



Agri Plant Solutions

GROUND IMPROVEMENT STRATEGY

MCL, RED BULK TERMINAL

AGRI PLANT SOLUTIONS LTD

www.agriplantsolutions.com

AGRI PLANT SOLUTIONS
CROSBY GRANGE
THORNTON-LE-MOOR
DL6 3SG

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1. Introduction

Ground conditions play a critical role in the success of civil engineering projects. Weak or compressible soils can lead to excessive settlement, instability, and long-term structural issues. This case study examines the implementation of a ground improvement strategy to enable safe construction using modified site won materials.

1.1 Project Background

Works to improve the stability and strength capabilities were requested, to be carried out on an area of land within Redcar Bulk Terminal. The project involved the remediation and redevelopment of a disused dockland to create functional work environments for loading and unloading as well as bulk storage for significant quantities of imported material. The site had historically functioned as an active dock facility supporting maritime trade, cargo handling, and industrial activities, however, the site remained largely abandoned, with minimal maintenance. As a result, both the ground conditions and existing infrastructure deteriorated significantly.

1.2 Project Aims

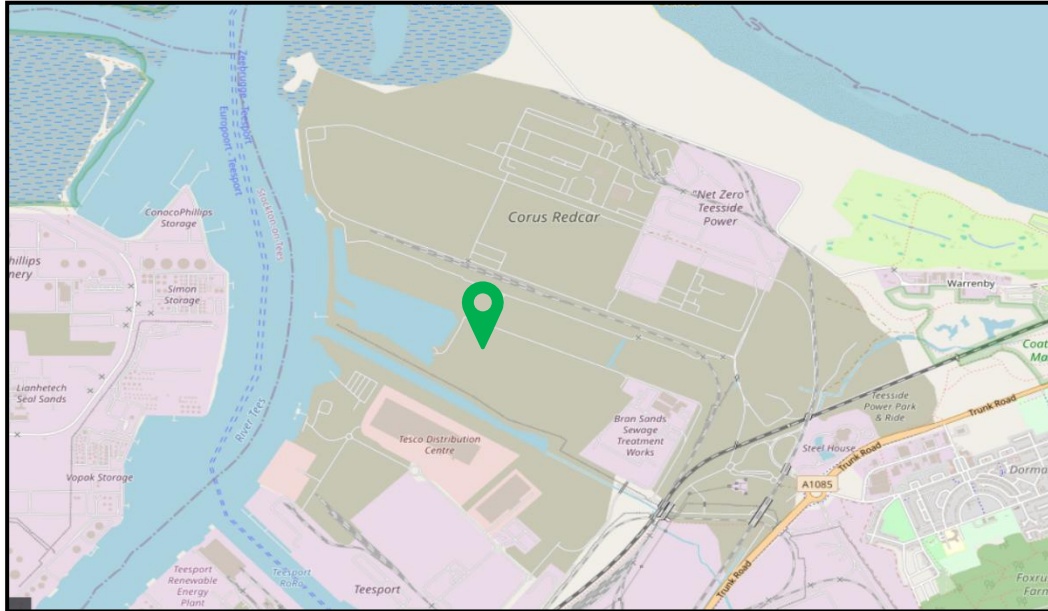
The general aims of the project were

- Increase material strength and stiffness.
- Reduce post-construction settlement.
- Accelerate consolidation.
- Ensure long-term stability of the structure.
- Optimise cost and construction time.

2. Site

Located on the South Bank of the River Tees the land is situated within Redcar Bulk Terminal. Primary access to the site can be gained east or west bound via the A1085 Trunk Road before exiting towards the gatehouse from the Trunk Road Roundabout. The what3words reference for the site is [///signs.object.globe](https://www.what3words.com/#!/signs.object.globe)

2.1 Site Layout



openstreetmap.org (2026) Screenshot of openstreetmap.org ©Openstreetmap Foundation. Available at: middlesbrough.gov.uk/openstreetmap/ (Accessed: 25th March 2026).



what3words (2026) Screenshot of [what3words grid showing \[///signs.object.globe\]](https://www.what3words.com/#!/signs.object.globe). © what3words Limited. Available at: [what3words.com/#!/signs.object.globe](https://www.what3words.com/#!/signs.object.globe) (The simplest way to talk about location) Accessed: 25th March 2026)

2.2 Site Ground Conditions Profile

Initial site investigations identified a highly variable subsurface profile, typical of brownfield dockland environments. This generally comprised of:

- **Made Ground (0–5 m depth):**
Heterogeneous fill consisting of sediments, ash, slag, concrete fragments, and industrial waste. This layer exhibited inconsistent density and strength characteristics.
- **Soft Alluvial Deposits (5–12 m depth):**
Compressible clays, sands and silts with high moisture content and low permeability. Owing to the proximity of the dock the area experienced a naturally high-water table. These soils were particularly prone to long-term consolidation and differential settlement.

In addition to poor geotechnical properties, the site presented potential contamination risks, including hydrocarbons, heavy metals, and other industrial pollutants. This required careful consideration during both the design and execution of ground improvement works to ensure environmental compliance and safe handling of materials.

The dock area was infilled with uncontrolled made ground and vegetation allowing the degradation of material. The material included by-products of industrial activity and loose granular deposits with pockets of poor strength and poorly compacted throughout. Boreholes determined underlying these layers were soft clays and silts typical of dock land areas. Owing to the environment, the existing land would not have provided the capabilities required of the end specification and conventional shallow foundation solutions were not feasible without prior treatment.

The combination of unstable made ground and demanding operational requirements meant a comprehensive ground improvement strategy was devised to ensure the engineered layers could provide a long-term solution with the benefit of using site won material. This was essential to:

- Stabilise and strengthen material against lateral movements.
- Reduce long term settlement and improve shear strength of sub base.
- Provide a high bearing capacity platform to withstand high sustained loads from bulk products and resistance of cyclic and dynamic loading, through the use of Roller Compacted Concrete (RCC).
- Mitigate risks associated with settlement and contamination.
- Enable safe and efficient operational work environment.
- Ensure compliance with environmental and regulatory standards.

3. Compliance

Prior to cement stabilisation a complete site investigation was carried out to determine ground characteristics and make up. Results from this allowed the design of a testing schedule with laboratory and in situ field test methods being conducted throughout each phase, ensuring compliance and validating the works.

Due to the site's history, UKAS laboratory tests included, but not limited to, analysis such as sulphate determination suite in accordance with TRL 447 which provides guidance on the classification of ground sulphate concentrations and its risk towards buried and ground bearing cementitious materials. From this the trial mixes could be designed to ascertain the appropriate blend ratio for use within the material. The analysis proved that the existing material on site was beneficial to the trial blends and could be incorporated within the design to enhance end specifications.

To verify that the ground improvement works achieved the required performance in practice, in-situ testing was undertaken during and after construction. Methods of testing such as Plate Load Testing were included, which are fundamental to ascertain material characteristics such as bearing capacity and California Bearing Ratio.

The continuous testing throughout each phase ensured the project was scientifically and practically validated. All works were undertaken in strict accordance with British Standards for geotechnical and chemical testing, Specification for Highway Works (SHW) and environmental regulations for contaminated land remediation.

4. Testing Summary

Laboratory trial mix testing was undertaken to evaluate and optimise the stabilisation of site-won materials using cementitious binders. Representative samples of made ground were collected and subjected to controlled mixing with varying proportions of binders, including cement, lime, and site won ground granulated blast furnace slag (GGBS).

The primary objective of the trial mix design was to achieve a material suitable for heavy-duty applications such as:

- Container handling areas.
- Bulk storage zones.
- Heavily trafficked access yards.

4.1 California Bearing Ratio

Testing focused on determining the California Bearing Ratio (CBR) as a key indicator of strength and load-bearing capacity.

