	21.3

Particle Diameter - mm	
D100	75
D60	6.2
D10	
Uniformity Coefficient	N/A

Notes



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PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 17

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:26

Version 059 - 24/06/2013
1260 - PSD Pond 1 03.00 B - B24526-736528.xls : Sample ID 736528

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Pond 1
		Sample Ref
		Depth (m) 3.00-3.50
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	96
50.0 mm	96
37.5 mm	93
28.0 mm	82
20.0 mm	72
14.0 mm	68
10.0 mm	64
6.30 mm	57
5.00 mm	55
3.35 mm	51
2.00 mm	48
1.18 mm	45
600 µm	42
425 µm	41
300 µm	39
212 µm	37
150 µm	34
63 µm	22

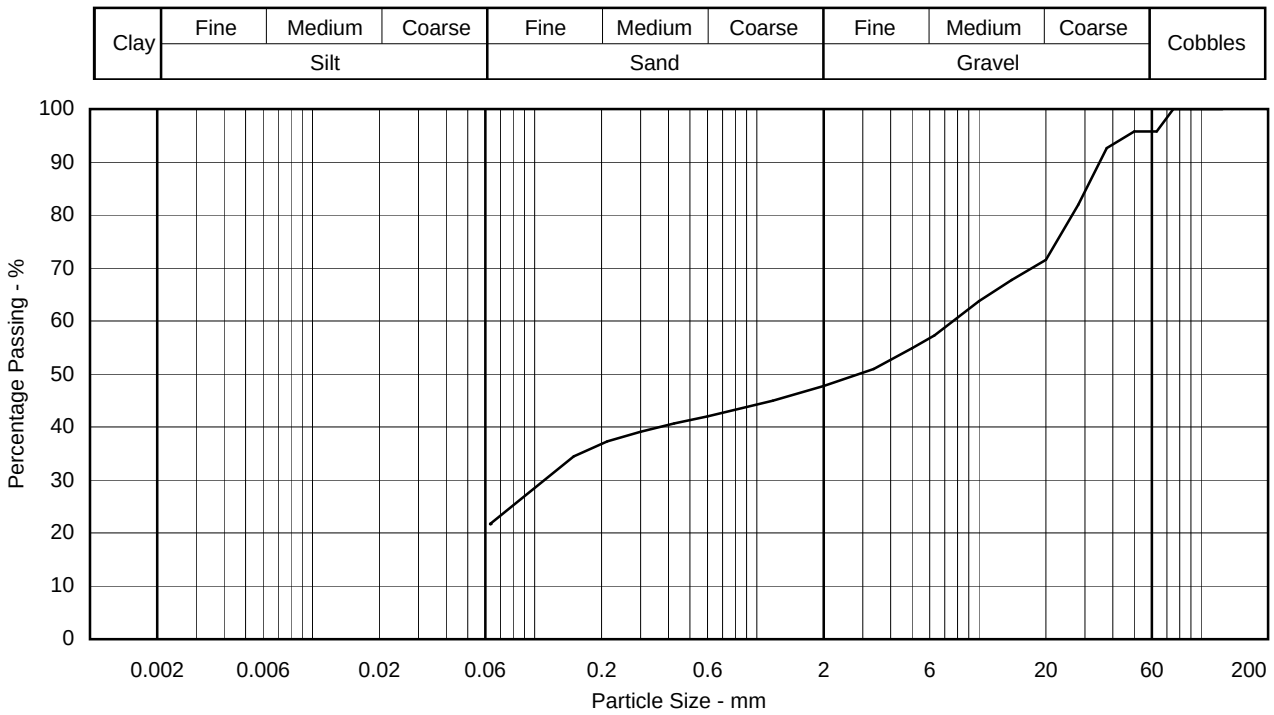
Non Engineering Description

Grey fine to coarse GRAVEL with much very sandy clay and one cobble.

Sample Proportions - %	
Cobbles	4.3
Gravel	48.0
Sand	26.0
Silt & Clay	21.7

Particle Diameter - mm	
D100	75
D60	7.7
D10	
Uniformity Coefficient	N/A

Notes



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TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 18

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:35

Version 059 - 24/06/2013
1260 - PSD Pond 2 00.50 B - B24526-736529.xls : Sample ID 736529

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site	ROCKINGHAM	**Contract No** **B24526**
Client		Hole: Pond 2
Engineer		Sample Ref
		Depth (m): 0.50-1.00
		Sample Type: B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	98
20.0 mm	97
14.0 mm	95
10.0 mm	93
6.30 mm	92
5.00 mm	91
3.35 mm	89
2.00 mm	88
1.18 mm	86
600 µm	83
425 µm	82
300 µm	80
212 µm	77
150 µm	69
63 µm	59

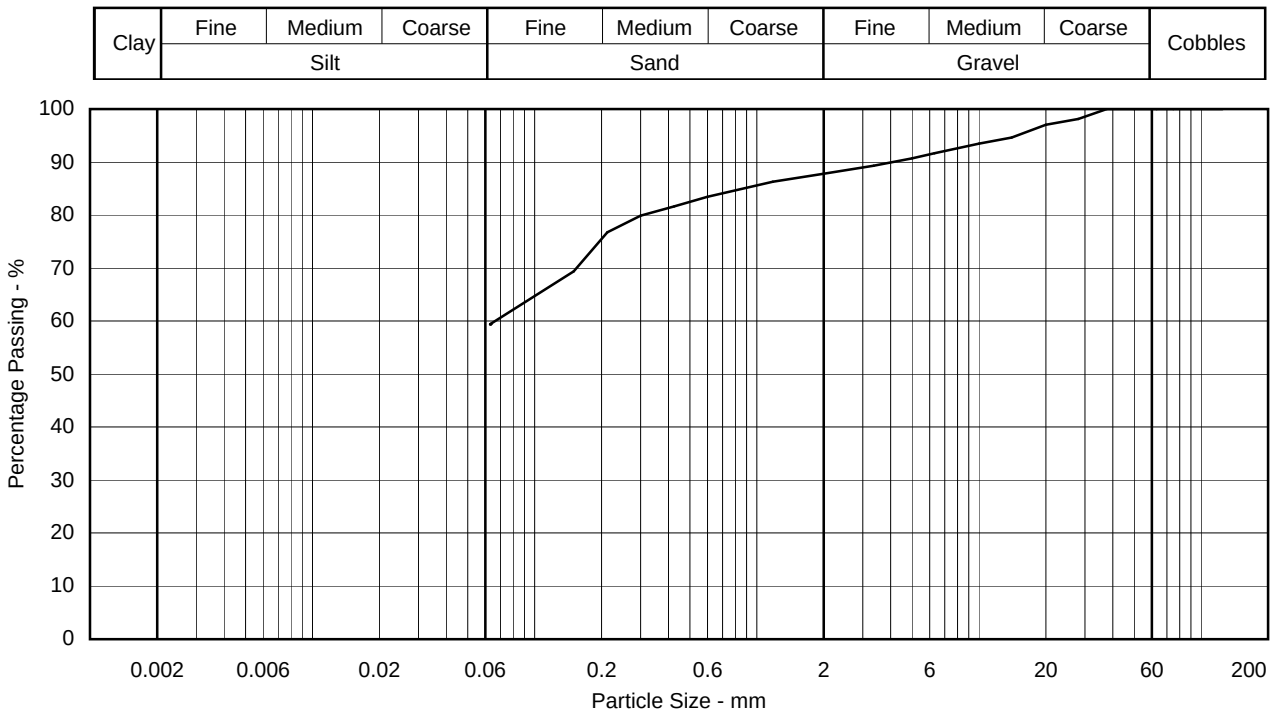
Non Engineering Description

Light brown very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.

Sample Proportions - %	
Cobbles	0.0
Gravel	12.2
Sand	28.4
Silt & Clay	59.4

Particle Diameter - mm	
D100	38
D60	0.067
D10	
Uniformity Coefficient	N/A

Notes



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PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 19

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:38

Version 059 - 24/06/2013
1260 - PSD Pond 2 01.50 B - B24526-736530.xls : Sample ID 736530

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROCKINGHAM		**Contract No** **B24526**
Client		Hole Pond 2
		Sample Ref
		Depth (m) 1.50-2.00
Engineer		Sample Type B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	97
37.5 mm	95
28.0 mm	92
20.0 mm	88
14.0 mm	83
10.0 mm	80
6.30 mm	77
5.00 mm	75
3.35 mm	72
2.00 mm	69
1.18 mm	67
600 µm	64
425 µm	63
300 µm	62
212 µm	60
150 µm	57
63 µm	34

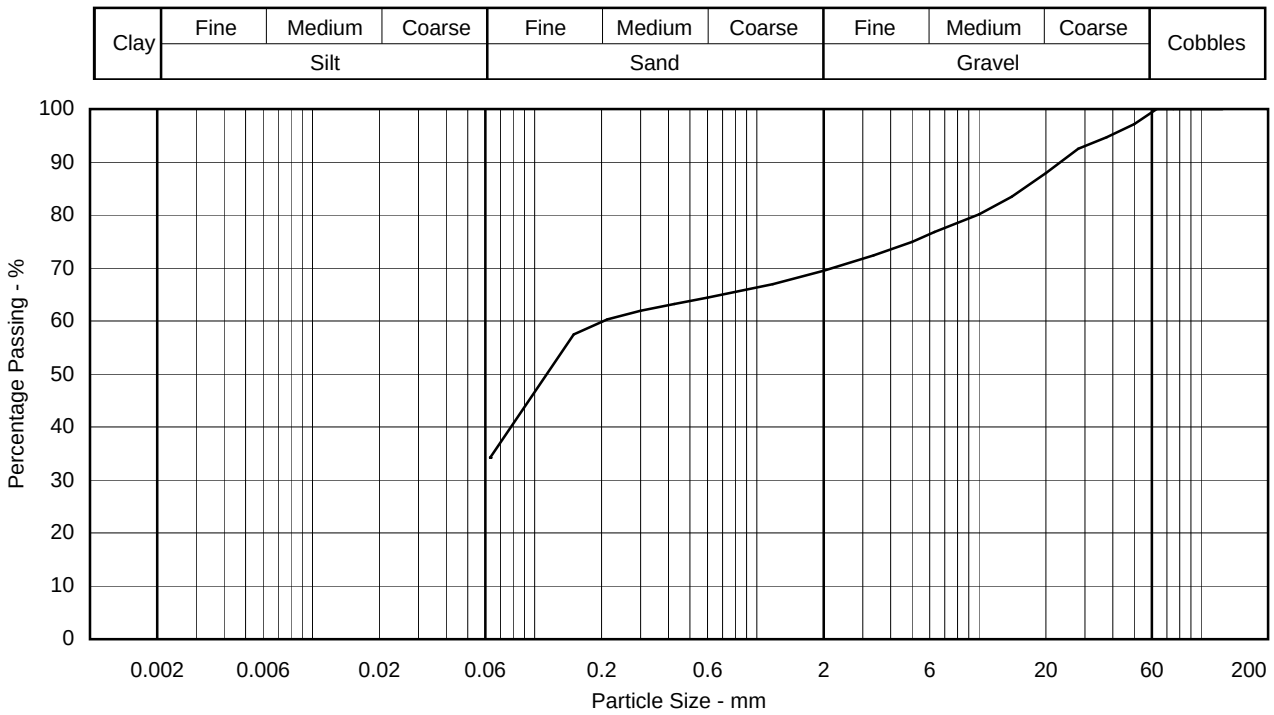
Non Engineering Description

Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse.