The results of the laboratory trials demonstrated significant improvement in engineering performance:

- Generally, untreated soils such as clays exhibited CBR values typically below 5.0%, indicating weak subgrade conditions and unsuitable for demanding applications.
- Stabilised mixes within the laboratory trial achieved CBR values exceeding 150%, with the incorporation of cement and site won GGBS. Mix designs consistently produced CBR values beyond 350%, suitable for heavy industrial loading.

4.2 Demonstration of 7-day Laboratory Soaked CBR

Laboratory CBR Number	Sample Description	Trial Mix Design	Swell (mm)	CBR (%)
1	Sandy Gravel	5% (60% GGBS, 20% PFA, 20% Cement)	0.01	350.0
2	Sandy Gravel	5% (60% GGBS, 20% PFA, 20% Cement)	0.01	>350*

*Unable to get CBR value as test exceeded maximum load ring divisions.

Laboratory Test Certificates are contained in Appendix A.

4.3 Plate Bearing Test

Plate Bearing Tests (PBTs) were undertaken across representative areas of the site, including the proposed access routes, and bulk storage areas, to directly assess the load-bearing capacity and deformation characteristics of the treated ground.

The tests were carried out using a standard rigid plate under incremental loading, with settlement measurements recorded at each load stage. The results demonstrated exceptionally high stiffness and strength characteristics of the improved ground with the engineered stabilised fill consistently achieving results beyond 30% CBR with pressure values of up to 700kPa at

1.25mm deformation. Final testing of the roller compacted concrete estimated a load of approximately 4000kN/m² at 1.25mm deformation.

4.4 Demonstration of Post Mix CBR Results

CBR Number	Test Area	Sample Type	Pressure at 1.25mm (kN/m ²)	Equivalent CBR (%)
1	Bulk Storage Area	Modified Granular	318.2	61.5
2	Bulk Storage Area	Modified Granular	422.4	100.5
3	Bulk Storage Area	Modified Granular	334.2	67.0
4	Bulk Storage Area	Modified Granular	358.9	75.8

4.5 Demonstration of Roller Compacted Concrete (RCC) Plate Load Test Results

PLT Number	Test Area	Sample Type	Maximum Pressure Applied (kN/m ²)	Maximum Deformation (mm)	Pressure at 1.25mm (kN/m ²)	Equivalent CBR (%)
1	Bulk Storage Area	RCC	1881.5	1.32	1813.8	>200
2	Bulk Storage Area	RCC	2121.9	0.35	4243.9	>200

Test Certificates are contained in Appendix B.

4.6 Core Compressive Strength

100mm diameter core samples were recovered from the roller compacted concrete for compressive strength. Results for this are to follow.

Laboratory Test Certificates are contained in Appendix C.

5. Summary

The ground improvement and remediation strategy implemented at site has proven to be highly effective in transforming variable, low-strength soils into a robust and durable engineered platform suitable for heavy industrial use

Laboratory testing demonstrated that stabilised soils consistently achieved California Bearing Ratio (CBR) values exceeding 150%, representing a substantial improvement over the untreated ground conditions. These results indicated that the treated material could perform at a level comparable to high-quality granular sub-base, making it well suited for applications subjected to heavy static and dynamic loading.

Field validation further reinforced these findings. Plate Bearing Tests recorded bearing capacities of up to 2121kPa with minimal deformation of 0.35 mm, confirming the development of a high-stiffness, low-compressibility ground profile. The strong correlation between laboratory and in-situ results demonstrated that the designed mix and construction methodology were successfully implemented and achieved consistent performance across the site.

From a practical perspective, the treated material is highly effective as a sub base and final application layer across the site and highly effective as an alternative to traditional stoning up methods. The improved layers exhibit excellent load bearing capacity, low deformation under stress and long term durability in aggressive conditions.

In addition, the incorporation of compliance testing, including sulphate assessment in accordance with TRL 447 and validated laboratory mix designs, ensures that the material will maintain its performance over time without significant degradation.

Overall, the treated material can be considered a highly reliable and cost-effective solution, eliminating the need for extensive imported materials or deep foundation systems such as piling. Its successful application across the site demonstrates its suitability as permanent engineered layers, capable of supporting the demanding operational requirements with minimal maintenance and long-term performance.

APPENDIX A
LABORATORY TEST
CERTIFICATES



EXPLORATION
& TESTING ASSOCIATES

Unit 8B Bowburn South Industrial Estate
Durham, DH6 5AD T: 0191 389 6543

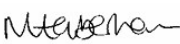


20632

Laboratory Test Report

Client	AG Site Testing
Address	Crosby Grange Thornton Le Moor Northallerton DL6 3SG
F.A.O	Gavin Bewick
Project:	Agri Plant Solutions
Project Number:	D11954
Report Number:	L25-1149
Date Received:	18/08/2025

Testing Required:	Particle Density by Gas Jar - BS:1377-2:2022 Particle Size Distribution - BS:1377-2:1990 includes where applicable Uniformity Coefficient* and Curvature Coefficient* Determination of Maximum Dry Density / Optimum Moisture Content by 4.5kg Rammer - BS:1377-2:2022 Determination of the California Bearing Ratio, Immediate Bearing Index & Linear Swelling BS EN 13286-47:2021*
Date Started:	26/08/2025
Date Finished:	05/09/2025

Report Issue Date:	05/09/2025
Reviewed By:	 M. Taberham - Assistant Quality Technician
Authorised By:	 K. Gargett - Laboratory Manager
Remarks:	(*) denotes testing is outside of UKAS Scope of Accreditation. (+) denotes subcontracted testing.

This report shall not be reproduced by a third party except in full, without prior approval of the Laboratory.

Samples will be stored for one month after the report has been issue before being disposed of.

The published results appertain only to the specimens tested as received.

Exploration and Testing Associates Limited, registered in England and Wales #11803869 at
8B, Bowburn South Industrial Estate, Bowburn, Durham, DH6 5AD



Aggregate Particle Size Distribution

D11954

Site Sample

Sample No.	MS8829
------------	--------

Depth m	N/A
---------	-----

Sample Type	BLK
-------------	-----

KeyLAB ID	EAT_202508283
-----------	---------------

Date of test

Material Type

6D and 6I only

Crushed rock

Series1

minimum

maximum

Percentage Passing %

Particle Size mm

Particle Size (mm)	Percentage Passing (%)
0.075	7
0.15	10
0.3	14
0.6	17
1.2	21
2.5	26
5.0	33
7.5	35
15	43
30	47
45	56
60	60
75	67
100	83
150	89
200	90
250	100
300	100
350	100
400	100
450	100
500	100
600	100
700	100
800	100
900	100
1000	100

sieve result %passing

*Specification for Highway Works, MCHW volume 1, series 0600.
Assessment based on specified sieve sizes. Envelopes drawn using
straight line connections for information only.*

05/09/2025 12:10

Keith Gargett

UKAS
Accredited
Laboratory No.
20632



Particle Density by Gas Jar - Summary of Results

Project Name

Agri Plant Solutions Ltd

[illegible]

Comments

Date _____

UKAS
Accredited
Laboratory No.
20632

28/08/2025 12:38

Keith Garrett

**EXPLORATION**
& TESTING ASSOCIATES**Dry Density / Water Content Relationship
Heavy Compaction**

Job Ref

D11954

Borehole / Pit No

Site Sample

Site Name

Agri Plant Solutions Ltd

Sample No

MS8829

Soil Description

MG(Black/Dark Grey sandy gravel including slag ash and concrete).

Depth

0.00 m

Specimen Ref.