Sample Proportions - %	
Cobbles	0.6
Gravel	29.9
Sand	35.2
Silt & Clay	34.2

Particle Diameter - mm	
D100	63
D60	0.20
D10	
Uniformity Coefficient	N/A

Notes



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PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 20

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:41

Version 059 - 24/06/2013
1260 - PSD Pond 2 02.50 B - B24526-736531.xls : Sample ID 736531

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site	ROCKINGHAM	**Contract No** **B24526**
Client		Hole: Pond 2
Engineer		Sample Ref
		Depth (m): 2.50-3.00
		Sample Type: B

Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	97
50.0 mm	97
37.5 mm	92
28.0 mm	86
20.0 mm	80
14.0 mm	75
10.0 mm	72
6.30 mm	67
5.00 mm	65
3.35 mm	62
2.00 mm	59
1.18 mm	55
600 µm	51
425 µm	50
300 µm	48
212 µm	47
150 µm	45
63 µm	28

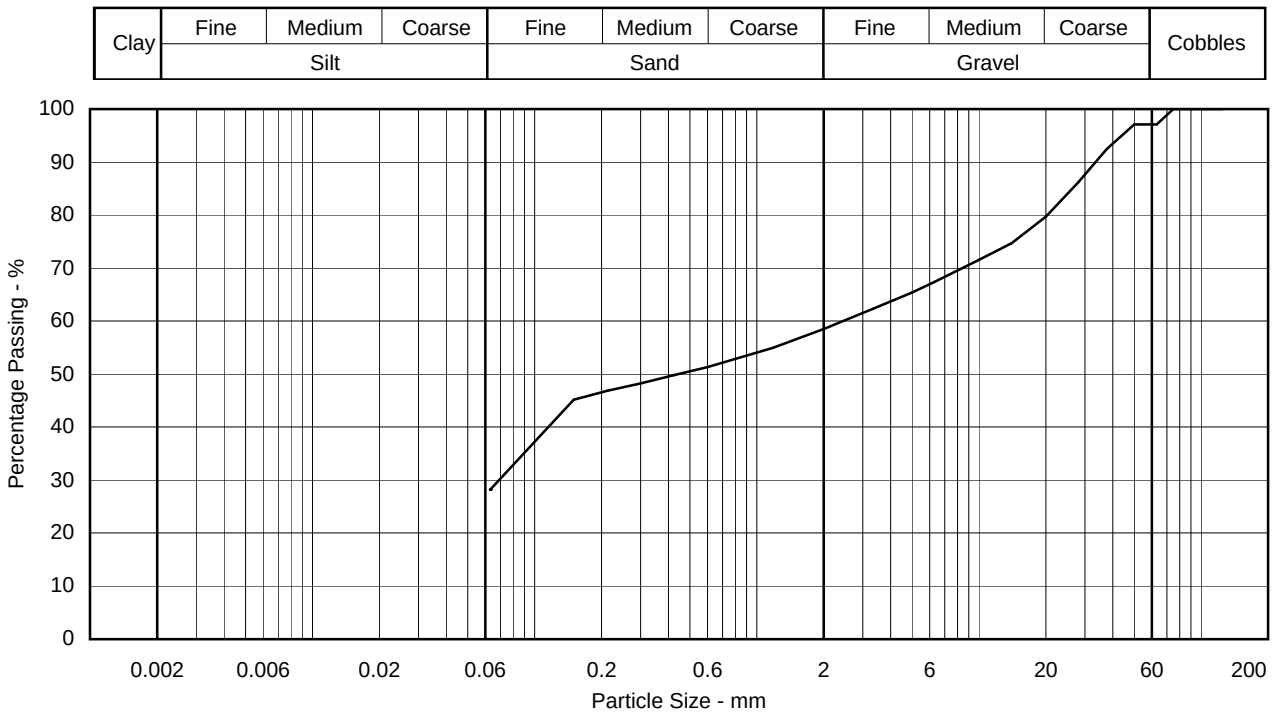
Non Engineering Description

Grey very clayey silty SAND with much gravel. Gravel is fine to coarse with one cobble.

Sample Proportions - %	
Cobbles	2.9
Gravel	38.6
Sand	30.3
Silt & Clay	28.2

Particle Diameter - mm	
D100	75
D60	2.4
D10	
Uniformity Coefficient	N/A

Notes



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TH	S. Langran 09/07/2020

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

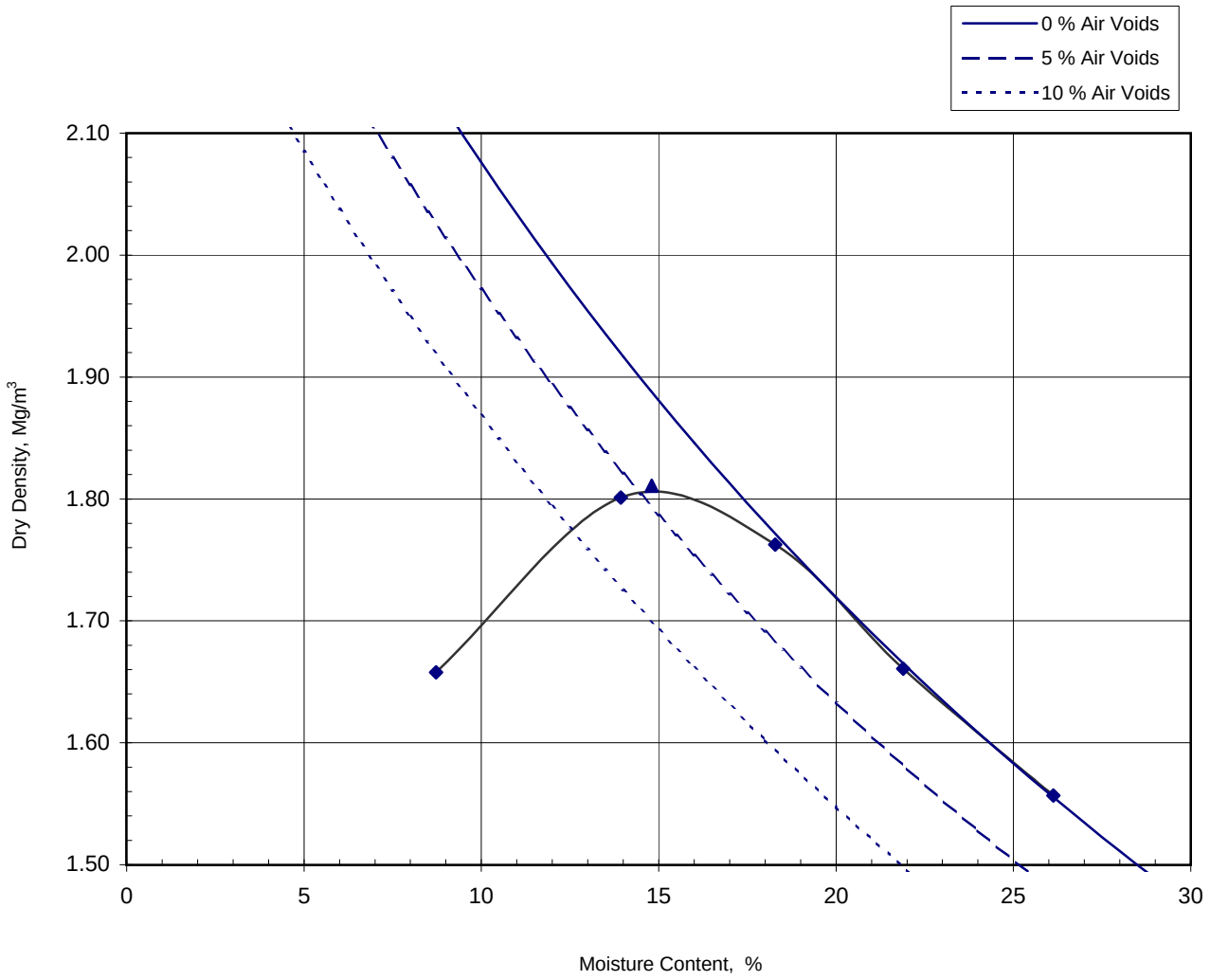
Figure 21

Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:44

Version 019 - 05/09/2013
1410 - Comp Formation 1 00.50 B - B24526-736523.xls : Sample ID 736523

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Formation 1
		Sample Ref
	Engineer	Depth (m) 0.50
		Sample Type B



Non Engineering Description		Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	0
Mass Retained on 20.0 mm Sieve	%	2
Particle Density - Measured	Mg/m³	2.62
Natural Moisture Content	%	18
Maximum Dry Density	Mg/m³	1.81
Optimum Moisture Content	%	14.8

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 22**
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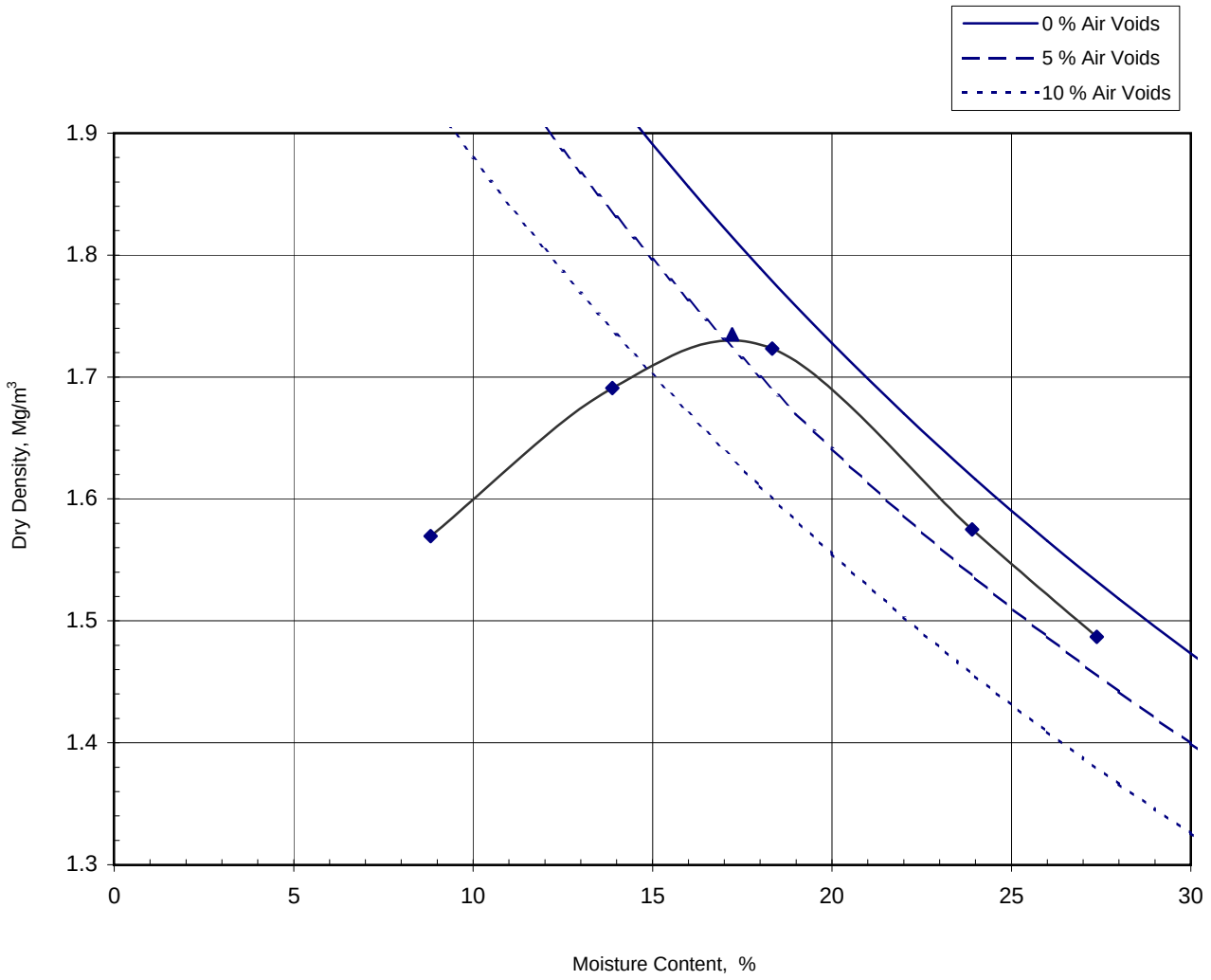
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:47