Specimen Depth

m

Sample Type

BLK

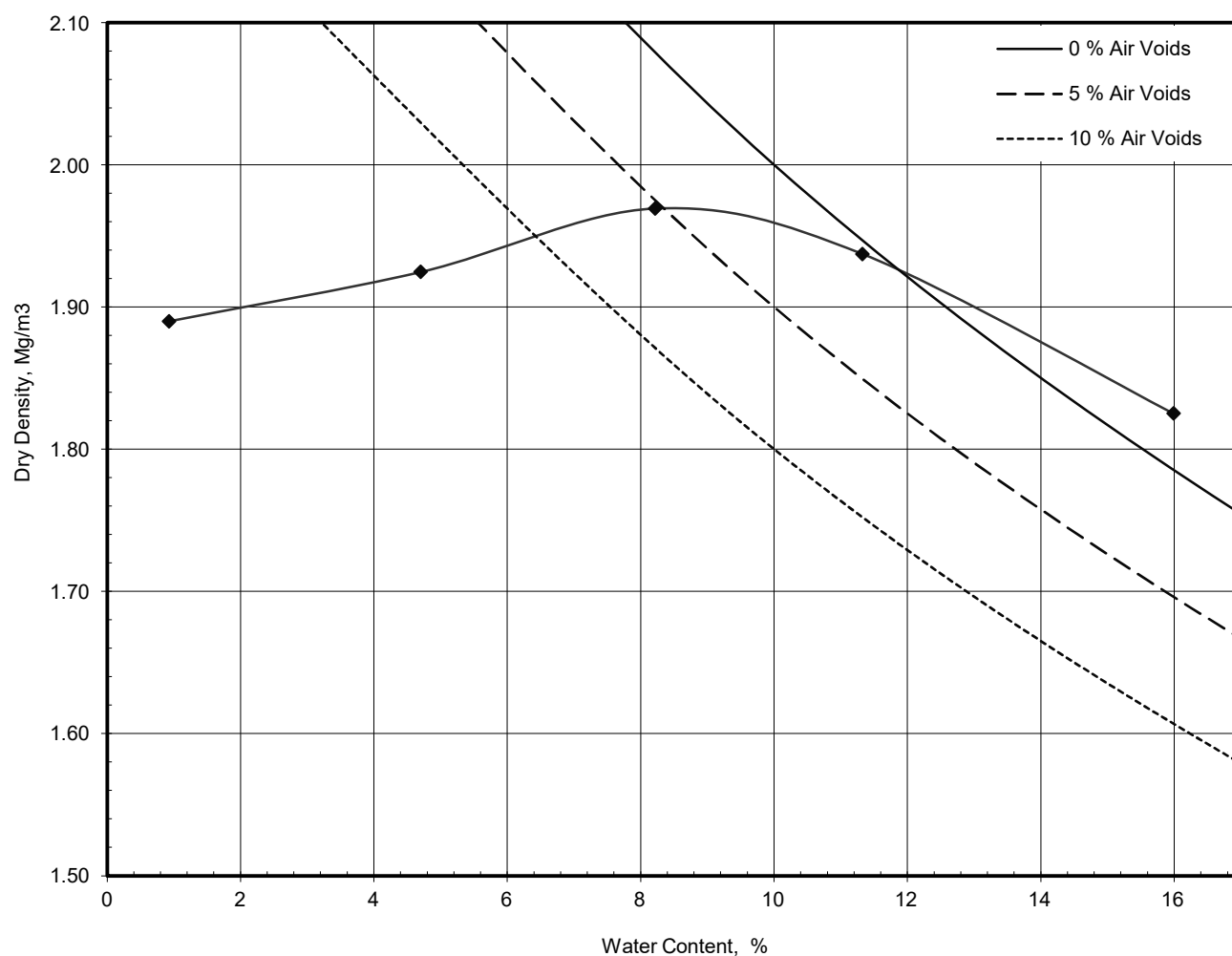
Test Method

BS 1377:Part 2: 2022, clause 11, 4.5kg rammer

Keylab ID

EAT_202508283

Compaction Test Reference/No.



Preparation	Material used was natural	
Mould Type	CBR	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	20
Material Retained on 20.0 mm Sieve	%	36
Particle Density - Measured using gas jar	Mg/m³	2.50
Grading Zone of Material	X	

Maximum Dry Density	Mg/m³	1.97
Optimum Water Content	%	8.2

Comments

Testing deviates from British Standard due to amount retained on 37.5mm & 20mm sieve

Date

28/08/2025 12:36

Checked

N. O'Brien

Approved

K. Gargett

UKAS Accredited
Laboratory No. 20632



Test Report
Test Method for the Determination of California Bearing Ratio, Immediate Bearing Index and Linear Swelling
BS EN 13286-47:2021

Job Number D11954
Project Agri Plant Solutions Ltd
Soil Description Sandy Gravel +5%
(60%GGBS,20%PFA,20% Cement)

Sample Number MS8829
Client Reference N/A
Depth (m) N/A

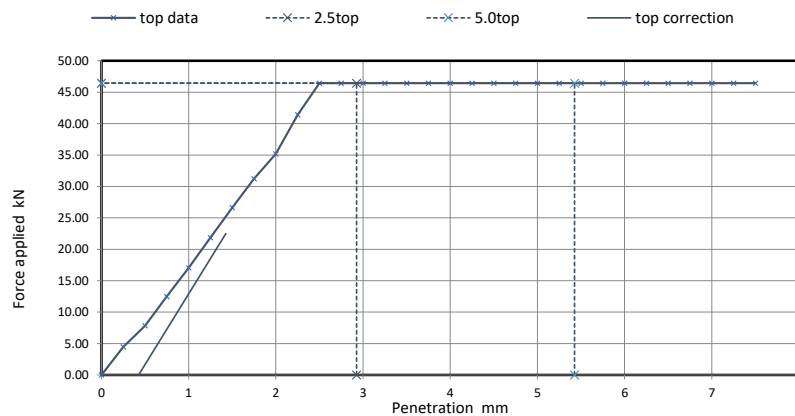
Soaking Details

Period of soaking 7 days
Time for water to surface N/A days
Amount of swell recorded 0.01 mm
Dry density after soaking 1.72 Mg/m³
Date of test after soaking 05.09.2025
Area Tested Top

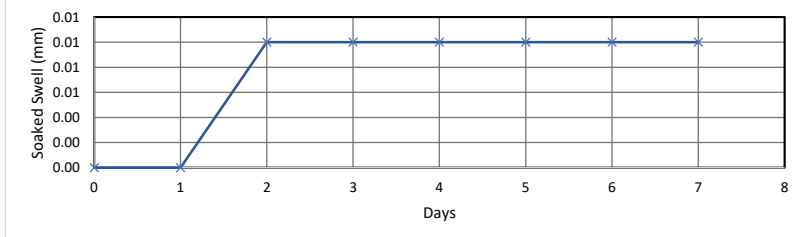
Initial Specimen Details

Bulk density 2.06 Mg/m³
Dry density 1.72 Mg/m³
Moisture content 19.8 %
Material retained on 20mm sieve removed 33.0 %
Compaction Rammer Used 2.5 kg

Force Applied / Penetration



Soaked Swell / Days Soaked



CBR Values %

	2.5mm	5mm	Highest	Moisture Content %
Top	350	230	350	20

Comments: Sample hit load ring maximum divisions @ 2.5mm

Checked By:

N O'Brien - Quality & Technical Manager

Approved By:

K Gargett - Laboratory Manager

Approved Date:

08/09/2025



EXPLORATION & TESTING ASSOCIATES

Unit 8B, Bowburn South Industrial Estate
Durham, DH6 5AD

Tel. (+44) 0191 389 6543

Test Report

Test Method for the Determination of California Bearing Ratio, Immediate Bearing Index and Linear Swelling BS EN 13286-47:2021

Job Number D11954
Project Agri Plant Solutions Ltd
Sandy Gravel +5%
Soil Description (60%GBS,20%PFA,20% Cement)