Version 019 - 05/09/2013
1410 - Comp Formation 2 00.36 B - B24526-736524.xls : Sample ID 736524

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Formation 2
		Sample Ref
		Depth (m) 0.36
	Engineer	Sample Type B



Non Engineering Description		Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse with one cobble.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	7
Mass Retained on 20.0 mm Sieve	%	1
Particle Density - Measured	Mg/m³	2.64
Natural Moisture Content	%	18
Maximum Dry Density	Mg/m³	1.73
Optimum Moisture Content	%	17.2

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 23**
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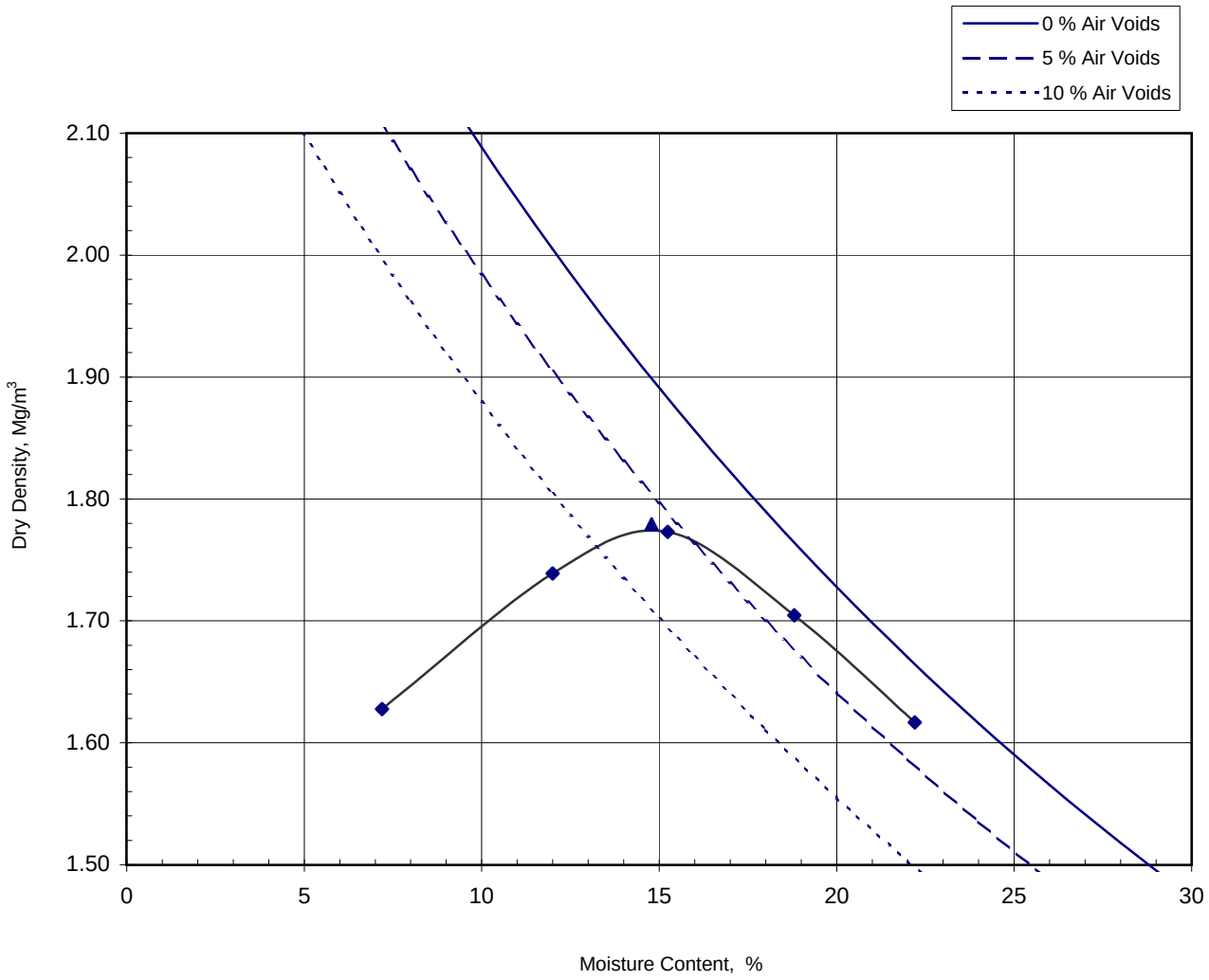
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:55

Version 019 - 05/09/2013
1410 - Comp Formation 3 00.30 B - B24526-736525.xls : Sample ID 736525

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Formation 3
		Sample Ref
	Engineer	Depth (m) 0.30
		Sample Type B



Non Engineering Description		Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	2
Mass Retained on 20.0 mm Sieve	%	3
Particle Density - Measured	Mg/m³	2.64
Natural Moisture Content	%	16
Maximum Dry Density	Mg/m³	1.78
Optimum Moisture Content	%	14.8

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 24**
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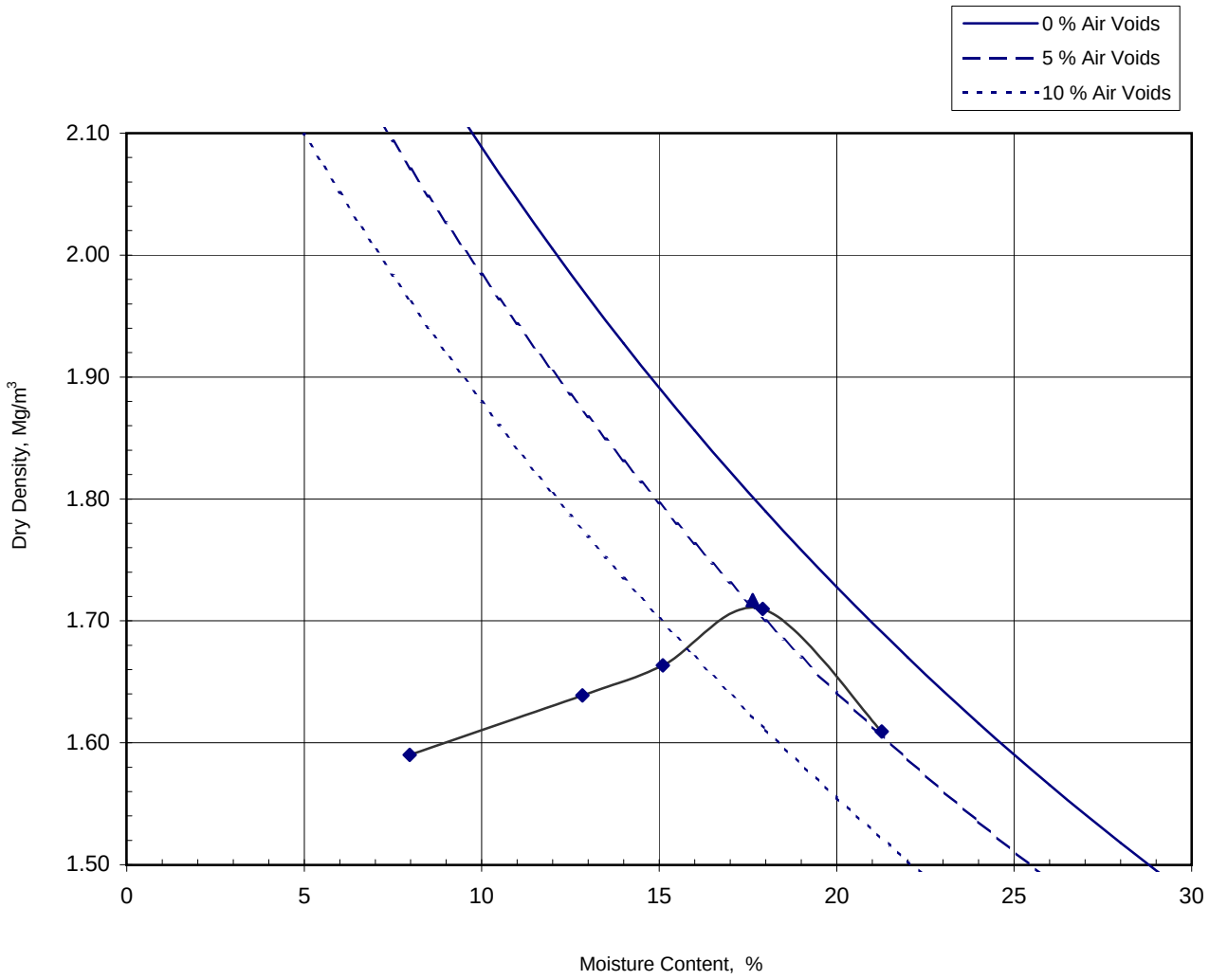
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:09:58

Version 019 - 05/09/2013
1410 - Comp Formation 4 00.50 B - B24526-736526.xls : Sample ID 736526

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Formation 4
		Sample Ref
		Depth (m) 0.50
	Engineer	Sample Type B



Non Engineering Description		Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse with one cobble.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	6
Mass Retained on 20.0 mm Sieve	%	5
Particle Density - Measured	Mg/m³	2.64
Natural Moisture Content	%	17
Maximum Dry Density	Mg/m³	1.72
Optimum Moisture Content	%	17.6

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 25**
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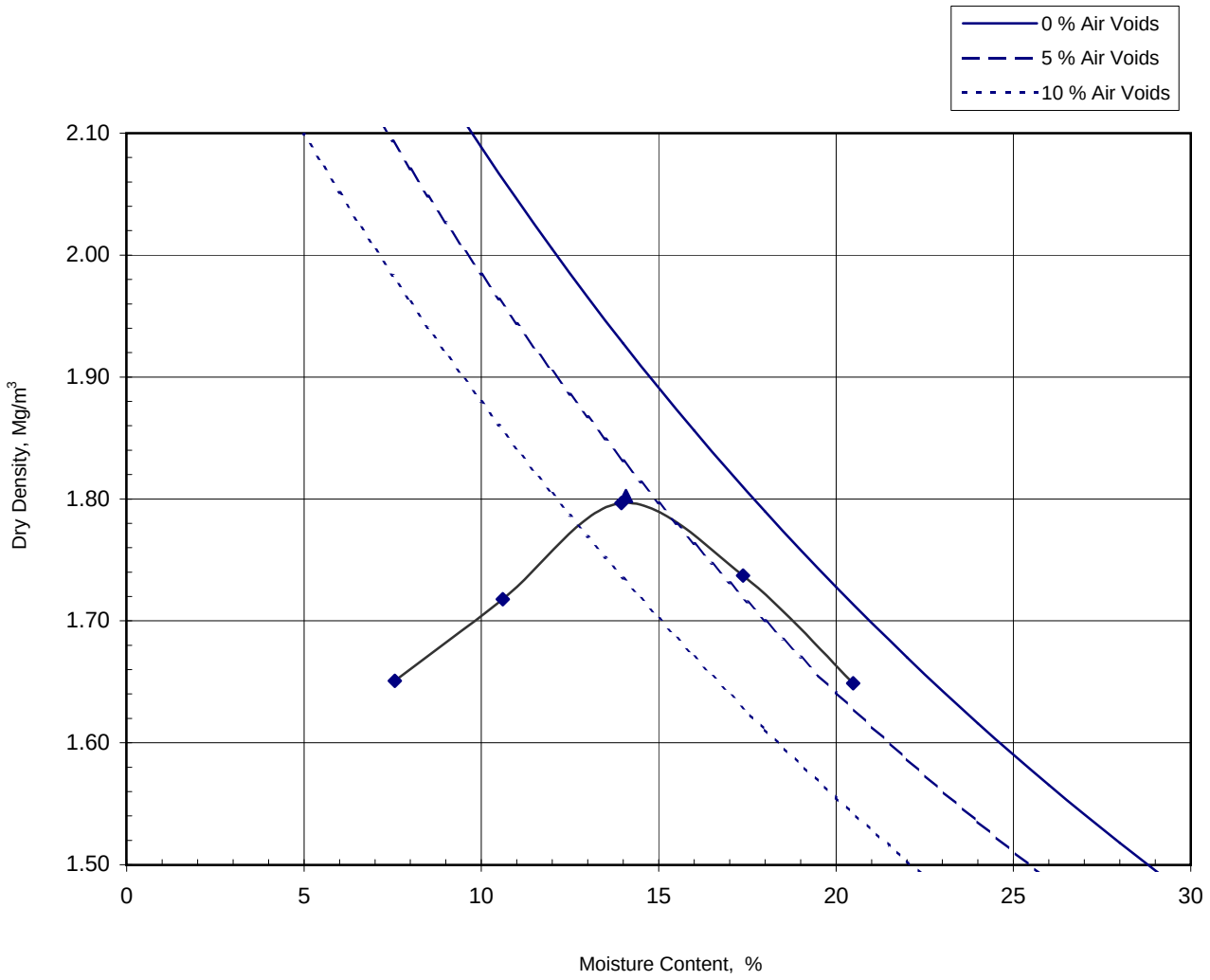
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:00

Version 019 - 05/09/2013
1410 - Comp Pond 1 01.00 B - B24526-736527.xls : Sample ID 736527

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 1
		Sample Ref
	Engineer	Depth (m) 1.00-1.50
		Sample Type B



Non Engineering Description		Grey very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	0
Mass Retained on 20.0 mm Sieve	%	1
Particle Density - Measured	Mg/m³	2.64
Natural Moisture Content	%	17
Maximum Dry Density	Mg/m³	1.80
Optimum Moisture Content	%	14.1

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 26**
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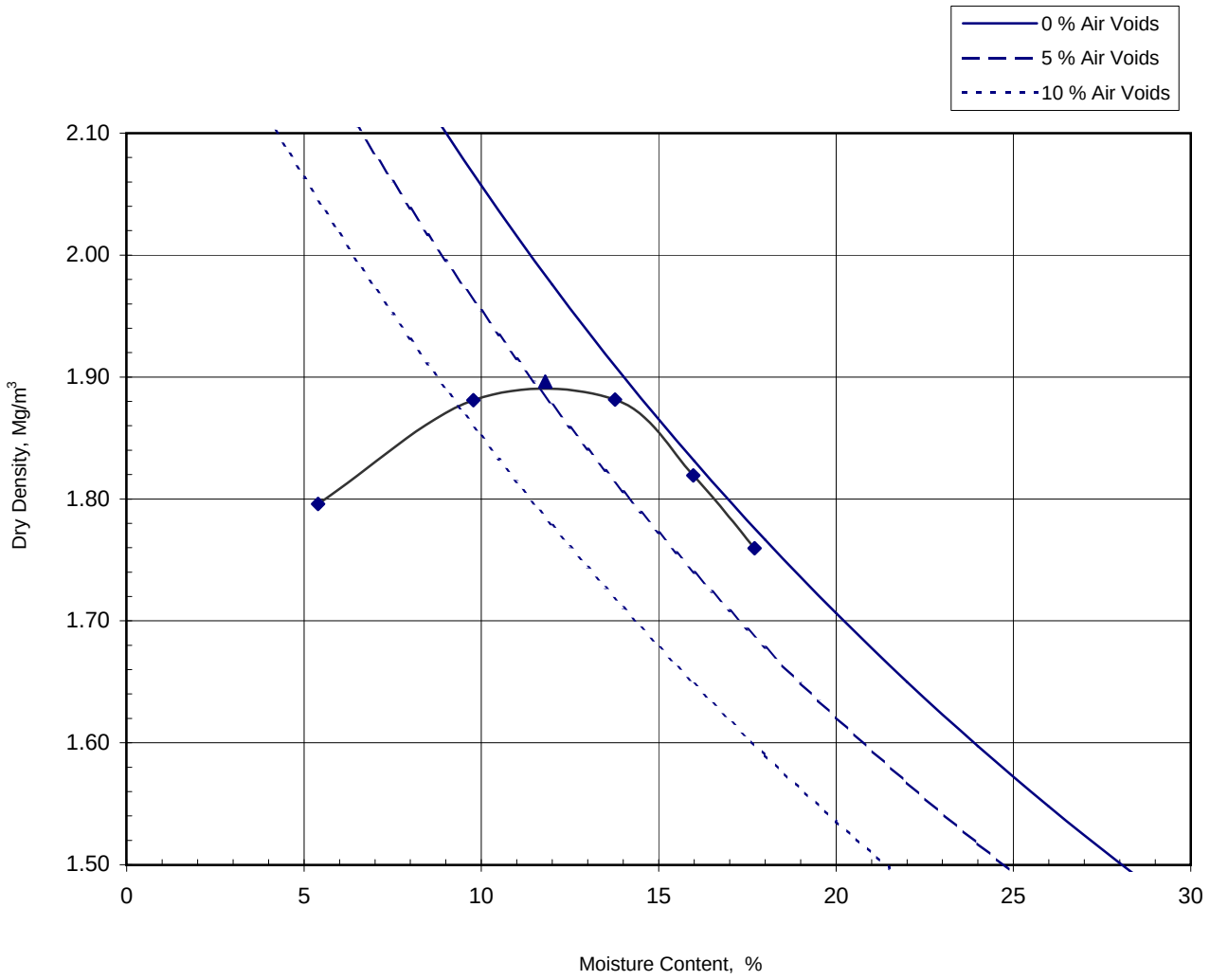
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:04

Version 019 - 05/09/2013
1410 - Comp Pond 1 02.50 B - B24526-736573.xls : Sample ID 736573

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 1
		Sample Ref
	Engineer	Depth (m) 2.50-3.00
		Sample Type B



Non Engineering Description		Grey very clayey SAND with much gravel. Gravel is fine to coarse with one cobble.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	7
Mass Retained on 20.0 mm Sieve	%	17
Particle Density - Measured	Mg/m³	2.59
Natural Moisture Content	%	14
Maximum Dry Density	Mg/m³	1.90
Optimum Moisture Content	%	11.8

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 27**
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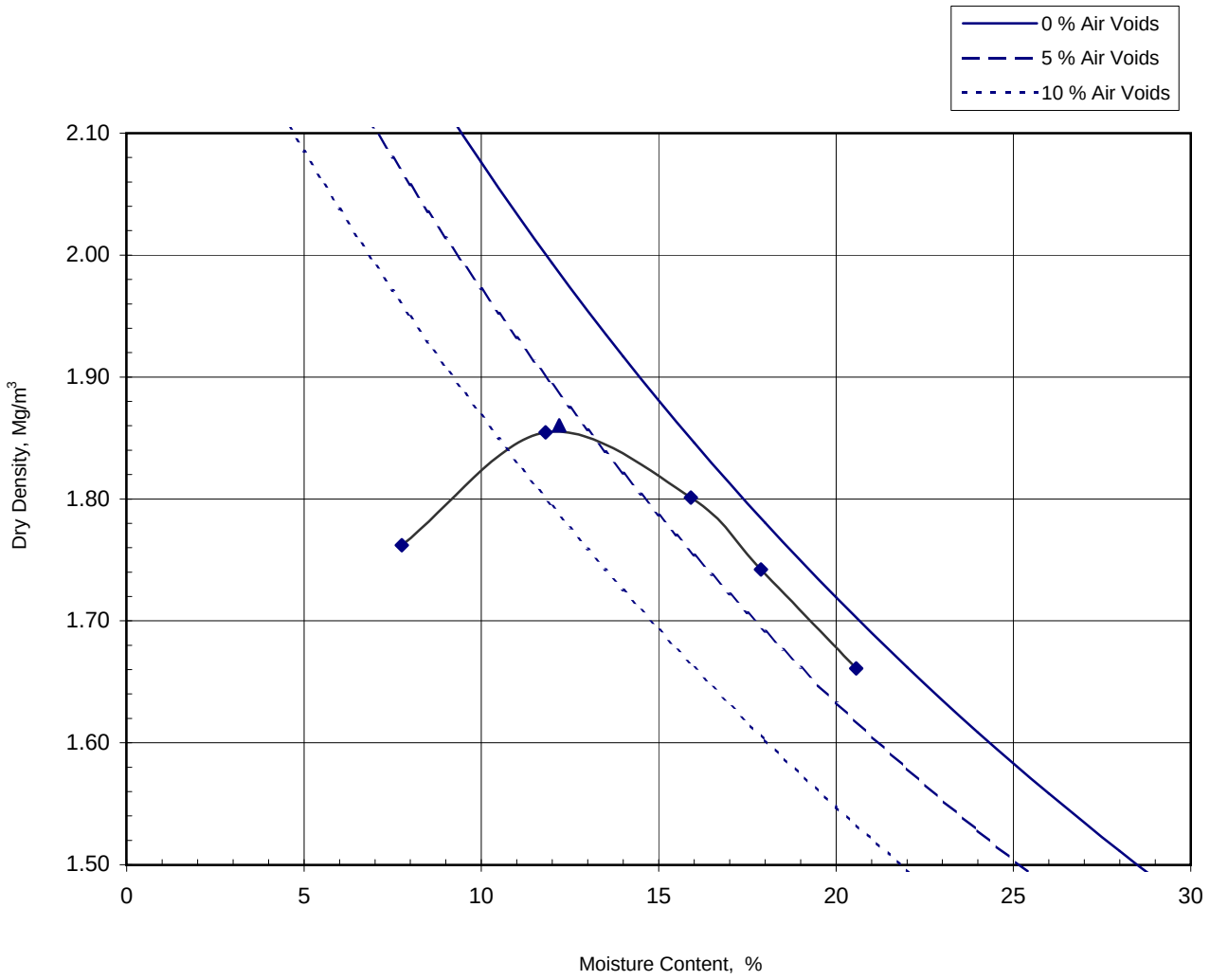
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:06

Version 019 - 05/09/2013
1410 - Comp Pond 1 03.00 B - B24526-736528.xls : Sample ID 736528

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 1
		Sample Ref
	Engineer	Depth (m) 3.00-3.50
		Sample Type B



Non Engineering Description		Grey fine to coarse GRAVEL with much very sandy clay and one cobble.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	7
Mass Retained on 20.0 mm Sieve	%	21
Particle Density - Measured	Mg/m³	2.62
Natural Moisture Content	%	13
Maximum Dry Density	Mg/m³	1.86
Optimum Moisture Content	%	12.2