Sample Number MS8829
Client Reference N/A
Depth (m) N/A

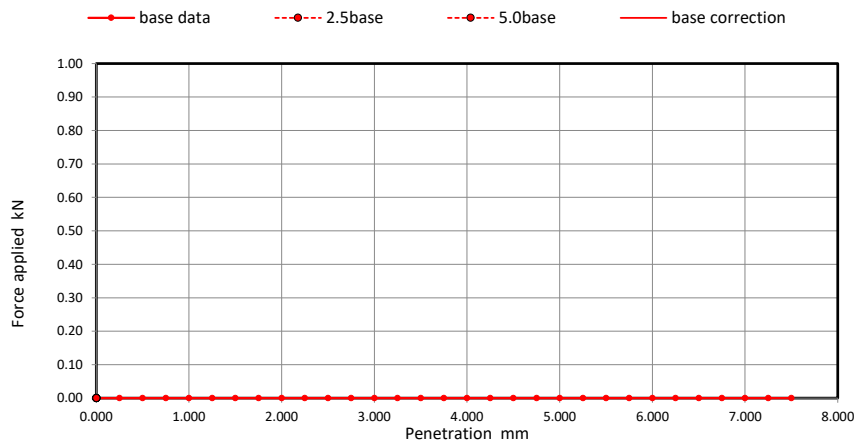
Soaking Details

Period of soaking 28 days
Time for water to surface N/A days
Amount of swell recorded 0.01 mm
Dry density after soaking 1.72 Mg/m³
Date of test after soaking 26.09.2025
Area Tested Base

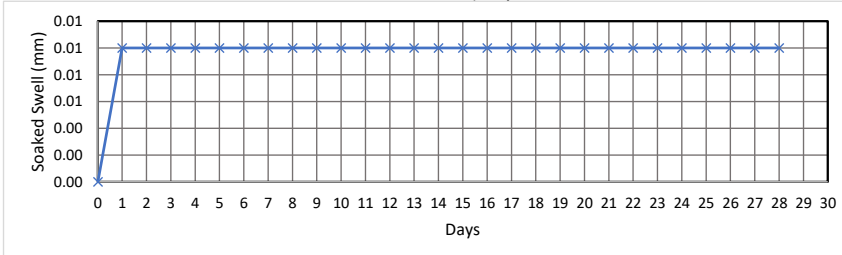
Initial Specimen Details

Bulk density 2.06 Mg/m³
Dry density 1.72 Mg/m³
Moisture content 19.8 %
Material retained on 20mm sieve removed 33.0 %
Compaction Rammer Used 2.5 kg

Force Applied / Penetration



Soaked Swell / Days Soaked



CBR Values %

	2.5mm	5mm	Highest	Moisture Content %
Base	N/A	N/A	N/A	13

Comments: Unable to get CBR value as test exceeded maximum load ring divisions

Checked By:

Approved By:

K. Gargett - Laboratory Manager

Approved Date:

29/09/2025

APPENDIX B

IN-SITU TEST REPORT



AG SITE TESTING
44 Hugar Road
Rowlands Gill
NE39 2AN

contact@agtesting.co.uk

PLATE BEARING TEST REPORT

BS 1377-9:1990 Clause 4.1 and in accordance with DMRB 73/06 Rev 1

www.agtesting.co.uk

Project Details

Project Reference: **122298-6**
Client: **Agri Plant Solutions Ltd**
Crosby Grange, Thronton-le-Moor,
Northallerton DL6 3SG
Site: **MCL, Teesworks**

Report Details

Report Number.: **122298-6/CBR1**
Report Date: **03/12/2025**
Issue Number: **1**

Test Details

Date:	01/12/2025	Material:	STONE
Test Number:	CBR 1	Moisture Content:	Not requested
Location/Reference:	Pad	Reaction Load:	23T Excavator
Test Depth:	Existing GL	Weather:	Wet 12.0°C
Plate Diameter:	450mm	Test Requested By:	M Sutton
Plate to Excavation Wall:	NA	Test Conducted By:	G Bewick

Test Results

Maximum Applied Pressure (kN/m ²):	320.36	Pressure at 1.25mm (kN/m ²):	318.19
Maximum Deformation (mm):	1.26	Modulus of Subgrade Reaction (MN/m ² /m):	156.78
		Calculated Equivalent CBR Value (%):	61.48

Test Loads and Readings

Applied Pressure (kN/m²)	62.88	103.43	178.89	254.34	320.36	0.00
Average Settlement (mm)	0.25	0.49	0.73	0.96	1.26	0.60

Comments:

Unless otherwise stated the test has been conducted in accordance with published standards and documents, with no deviations of the test method.

The results issued are representative of the test area only.

Authorised By:

G Bewick
Proprietor
AG Site Testing

Date:

03/12/2025

AG SITE TESTING

44 Hugar Road, Rowlands Gill NE39 2AN
07519 865 437



AG SITE TESTING
44 Hugar Road
Rowlands Gill
NE39 2AN

PLATE BEARING TEST REPORT

BS 1377-9:1990 Clause 4.1 and in accordance with DMRB 73/06 Rev 1

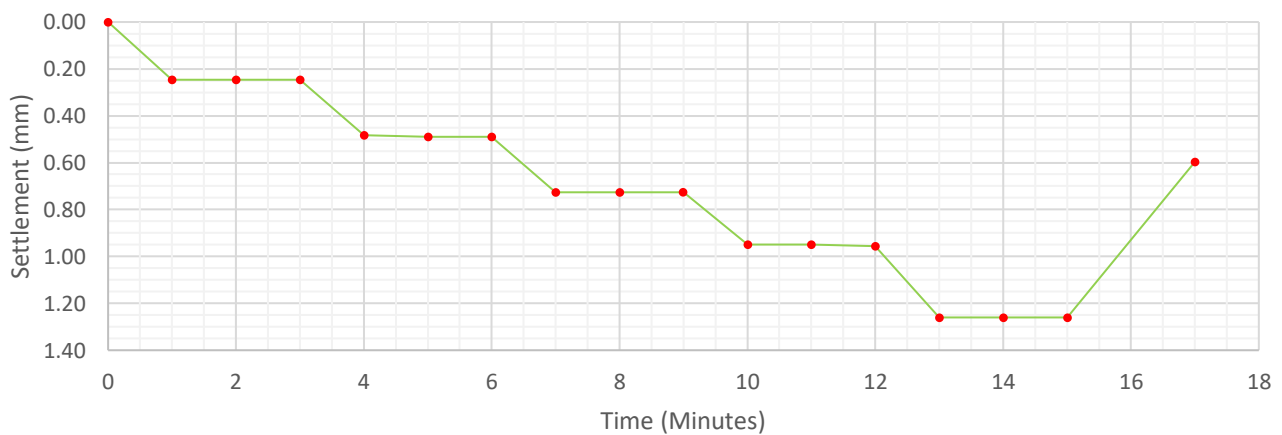
contact@agtesting.co.uk

www.agtesting.co.uk

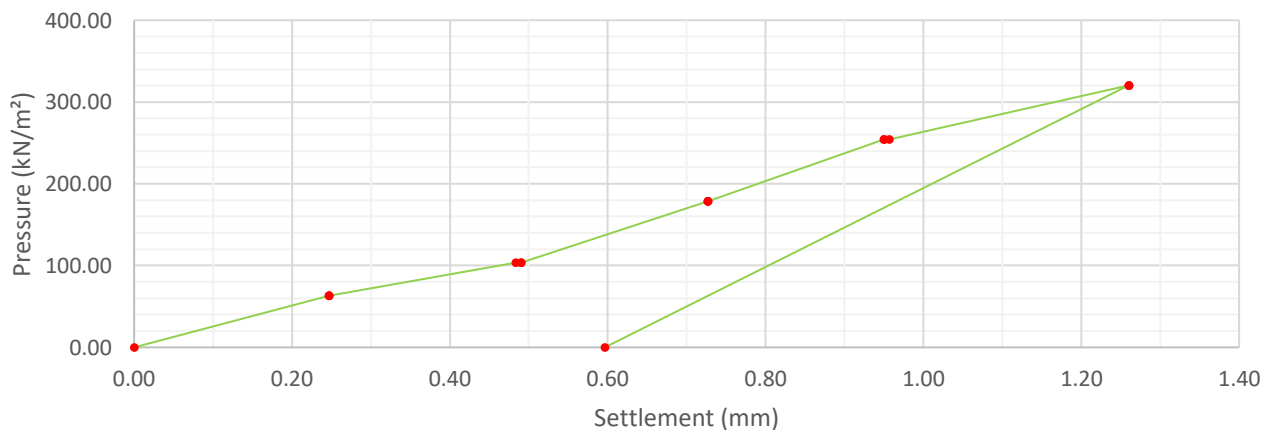
Details: Agri Plant Solutions Ltd - MCL, Teesworks

Date:	01/12/2025	Material:	STONE
Test Number:	CBR 1	Moisture Content:	Not requested
Location/Reference:	Pad	Reaction Load:	23T Excavator
Test Depth:	Existing GL	Weather:	Wet 12.0°C
Plate Diameter:	450mm	Test Requested By:	M Sutton
Plate to Excavation Wall:	NA	Test Conducted By:	G Bewick

Settlement/Time



Pressure/Settlement



AG SITE TESTING

44 Hugar Road, Rowlands Gill NE39 2AN
07519 865 437



AG SITE TESTING
44 Hugar Road
Rowlands Gill
NE39 2AN

contact@agtesting.co.uk

PLATE BEARING TEST REPORT

BS 1377-9:1990 Clause 4.1 and in accordance with DMRB 73/06 Rev 1

www.agtesting.co.uk

Project Details

Project Reference: **122298-6**
Client: **Agri Plant Solutions Ltd**
Crosby Grange, Thronton-le-Moor,
Northallerton DL6 3SG
Site: **MCL, Teesworks**

Report Details

Report Number.: **122298-6/CBR2**
Report Date: **03/12/2025**
Issue Number: **1**

Test Details

Date:	01/12/2025	Material:	STONE
Test Number:	CBR 2	Moisture Content:	Not requested
Location/Reference:	Pad	Reaction Load:	23T Excavator
Test Depth:	Existing GL	Weather:	Wet 12.0°C
Plate Diameter:	450mm	Test Requested By:	M Sutton
Plate to Excavation Wall:	NA	Test Conducted By:	G Bewick

Test Results

Maximum Applied Pressure (kN/m ²):	440.14	Pressure at 1.25mm (kN/m ²):	422.38
Maximum Deformation (mm):	1.30	Modulus of Subgrade Reaction (MN/m ² /m):	208.11
		Calculated Equivalent CBR Value (%):	100.45

Test Loads and Readings

Applied Pressure (kN/m²)	101.23	169.14	241.76	322.88	440.14	0.00
Average Settlement (mm)	0.27	0.50	0.74	0.97	1.30	0.53

Comments:

Unless otherwise stated the test has been conducted in accordance with published standards and documents, with no deviations of the test method.

The results issued are representative of the test area only.

Authorised By:

G Bewick
Proprietor
AG Site Testing

Date:

03/12/2025

AG SITE TESTING

44 Hugar Road, Rowlands Gill NE39 2AN
07519 865 437



AG SITE TESTING
44 Hugar Road
Rowlands Gill
NE39 2AN

PLATE BEARING TEST REPORT

BS 1377-9:1990 Clause 4.1 and in accordance with DMRB 73/06 Rev 1

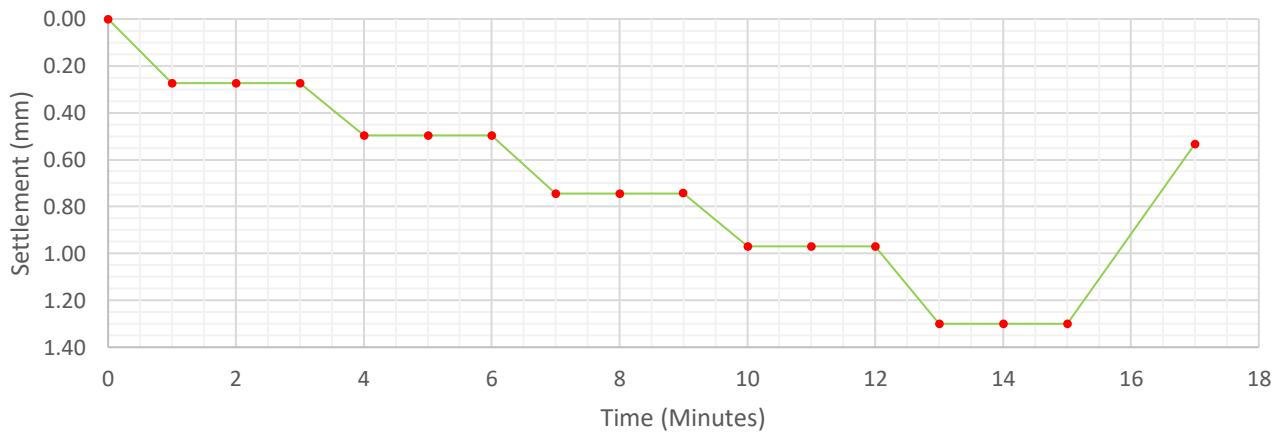
contact@agtesting.co.uk

www.agtesting.co.uk

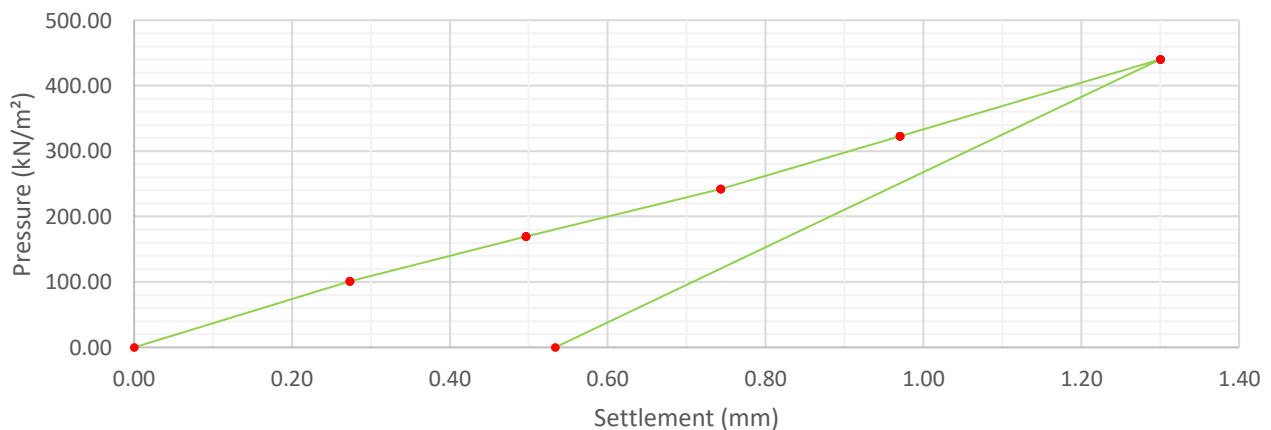
Details: Agri Plant Solutions Ltd - MCL, Teesworks

Date:	01/12/2025	Material:	STONE
Test Number:	CBR 2	Moisture Content:	Not requested
Location/Reference:	Pad	Reaction Load:	23T Excavator
Test Depth:	Existing GL	Weather:	Wet 12.0°C
Plate Diameter:	450mm	Test Requested By:	M Sutton
Plate to Excavation Wall:	NA	Test Conducted By:	G Bewick

Settlement/Time



Pressure/Settlement



AG SITE TESTING

44 Hugar Road, Rowlands Gill NE39 2AN
07519 865 437

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www.agtesting.co.uk



AG SITE TESTING
44 Hugar Road
Rowlands Gill
NE39 2AN

contact@agtesting.co.uk

PLATE BEARING TEST REPORT

BS 1377-9:1990 Clause 4.1 and in accordance with DMRB 73/06 Rev 1

www.agtesting.co.uk

Project Details

Project Reference: **122298-6**
Client: **Agri Plant Solutions Ltd**
Crosby Grange, Thronton-le-Moor,
Northallerton DL6 3SG
Site: **MCL, Teesworks**

Report Details

Report Number.: **122298-6/CBR3**
Report Date: **03/12/2025**
Issue Number: **1**

Test Details

Date:	01/12/2025	Material:	STONE
Test Number:	CBR 3	Moisture Content:	Not requested
Location/Reference:	Pad	Reaction Load:	23T Excavator
Test Depth:	Existing GL	Weather:	Wet 12.0°C
Plate Diameter:	450mm	Test Requested By:	M Sutton
Plate to Excavation Wall:	NA	Test Conducted By:	G Bewick

Test Results

Maximum Applied Pressure (kN/m ²):	352.11	Pressure at 1.25mm (kN/m ²):	334.21
Maximum Deformation (mm):	1.30	Modulus of Subgrade Reaction (MN/m ² /m):	164.67
		Calculated Equivalent CBR Value (%):	66.95

Test Loads and Readings

Applied Pressure (kN/m²)	95.57	139.59	222.27	276.66	352.11	0.00
Average Settlement (mm)	0.28	0.48	0.83	1.10	1.30	0.75

Comments:

Unless otherwise stated the test has been conducted in accordance with published standards and documents, with no deviations of the test method.