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 28**
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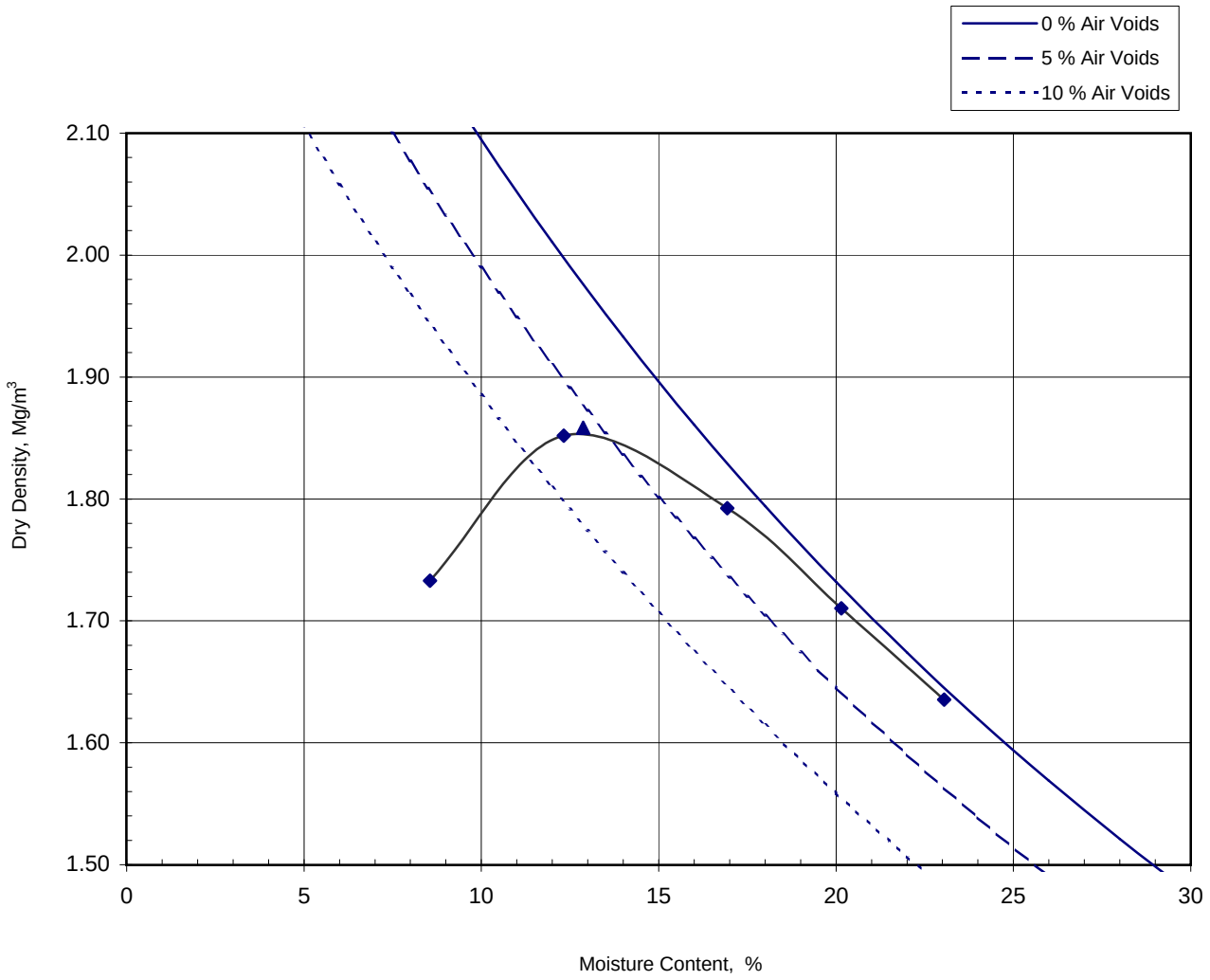
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:09

Version 019 - 05/09/2013
1410 - Comp Pond 2 00.50 B - B24526-736529.xls : Sample ID 736529

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 2
	Engineer	Sample Ref Depth (m) 0.50-1.00 Sample Type B



Non Engineering Description		Light brown very sandy CLAY / SILT with some gravel. Gravel is fine to coarse.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	0
Mass Retained on 20.0 mm Sieve	%	3
Particle Density - Measured	Mg/m³	2.65
Natural Moisture Content	%	16
Maximum Dry Density	Mg/m³	1.86
Optimum Moisture Content	%	12.9

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 29**
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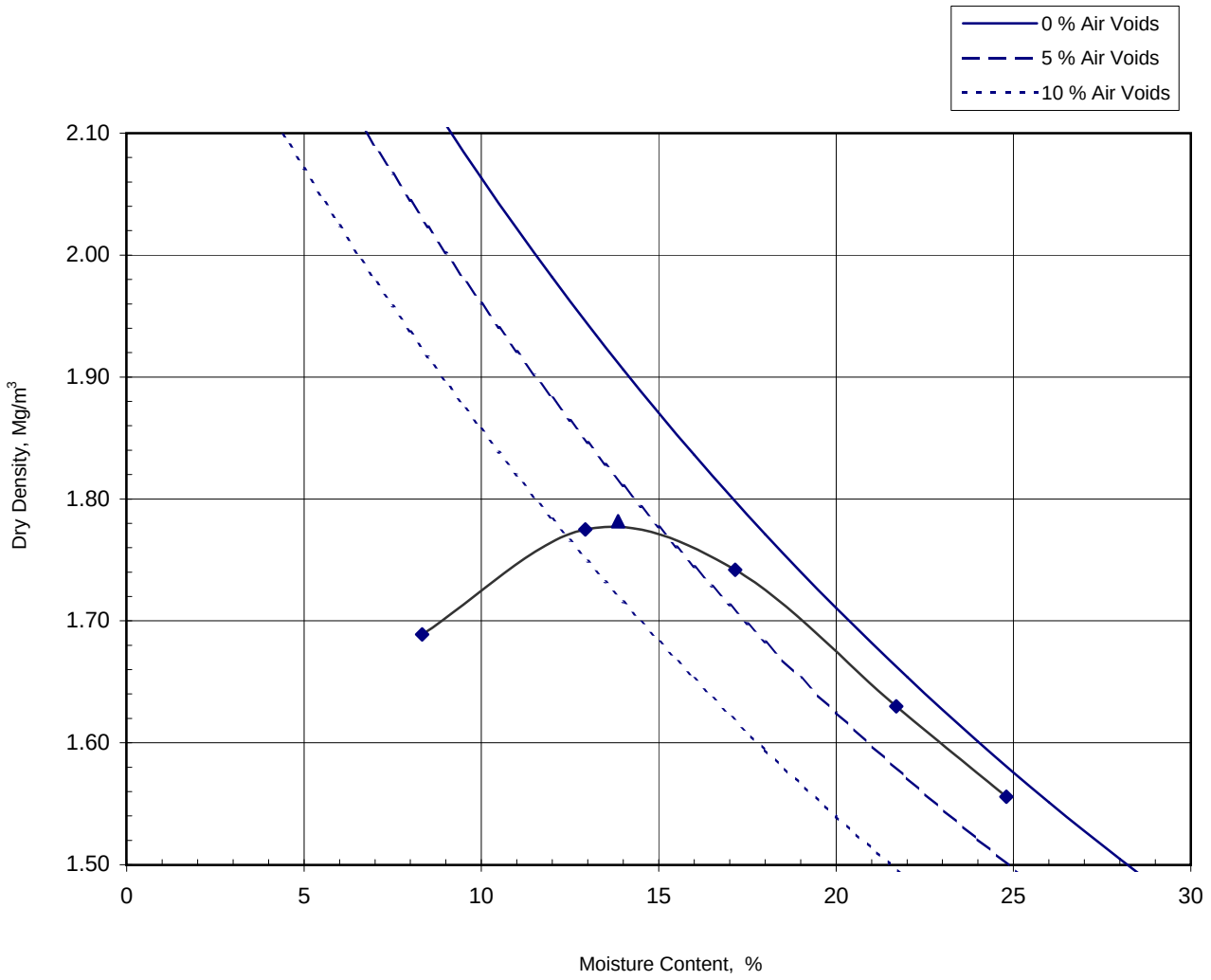
Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:12

Version 019 - 05/09/2013
1410 - Comp Pond 2 01.50 B - B24526-736530.xls : Sample ID 736530

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 2
		Sample Ref
	Engineer	Depth (m) 1.50-2.00
		Sample Type B



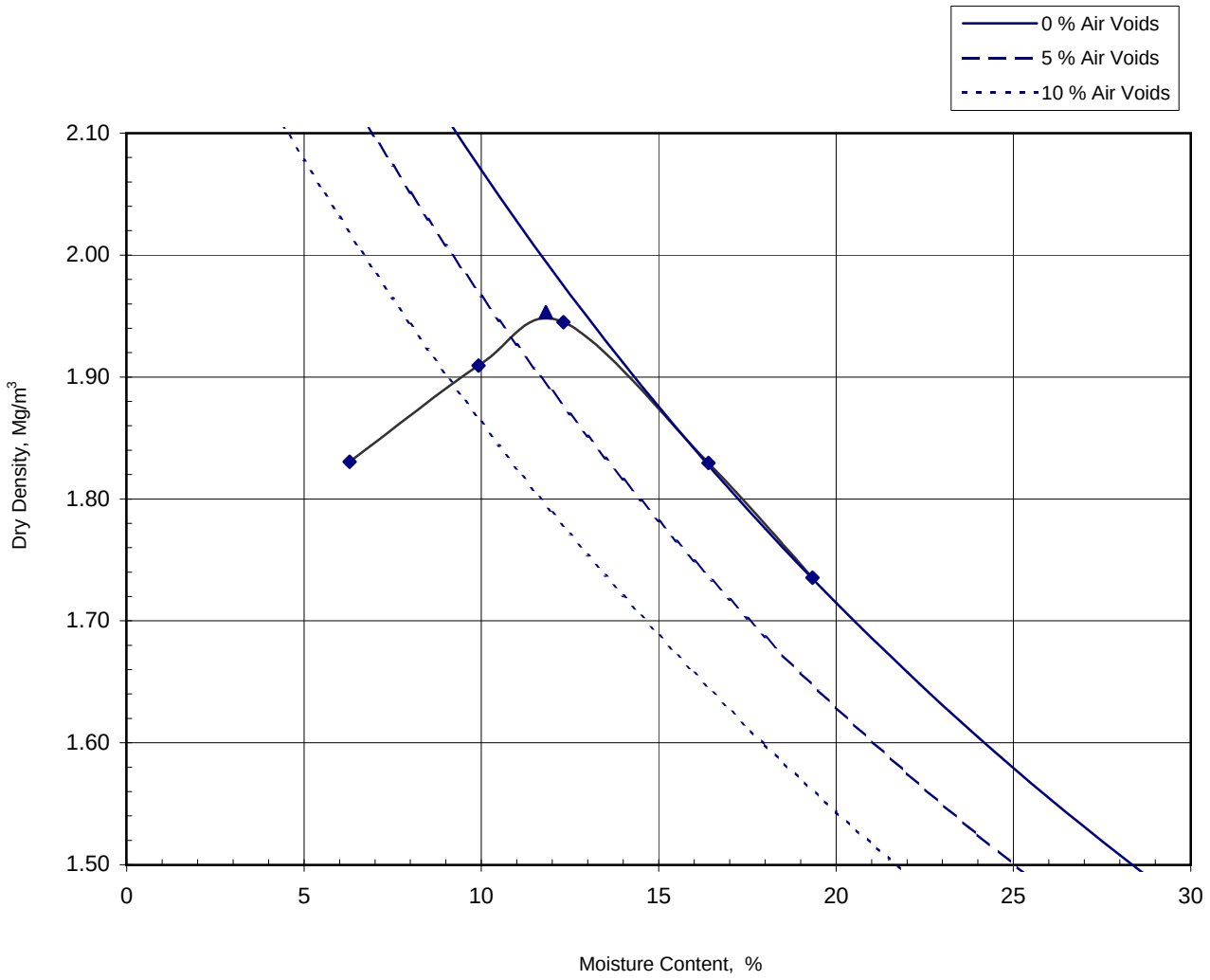
Non Engineering Description		Grey very sandy silty CLAY with much gravel. Gravel is fine to coarse.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	5
Mass Retained on 20.0 mm Sieve	%	7
Particle Density - Measured	Mg/m³	2.60
Natural Moisture Content	%	15
Maximum Dry Density	Mg/m³	1.78
Optimum Moisture Content	%	13.9

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 30**
IG	S. Langran 09/07/2020		Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:15

Version 019 - 05/09/2013
1410 - Comp Pond 2 02.50 B - B24526-736531.xls : Sample ID 736531

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES	Site ROCKINGHAM	Contract No **B24526**
	Client	Hole Pond 2
		Sample Ref
	Engineer	Depth (m) 2.50-3.00
		Sample Type B



Non Engineering Description		Grey very clayey silty SAND with much gravel. Gravel is fine to coarse with one cobble.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	8
Mass Retained on 20.0 mm Sieve	%	12
Particle Density - Measured	Mg/m³	2.61
Natural Moisture Content	%	14
Maximum Dry Density	Mg/m³	1.95
Optimum Moisture Content	%	11.8

Originator	Checked & Approved	**Moisture Content / Dry Density Relationship** BS1377:Part 4:1990 Clause 3.3	**Figure 31**
IG	S. Langran 09/07/2020		Sheet 1 of 1

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B24526 : 09/07/2020 11:10:18

SITE TEST CERTIFICATE

MATtest Southern Limited
materials testing & consultancy

Unit 2 Glover Court
Burymead Road
Hitchin
Herts, SG5 1RT

Tel: 01462 423 040
email: info@mattestsouth.co.uk
Website: www.mattestsouth.co.uk

Certificate No: K20\10773\10.12.20\aa

To: Mick Petch

Client: Core SP - Corby
Rockingham Speedway Stadium
Rockingham
Corby
Northamptonshire, NN17 5AF

Dear sirs,

Summary of Site Testing
Rockingham Speedway Stadium Corby

Date Tested : 04.12.20
Tested By : Simon Jones

Testing / Inspection

Location	1	2	3	4		6					
Site Reference	Car Park	Car Park									
Sampling											
Plate-Incremental											
Plate-CRP											
Plate-CBR	Y	Y									
DCP											
LWD											
Insitu Density - SRD											
Insitu Density - EDG											
Insitu Density - CCC											
Insitu Density - NDM											
Hand Vane											
Trial Pits											

Comments

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4. Opinions and interpretations, if stated, are not within the scope of our UKAS accreditation

Approved For Issue

Date: 10.12.20

M Dicker (Operations Manager)

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Website: www.mattestsouth.co.uk

Certificate No: K20\10773\10.12.20\ac

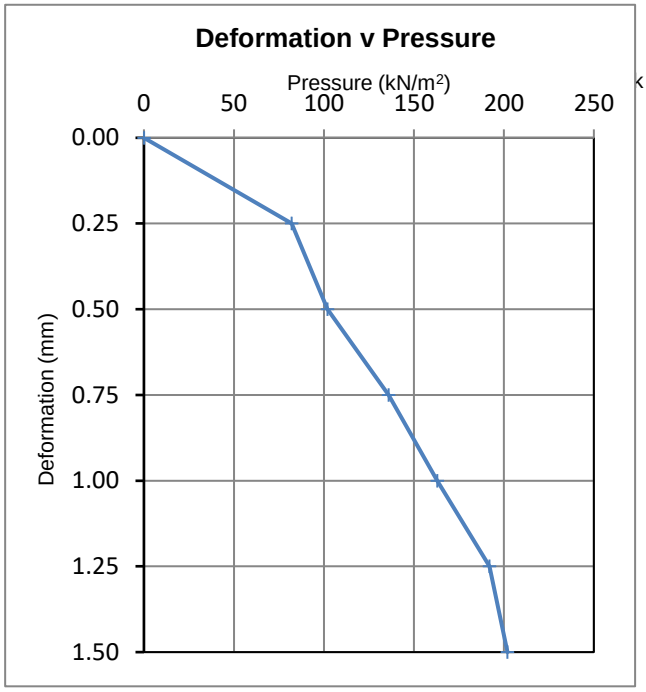
To: Mick Petch

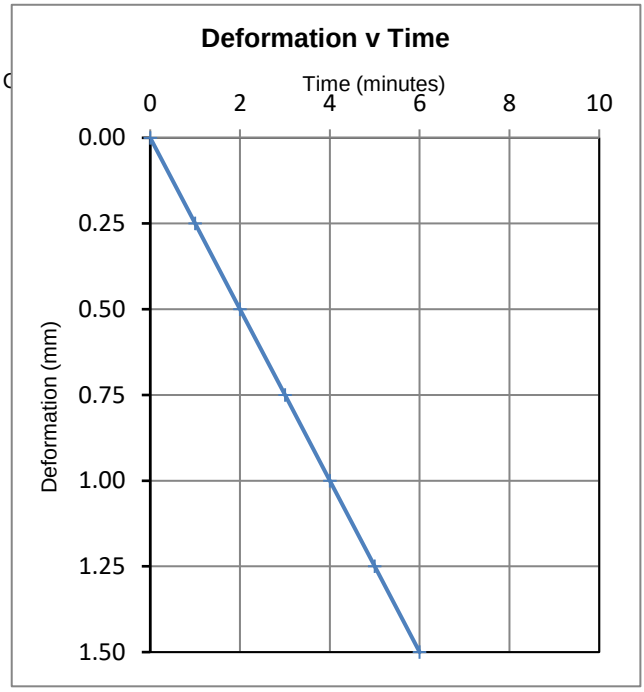
Client: Core SP - Corby
Rockingham Speedway Stadium
Rockingham
Corby
Northamptonshire, NN17 5AF

Dear sirs,

CBR by Plate Loading
BS 1377-9:1990 / IAN 73/06rev1

Project:	Rockingham Speedway Stadium Corby	Date Tested:	04.12.20
Test reference:	car park, e52	Tested By:	Simon Jones
Test depth:	0 mm	Weather:	Rain 2°c
Material:	Type 1	Plate Size:	600 mm
Moisture Content:	n/a %	Reaction Load:	Site Plant
Soil Density:	n/a kg/m^3	Distance of Plate to Reaction Load:	>600 mm





Stage	Load kN/m^2	Deformation mm	Comments
1	82	0.3	
2	102	0.5	
3	136	0.8	
4	163	1.0	
5	192	1.3	
6	202	1.5	

Maximum Load:	202	kN/m^2
Maximum Deformation:	1.5	mm
Load at 1.25mm:	192	kN/m^2
Modulus of Subgrade Reaction:	124	kN/m^2/mm
Equivalent CBR:	40.7	%

Comments:
Formulae for MSR & CBR from IAN73/06rev1
Tested in accordance with BS1377-9:1990; cl 4.1.6.4.1 and IAN73/06rev1

Approved For Issue

Worksheet 17
Revision 2

Date: 10.12.20

M Dicker (Operations Manager)

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Website: www.mattestsouth.co.uk

Certificate No: K20\10773\10.12.20\ac

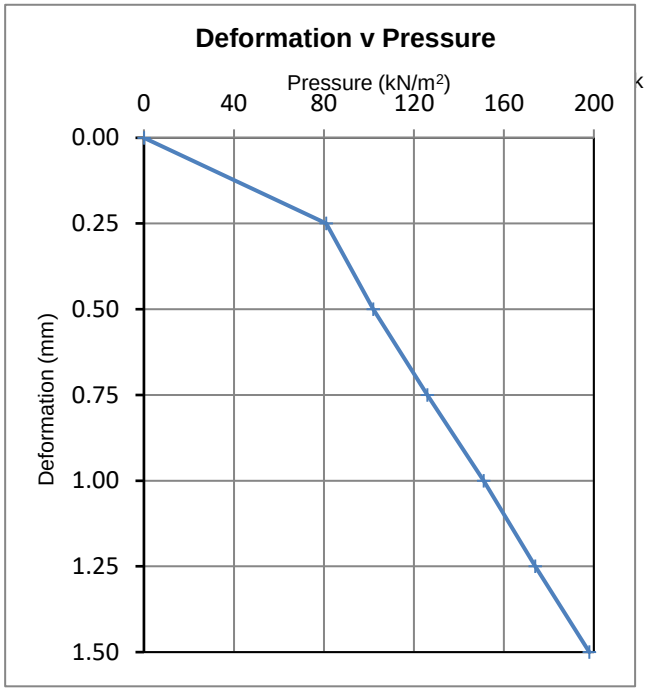
To: Mick Petch

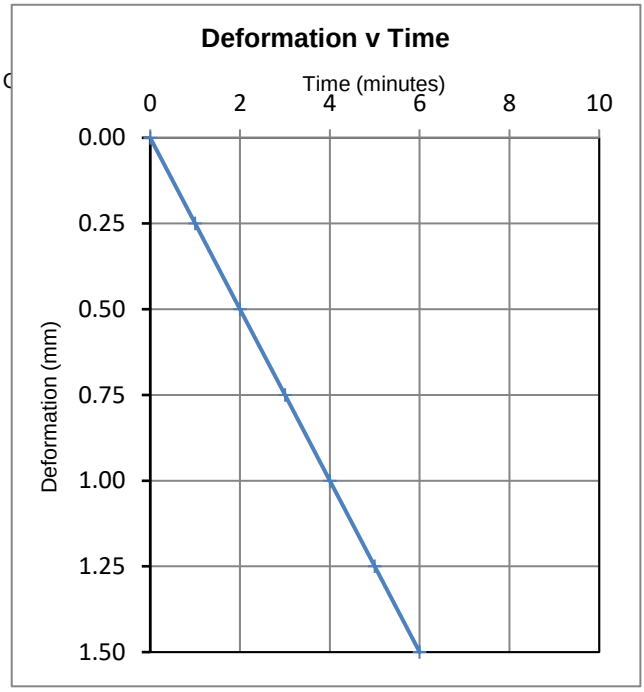
Client: Core SP - Corby
Rockingham Speedway Stadium
Rockingham
Corby
Northamptonshire, NN17 5AF

Dear sirs,

CBR by Plate Loading
BS 1377-9:1990 / IAN 73/06rev1

Project: Rockingham Speedway Stadium Corby
Date Tested: 04.12.20
Test reference: car park, e29
Tested By: Simon Jones
Test depth: 0 mm
Weather: Rain 2°c
Material: Type 1
Plate Size: 600 mm
Moisture Content: n/a %
Reaction Load: Site Plant
Soil Density: n/a kg/m^3
Distance of Plate to Reaction Load: >600 mm





Stage	Load kN/m^2	Deformation mm	Comments
1	81	0.3	
2	102	0.5	
3	126	0.8	
4	151	1.0	
5	174	1.3	
6	198	1.5	

Maximum Load:	198	kN/m^2
Maximum Deformation:	1.5	mm
Load at 1.25mm:	174	kN/m^2
Modulus of Subgrade Reaction:	112	kN/m^2/mm
Equivalent CBR:	34.3	%

Comments:
Formulae for MSR & CBR from IAN73/06rev1
Tested in accordance with BS1377-9:1990; cl 4.1.6.4.1 and IAN73/06rev1

Approved For Issue

Worksheet 17
Revision 2

Date: 10.12.20

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Certificate No: K20\10773\200121\aa

To: Mick Petch

Client: Core SP
Corby

Dear sirs,

Summary of Site Testing
Rockingham Speedway Stadium Corby

Date Tested : 20.01.21
Tested By : Simon Jones

Testing / Inspection

Location	1	2									
Site Reference											
Sampling											
Plate-Incremental											
Plate-CRP											
Plate-CBR	Y	Y									
DCP											
LWD											
Insitu Density - SRD											
Insitu Density - EDG											
Insitu Density - CCC											
Insitu Density - NDM											
Hand Vane											
Trial Pits											