The results issued are representative of the test area only.

Authorised By:

G Bewick
Proprietor
AG Site Testing

Date:

03/12/2025

AG SITE TESTING

44 Hugar Road, Rowlands Gill NE39 2AN
07519 865 437



AG SITE TESTING
44 Hugar Road
Rowlands Gill
NE39 2AN

PLATE BEARING TEST REPORT

BS 1377-9:1990 Clause 4.1 and in accordance with DMRB 73/06 Rev 1

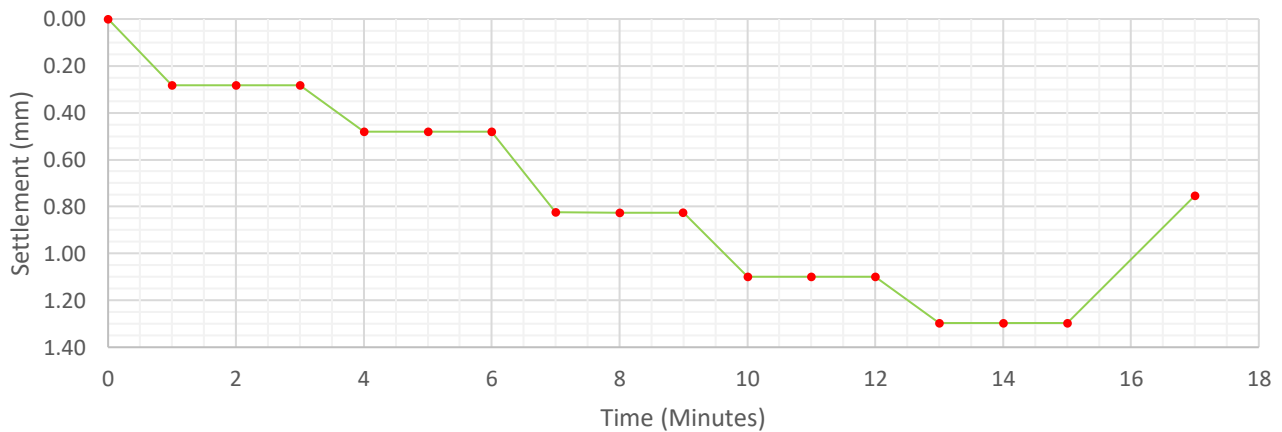
contact@agtesting.co.uk

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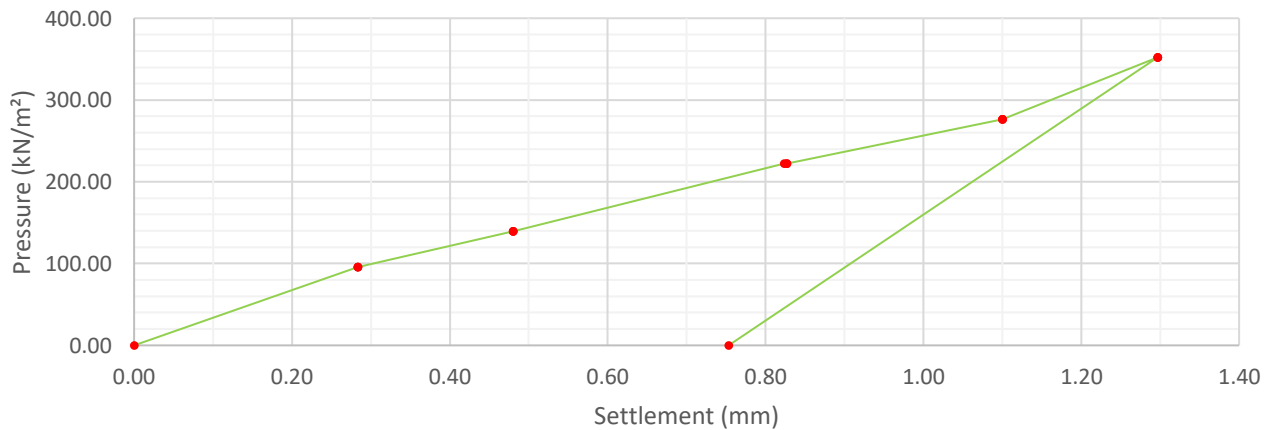
Details: Agri Plant Solutions Ltd - MCL, Teesworks

Date:	01/12/2025	Material:	STONE
Test Number:	CBR 3	Moisture Content:	Not requested
Location/Reference:	Pad	Reaction Load:	23T Excavator
Test Depth:	Existing GL	Weather:	Wet 12.0°C
Plate Diameter:	450mm	Test Requested By:	M Sutton
Plate to Excavation Wall:	NA	Test Conducted By:	G Bewick

Settlement/Time



Pressure/Settlement



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PLATE BEARING TEST REPORT

BS 1377-9:1990 Clause 4.1 and in accordance with DMRB 73/06 Rev 1

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Project Details

Project Reference: **122298-6**
Client: **Agri Plant Solutions Ltd**
Crosby Grange, Thronton-le-Moor,
Northallerton DL6 3SG
Site: **MCL, Teesworks**

Report Details

Report Number.: **122298-6/CBR4**
Report Date: **03/12/2025**
Issue Number: **1**

Test Details

Date:	01/12/2025	Material:	STONE
Test Number:	CBR 4	Moisture Content:	Not requested
Location/Reference:	Pad	Reaction Load:	23T Excavator
Test Depth:	Existing GL	Weather:	Wet 12.0°C
Plate Diameter:	450mm	Test Requested By:	M Sutton
Plate to Excavation Wall:	NA	Test Conducted By:	G Bewick

Test Results

Maximum Applied Pressure (kN/m ²):	380.41	Pressure at 1.25mm (kN/m ²):	358.93
Maximum Deformation (mm):	1.33	Modulus of Subgrade Reaction (MN/m ² /m):	176.85
		Calculated Equivalent CBR Value (%):	75.76

Test Loads and Readings

	63.51	132.04	198.06	286.09	380.41	0.00
Applied Pressure (kN/m²)						
Average Settlement (mm)	0.26	0.50	0.75	0.99	1.33	0.50

Comments:

Unless otherwise stated the test has been conducted in accordance with published standards and documents, with no deviations of the test method.

The results issued are representative of the test area only.