UKAS TESTING 1740

Comments

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Approved For Issue

Date: 25.01.21

M Dicker (Operations Manager)

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Herts, SG5 1RT

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email: info@mattestsouth.co.uk
Website: www.mattestsouth.co.uk

Certificate No: K20\10773\200121\ac

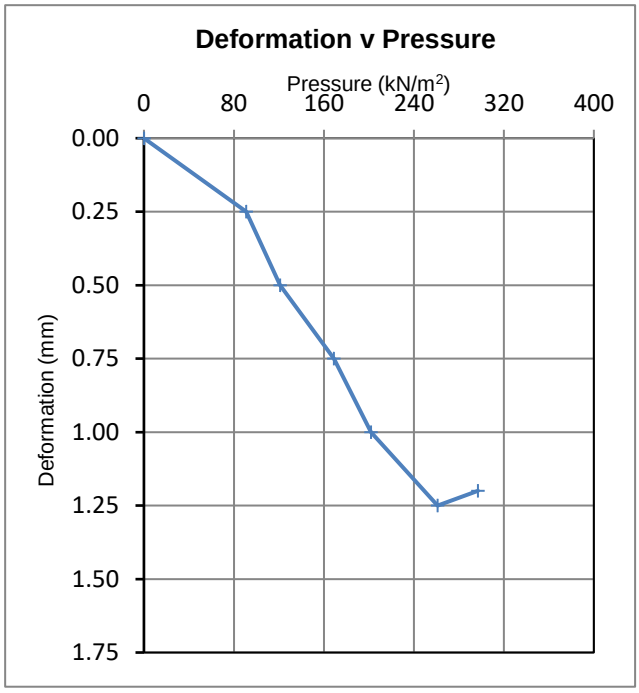
To: Mick Petch

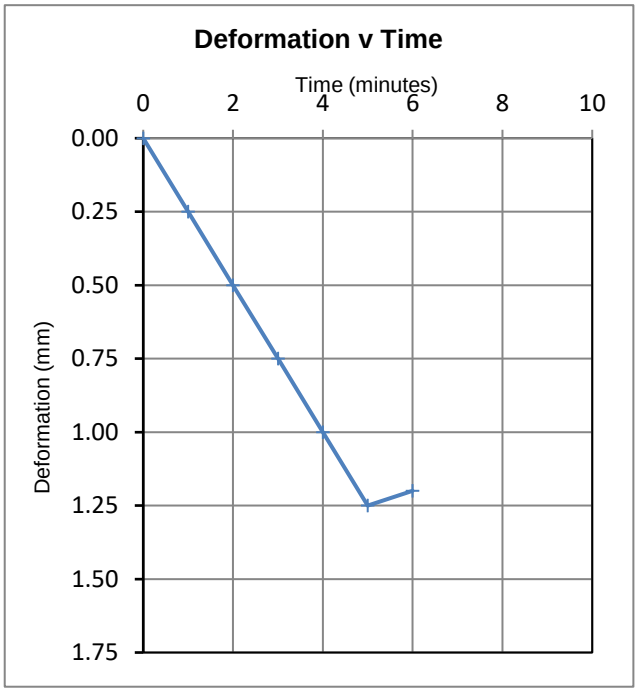
Client: Core SP
Corby

Dear sirs,

CBR by Plate Loading
BS 1377-9:1990 / IAN 73/06rev1

Project: Rockingham Speedway Stadium Corby
Date Tested: 20.01.21
Test reference: north of building, e23
Tested By: Simon Jones
Test depth: 0 mm
Weather: clear 5°c
Material: sandy angular stone
Plate Size: 300 mm
Moisture Content: n/a %
Reaction Load: Site Plant
Soil Density: n/a kg/m^3
Distance of Plate to Reaction Load: >300 mm





Stage	Load kN/m^2	Deformation mm	Comments
1	91	0.25	
2	121	0.50	
3	169	0.75	
4	202	1.00	
5	261	1.25	
6	297	1.20	

Maximum Load:	297	kN/m^2
Maximum Deformation:	1.3	mm
Load at 1.25mm:	261	kN/m^2
Modulus of Subgrade Reaction:	92	kN/m^2/mm
Equivalent CBR:	25	%

Comments:
Formulae for MSR & CBR from IAN73/06rev1
Tested in accordance with BS1377-9:1990; cl 4.1.6.4.1 and IAN73/06rev1

Approved For Issue

Date: 25.01.21

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Website: www.mattestsouth.co.uk

Certificate No: K20\10773\200121\ac

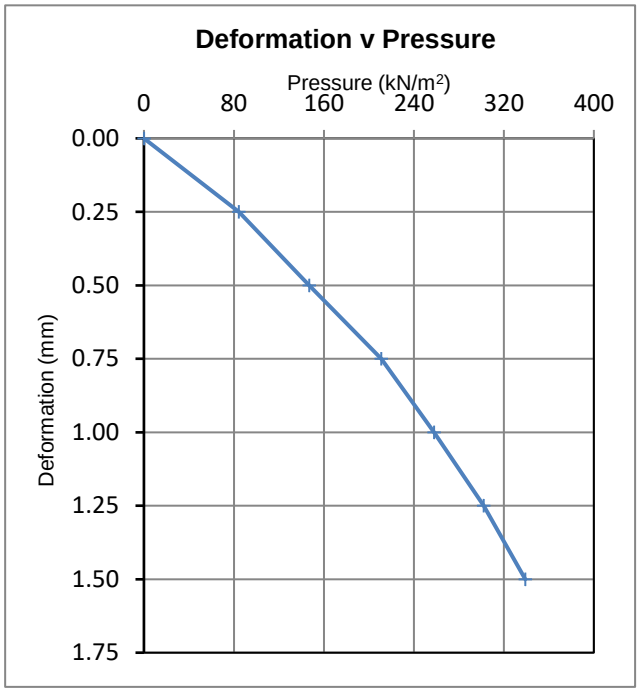
To: Mick Petch

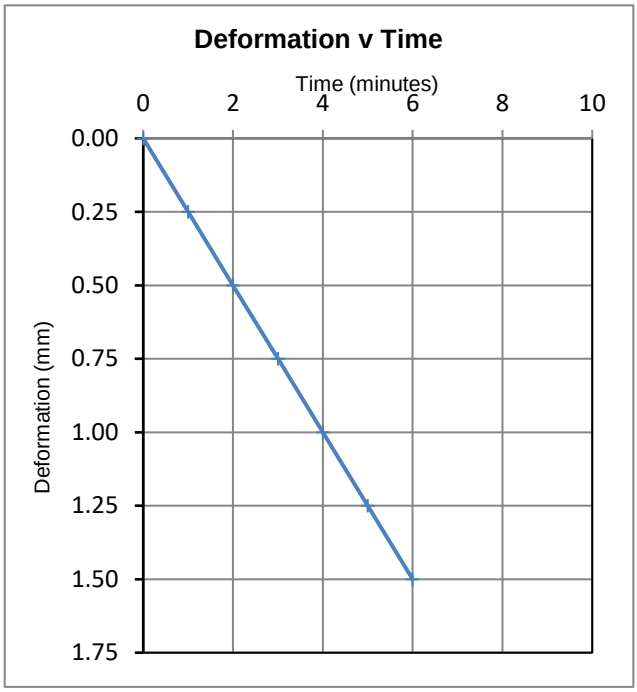
Client: Core SP
Corby

Dear sirs,

CBR by Plate Loading
BS 1377-9:1990 / IAN 73/06rev1

Project: Rockingham Speedway Stadium Corby
Date Tested: 20.01.21
Test reference: north of building, e24
Tested By: Simon Jones
Test depth: 0 mm
Weather: clear 5°c
Material: sandy angular stone
Plate Size: 300 mm
Moisture Content: n/a %
Reaction Load: Site Plant
Soil Density: n/a kg/m^3
Distance of Plate to Reaction Load: >300 mm





Stage	Load kN/m^2	Deformation mm	Comments
1	84	0.25	
2	147	0.50	
3	211	0.75	
4	258	1.00	
5	302	1.25	
6	339	1.50	

Maximum Load:	339	kN/m^2
Maximum Deformation:	1.5	mm
Load at 1.25mm:	302	kN/m^2
Modulus of Subgrade Reaction:	107	kN/m^2/mm
Equivalent CBR:	32	%

Comments:
Formulae for MSR & CBR from IAN73/06rev1
Tested in accordance with BS1377-9:1990; cl 4.1.6.4.1 and IAN73/06rev1

Approved For Issue

Worksheet 17
Revision 2

Date: 25.01.21

M Dicker (Operations Manager)

APPENDIX D

Scott Spencer
Ivy House Environmental Ltd
Scotland Farm
Ockbrook
Derby
DE72 3RX

e: ss@ivyhousenv.co.uk

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

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

Analytical Report Number : 20-24165

Project / Site name:	Rockingham, Corby	**Samples received on:**	11/08/2020
Your job number:	IV.131.20	**Samples instructed on/ Analysis started on:**	11/08/2020
Your order number:		**Analysis completed by:**	18/08/2020
Report Issue Number:	1	**Report issued on:**	18/08/2020
Samples Analysed:	3 soil samples		

Signed:

Joanna Wawrzeczko
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 20-24165
Project / Site name: Rockingham, Corby

Lab Sample Number				1589454	1589455	1589456
Sample Reference				ES1	ES2	ES3
Sample Number				MG Stockpile	MG Stockpile	MG Stockpile
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				07/08/2020	07/08/2020	07/08/2020
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	13	9.9	19
Total mass of sample received	kg	0.001	NONE	0.5	0.4	0.4
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Amosite, Chrysotile- Loose Fibres	Amosite- Loose Fibres	Amosite- Loose Fibres
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Detected	Detected
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	11.8	10.3	9.6
Total Sulphate as SO4	mg/kg	50	MCERTS	12000	6300	7600
Water Soluble SO4 16hr extraction (2:1 Leachate Equivale	g/l	0.00125	MCERTS	0.44	1.8	2.5
Organic Matter	%	0.1	MCERTS	3.9	2.4	2.8
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	9.5	12	22
Acenaphthylene	mg/kg	0.05	MCERTS	3.2	12	2.3
Acenaphthene	mg/kg	0.05	MCERTS	4.9	3.3	1.4
Fluorene	mg/kg	0.05	MCERTS	10	16	7.6
Phenanthrene	mg/kg	0.05	MCERTS	48	47	26
Anthracene	mg/kg	0.05	MCERTS	14	17	5.2
Fluoranthene	mg/kg	0.05	MCERTS	45	46	21
Pyrene	mg/kg	0.05	MCERTS	36	36	17
Benzo(a)anthracene	mg/kg	0.05	MCERTS	18	21	8.8
Chrysene	mg/kg	0.05	MCERTS	13	15	6
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	12	13	5.8
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	8.7	11	3.6
Benzo(a)pyrene	mg/kg	0.05	MCERTS	12	14	5.8
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	5	5.9	2.6
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.4	1.8	0.73
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	5.1	5.7	2.5
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	246	276	138
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	56	28	80
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	2	0.8	4.7
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	200	140	190
Copper (aqua regia extractable)	mg/kg	1	MCERTS	75	34	20
Lead (aqua regia extractable)	mg/kg	1	MCERTS	310	140	930
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	60	32	56
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	3.1	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	220	260	310
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	1500	720	8400
Monoaromatics & Oxygenates						
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 20-24165
Project / Site name: Rockingham, Corby

Lab Sample Number				1589454	1589455	1589456
Sample Reference				ES1	ES2	ES3
Sample Number				MG Stockpile	MG Stockpile	MG Stockpile
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				07/08/2020	07/08/2020	07/08/2020
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	1.7	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	8.2	11	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	69	51	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	310	160	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	390	220	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	11	12	22
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	27	30	27
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	160	160	67
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	110	91	49
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	320	290	170

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

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 20-24165
Project / Site name: Rockingham, Corby

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1589454	ES1	MG Stockpile	None Supplied	Brown loam and clay with gravel and vegetation.
1589455	ES2	MG Stockpile	None Supplied	Brown loam and clay with gravel.
1589456	ES3	MG Stockpile	None Supplied	Brown loam and clay with gravel.