Authorised By:

G Bewick
Proprietor
AG Site Testing

Date:

03/12/2025

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PLATE BEARING TEST REPORT

BS 1377-9:1990 Clause 4.1 and in accordance with DMRB 73/06 Rev 1

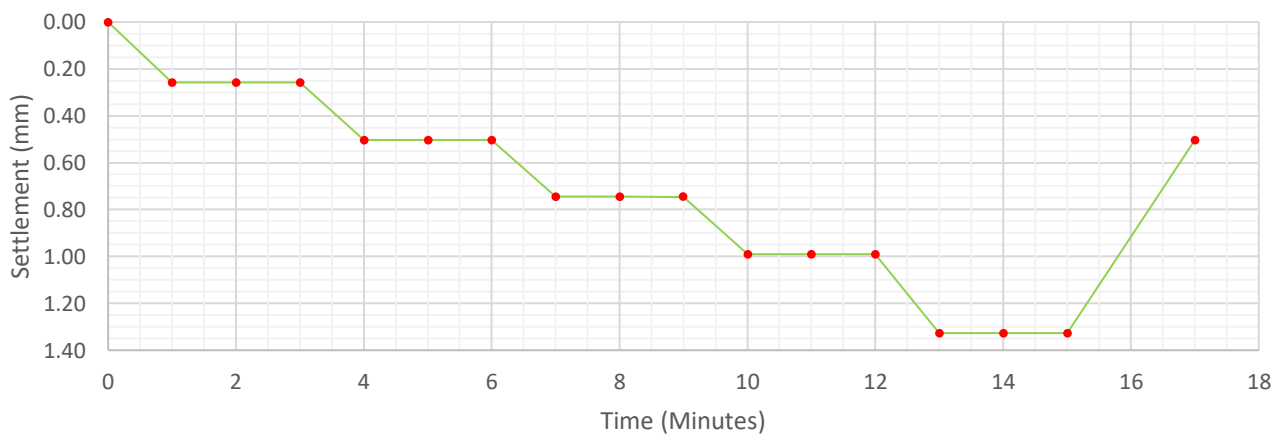
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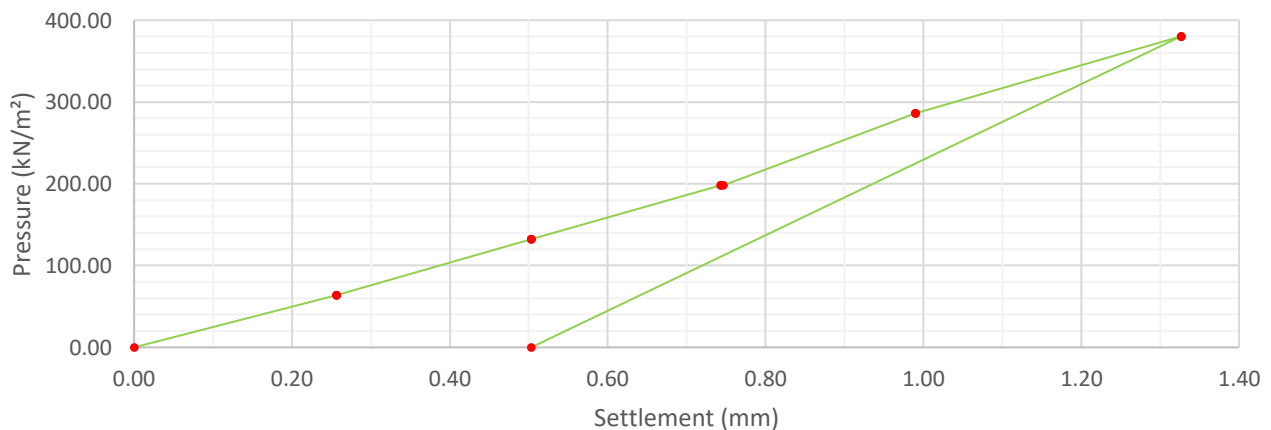
Details: **Agri Plant Solutions Ltd - MCL, Teesworks**

Date:	01/12/2025	Material:	STONE
Test Number:	CBR 4	Moisture Content:	Not requested
Location/Reference:	Pad	Reaction Load:	23T Excavator
Test Depth:	Existing GL	Weather:	Wet 12.0°C
Plate Diameter:	450mm	Test Requested By:	M Sutton
Plate to Excavation Wall:	NA	Test Conducted By:	G Bewick

Settlement/Time



Pressure/Settlement



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**DETERMINATION OF THE VERTICAL DEFORMATION AND
STRENGTH CHARACTERISTICS OF SOIL BY THE PLATE LOADING TEST**

BS 1377-9:2025 Clause 6.1 and in accordance with DMRB 73/06 Rev 1

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Project Details

Project Reference: **122298-9**
Client: **Agri Plant Solutions Ltd**
Crosby Grange, Thornton-le-Moor,
Northallerton DL6 3SG
Site: **MCL, Teesworks**

Report Details

Report Number.: **122298-9/CBR1**
Report Date: **16/03/2026**
Issue Number: **1**

Test Details

Date:	16/03/2026	Material:	RCC
Test Number:	CBR 1	Moisture Content:	Not requested
Location/Reference:	RCC Pad	In situ Density:	N/A
Test Depth:	Existing GL	Reaction Load:	23T Excavator
Plate Diameter:	300mm	Weather:	Dry 11.0°C
Seating Load (Time):	5.0kN (2 seconds)	Test Requested By:	M Sutton
Plate to Excavation Wall:	NA	Test Conducted By:	G Bewick

Test Results

Maximum Applied Pressure (kN/m ²):	1881.45	Pressure at 1.25mm (kN/m ²):	1813.80
Maximum Deformation (mm):	1.32	Modulus of Subgrade Reaction (MN/m ² /m):	623.95
		Calculated Equivalent CBR Value (%):	> 150

Test Loads and Readings

Applied Pressure (kN/m²)	372.47	783.00	1121.45	1564.23	1813.80	0.00
Average Settlement (mm)	0.25	0.50	0.75	1.00	1.25	0.60

Comments:

Unless otherwise stated the test has been conducted in accordance with published standards and documents, with no deviations of the test method.

The results issued are representative of the test area only.

Authorised By:


G Bewick

Proprietor

AG Site Testing

Date:

16/03/2026

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DETERMINATION OF THE VERTICAL DEFORMATION AND STRENGTH CHARACTERISTICS OF SOIL BY THE PLATE LOADING TEST

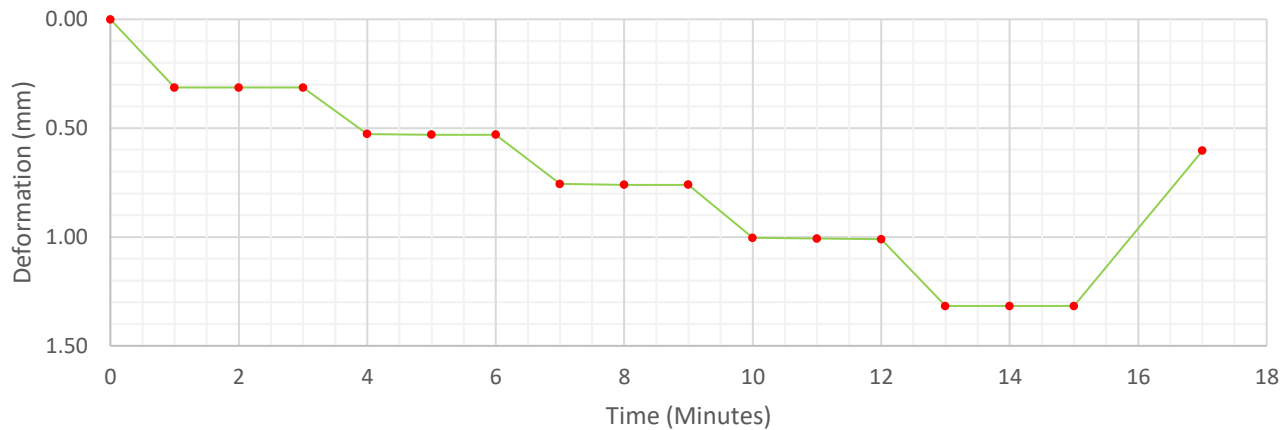
BS 1377-9:2025 Clause 6.1 and in accordance with DMRB 73/06 Rev 1