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 20-24165
Project / Site name: Rockingham, Corby

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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APPENDIX E

EXTERNAL AREAS – EARTHWORKS

1. PROPOSAL:

1.0.1 ALL FOREGOING TO BE READ IN CONJUNCTION WITH:

CORE - Minimum Construction Standards

CORE - Quality Plan - Pre-start

CORE - Quality Plan - Construction

Client's - Tender Drawings / Site Plans

Crossfield's - Geotechnical & Geoenvironmental Assessment Report RFS Rev 1

Crossfield's - L03277-CPTs

1.0.2 FURTHER INFORMATION ISSUED AT CONTRACT/CONSTRUCTION STAGE:

Scope & Sequence for works to include method statements, risk assessments etc.

Detailed Programme

Phasing Plans as necessary for project management

Quality Assurance Plan

Construction Impact Assessment as necessary

Testing Plans & Results

2. GENERAL:

The external areas will be stripped of any topsoil, with any existing stone / tarmac materials also being stripped and stockpiled, prior to the parking areas and access roads being cut and filled to the required sub-formation levels.

Where there is any surplus of material / arisings, CORE will stockpile this material in an agreed adjacent area, for future use by others or incorporte this into the works were applicable.

Core will test the existing formation prior to cutting & filling the site to confirm what CBR exists and also undertake further testing after the Cut & Fill at the sub-formation, to provide the actual CBR (Engineer's design currently assumes a CBR >4% at sub-formation in all external pavement designs).

Note: If the CBR at sub-formation <4% CBR direction and instruction must be sort form the Engineer, prior to the placment of Geo-Grid and or Stone layers.

After the site has been proof rolled and tested, Core will remove and replace any soft / unsuitable materials at sub-formation, where this might affect / hinder the placement of the upper granular layers.

At the sub-formation Core propose to provide a mininum CBR >4% CBR (provided the naturally occuring soils and other materials can provide this CBR)

Core will remove and replace any unsuitable materials / soft spots within the sub-formation with suitable alternative materials sourced from within the works, prior to placing the stone fill.

Please Note: Any Geo-environmental issues unearthed during the cut and fill etc. will have to be dealt with as and when they are discovered, in full consultation with the client and engineer.

Based on achieving a mininum CBR = 4% @ sub-formation, Core propose to place the designed depths of stone on top of a specified Tenax Type 2 Geogrid or similar. The stone depths vary dependant upon whether the areas are classified as *"Parking Bays"* or *"Circulation Route"* the depth of stone are as follows:

- *"Parking Bays" – 275mm Type 1 Subbase*
- *"Circulation Route" - 225mm Type 1 Subbase*

All Type 1 will be palced and compacted in accordance with MCHW guidance and will be tested, to achieve >95% compaction.

All pavement design has been undertaken by the Engineer on the basis of a Frost Index for the site being <50 for the area, thereby only requiring an overall pavement construction depth of *350mm* to meet the Frost Index requirements and also based on a traffic load of *2msa* (40 truck movements/day)

To prove adherance to the Engineers specification Core will CBR test the top of the sub-formation and compaction test the top of finished Type 1 formation, proving the required > 4% CBR at sub-formation and 95% Compaction of the Type 1 and any placed bulk fill.

Should further CBR's be required on top of the Type 1, Core can undertake and present these results, but are unable to guarrantee that any prescribed result be met as they only have control over the Sub-formation CBR and Type 1 compaction, with the remaining works being placed in line with the prescribed design / layer construction which under standard MCHW practice would not require testing.

Please refer to *Apendix 6/1* in regard to the rate of testing etc.

3. RESTRICTIONS:

Potential localised environmental hot spots currently unidentified under all external areas the extent of potential hot spots etc. and or other geo-environmental issues will ned to be dealt with as when then arise. .

4. CONSTRUCTION BRIEF/PROPOSAL:

4.0.1 *ADOPTION OF ENGINEERS DESIGN*

Based on an annual frost index for the development area, being 19.4, an overall minimum pavement construction depth of 350mm has been adopted for frost protection.

Based on a requirement of 40 trucks/day all pavement design has been based on 2msa.

Based on an assumed commencing CBR >4% at sub-formation

Design of stone has been based on the above and introduction of a Tenax Type A2 Geo-grid to limit the overall depth of stone.

4.0.2 SUB-FORMATION

- Pr-test sub-formation in shallow fill / cut areas, prior to comemncing earthworks, prove >4% CBR requirement is available/achievable.
- Cut & Fill site to the finished earthworks levels at sub-formation.
- Proof roll sub-formation and or placed layers in 250mm compacted layers.
- Remove and replace any soft spots.
- Test sub-formation, prove >4% CBR requirement achieved and 95% Compaction of any fill layers.
- After proof rolling & or compaction of sub-formation / fill, compaction test sub-formation
    - Shear Vanes - >50kPa
    - Plate Test CBR - > 4%
    - Compaction >95% (assumed 250mm layers placed)
    - Rate of testing as per *Appendix 6/1*

4.0.3 GRANULAR FILL (Type 1)

- Roll out and place Tenax Type A2 Geo-grid (lay with specified laps)
- Place and compact 225mm or 275mm Type 1 (Circulation Routes, Parking Bays respectively)
- After placement & rolling, test top Type 1
    - Compaction = >95% Compaction
    - Additional Testing ***
        - Modulus Stiffness - Plate Test >100mPa (maximum deflection 1.25mm)
        - CBR = >20%CBR
- Rate of testing as per *Appendix 6/1*

5. CONSTRUCTION METHOD:

5.0.1 *GENERAL CONSTRUCTION METHOD – INTERNAL*

- ✓ Check existing CBR in natural - undisturbed areas.
- ✓ Cut / Fill External Areas to finished sub-formation.
- ✓ Proof role & Compact Fill - check soft spots.
- ✓ Remove and replace soft spots.
- ✓ Test sub-formation >4% CBR & >95% Compaction (in fill areas)
- ✓ Place Geo-grid.
- ✓ Place Type 1 Stone
    - o 225mm Type 1 - Circulation Routes.
    - o 275mm Type 1 - Parking Bays.
- ✓ Compact Type 1 Layers.
- ✓ Test top of Type 1.
- ✓ Rate of testing as per *Appendix 6/1*

APPENDIX 6/1

ROCKINGHAM DEVELOPMENT - External Areas - (Rev01)

Earthworks Vol:	24,216 m3	Avg: Assumed Cut/Fill		0.35 m	TREATMENTS	
Cut Area:	62,500 m2	Building Area:	0 m2	B'ld Perimeter + 2m Load Zone	Sub-Formation & Formation >4%CBR / >95% Compaction - Below Parking & Access Routes =	170,000 m2
Fill Area:	62,500 m2	Extension Area:	0 m2	0 m2	Place & Compact 225mm / 275mm of stone Type 1 >100mPa (Pavement) =	125,000 m2
Surface Area:	125,000 m2					
Sub-Formation Layer - base of cut areas @ 250mm	1 No (In-situ)	50,000	m2			
1st Layer of Fill @ 250mm	1 No (layer)	75,000	m2			
2nd Layer of Fill @ 250mm	1 No (In-situ)	45,000	m2			
1 Stone Layer @ 225mm or 275mm	1 No Avg: (Fill)	1 No Final Surface				
Construction Period:	12 Wks	Earthworks @ 1,500m3 / day Stone Import @ 750m3/day				

NOTE: SHORTAGE OF FILL TO BE MADE UP BY USE OF DRAINAGE ARISINGS ETC.

(A)	Pre-Start/On-Going Classification Testing - CORE	TESTING RATE	ITEM	SAMPLE RATE	TESTS TOTAL (No)	RATE / TEST	COST (£)	NOTES	ACCEPTANCE CRITERIA LIMITS NOTE	LOWER	UPPER
1	Grading (U)	500	per m3	1	48	0.00	£0.00	Monitoring/record data	Record Data		
2	PI - Atterbergs Tests	500	per m3	1	48	0.00	£0.00	Monitoring/record data	Record Data		
3	MC	500	per m3	1	48	0.00	£0.00	Monitoring/record data	Record Data		
4	OMC	500	per m3	1	48	0.00	£0.00	Monitoring/record data	Record Data		
5	Geo-enviromental checks	-	per m3	-	-	0.00	-	Monitoring/record data	IF INSTRUCTED		
6	Organic Matter	5,000	per m3	1	5	0.00	£0.00	Monitoring/record data	Potential Action Rq'd	-	2%
	MIX DESIGN CHECKS								NOTE	LOWER	UPPER
7	NOT REQUIRED							NOT REQUIRED			
						TOTAL	£0.00		ACCEPTANCE CRITERIA LIMITS		

(B)	CONSTRUCTION TESTING - CORE	TESTING RATE	ITEM	TEST No / Item-Rate	TESTS TOTAL (No)	RATE / TEST	COST (£)	NOTES	NOTE	LOWER	UPPER
	General Testing Cont'd										
1	MDD - 2.5kg - Based on being 2C	1,000	per m3	1	24	0.00	£0.00	To be undertaken on Fills	Value to be used in detemination of Density		
	Sub-Formation (Prior to Cut & Fill) - Base of Fill Areas (Prior to Fill Placement)										
2	Sub-Formation - HSV - Hand Shear Vane	2,000	per m2	1	19	0.00	£0.00	By appointed UKAS Accredited Test House	HSV	60kPa	-
3	Sub-Formation - CBR - 150mm Plate	2,000	per m2	1	19	0.00	£0.00	By appointed UKAS Accredited Test House	CBR	4%	-
	Formation (After Cut & Fill) - Base of Cut Areas (Prior to Stone Placement)										
4	Sub-Formation - HSV - Hand Shear Vane	1,000	per m2	1	50	0.00	£0.00	By appointed UKAS Accredited Test House	HSV	60kPa	-
5	Sub-Formation - CBR - 150mm Plate	2,000	per m2	1	63	0.00	£0.00	By appointed UKAS Accredited Test House	CBR	4%	-
	Sub-Formation & Formation (After Fill) - Top of Placed Layers										
6	Formation - HSV - Hand Shear Vane	1,000	per m2	1	120	0.00	£0.00	By appointed UKAS Accredited Test House	HSV	60kPa	-
7	Formation - Density (NDM) - On all placed layers (250mm Compacted layers)	500	per m3	1	48	0.00	£0.00	By appointed UKAS Accredited Test House	Compaction	95%	-
8	Formation - CBR - 150mm Plate	2,000	per m2	1	60	0.00	£0.00	By appointed UKAS Accredited Test House	CBR	4%	-
	Stone Placement (Varies 225 & 275mm)										
9	Density (NDM) - On all placed layer	1,000	per m2	1	125	0.00	£0.00	By appointed UKAS Accredited Test House	Density	95%	-
10	Top of Type 1 - (150mm) Plate Test - Modulus Stiffness	1,000	per m2	1	125	0.00	£0.00	By appointed UKAS Accredited Test House	Stiffness	100mPa	-
11	Top of Type 1 - (150mm) Plate Test - CBR	1,000	per m2	1	125	0.00	£0.00	By appointed UKAS Accredited Test House	CBR	20%	-
	General Checks										
12	Attendance on site - Full Days	1	Tech:'s	3	36	0.00	£0.00	By appointed UKAS Accredited Test House			
						TOTAL	£0.00				
					GRAND TOTAL		£0.00				