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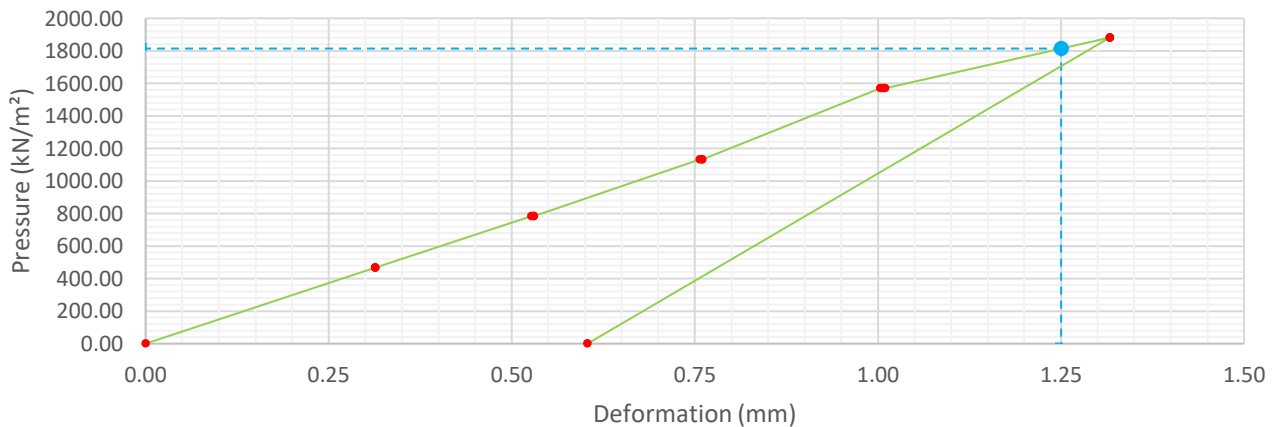
Details: **Agri Plant Solutions Ltd - MCL, Teesworks**

Date:	16/03/2026	Material:	RCC
Test Number:	CBR 1	Moisture Content:	Not requested
Location/Reference:	RCC Pad	Reaction Load:	23T Excavator
Test Depth:	Existing GL	Weather:	Dry 11.0°C
Plate Diameter:	300mm	Test Requested By:	M Sutton
Plate to Excavation Wall:	NA	Test Conducted By:	G Bewick

Deformation/Time



Pressure/Deformation



Authorised By:

G. Bewick
G Bewick

Proprietor
AG Site Testing

Date:

16/03/2026

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**DETERMINATION OF THE VERTICAL DEFORMATION AND
STRENGTH CHARACTERISTICS OF SOIL BY THE PLATE LOADING TEST**

BS 1377-9:2025 Clause 6.1 and in accordance with DMRB 73/06 Rev 1

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Project Details

Project Reference: **122298-9**
Client: **Agri Plant Solutions Ltd**
Crosby Grange, Thornton-le-Moor,
Northallerton DL6 3SG
Site: **MCL, Teesworks**

Report Details

Report Number.: **122298-9/CBR2**
Report Date: **16/03/2026**
Issue Number: **1**

Test Details

Date:	16/03/2026	Material:	RCC
Test Number:	CBR 2	Moisture Content:	Not requested
Location/Reference:	RCC Pad	In situ Density:	N/A
Test Depth:	Existing GL	Reaction Load:	23T Excavator
Plate Diameter:	300mm	Weather:	Dry 11.0°C
Seating Load (Time):	5.0kN (2 seconds)	Test Requested By:	M Sutton
Plate to Excavation Wall:	NA	Test Conducted By:	G Bewick

Test Results

Maximum Applied Pressure (kN/m ²):	2121.94	Estimated Pressure at 1.25mm (kN/m ²):	4243.88
Maximum Deformation (mm):	0.35	Estimated Modulus of Subgrade Reaction (MI	1459.90
		Estimated Equivalent CBR Value (%):	> 150

Test Loads and Readings

Applied Pressure (kN/m ²)	1707.31	2121.94	0.00			
Average Settlement (mm)	0.25	0.35	0.19			

Comments: *Test terminated due to insufficient kentledge weight.*

Unless otherwise stated the test has been conducted in accordance with published standards and documents, with no deviations of the test method.

The results issued are representative of the test area only.

Authorised By:


G Bewick

Proprietor

AG Site Testing

Date:

16/03/2026

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DETERMINATION OF THE VERTICAL DEFORMATION AND STRENGTH CHARACTERISTICS OF SOIL BY THE PLATE LOADING TEST

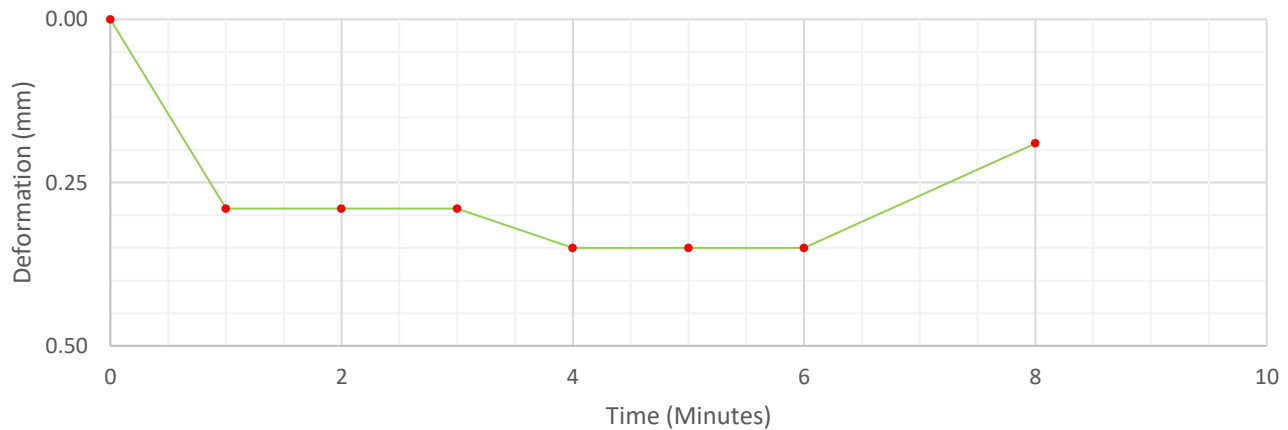
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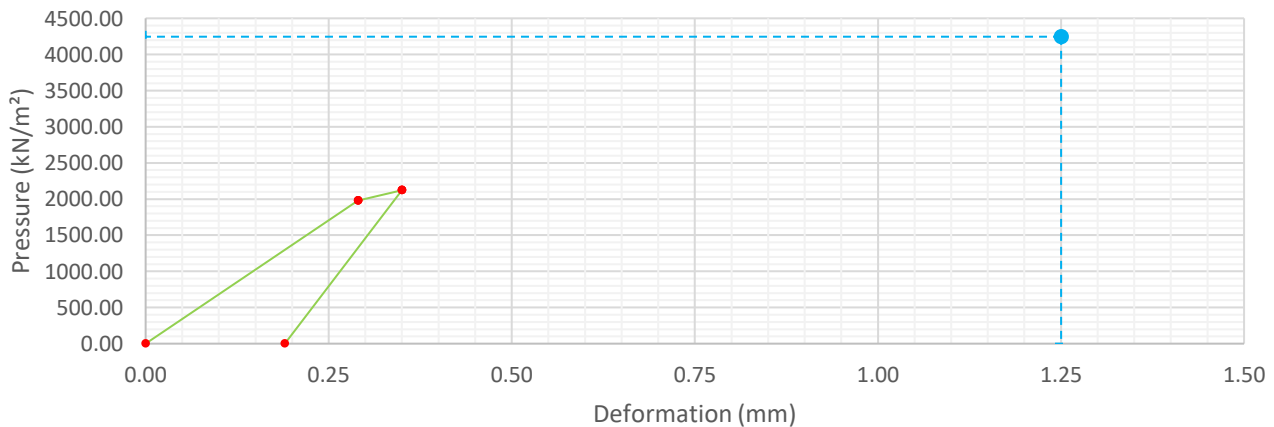
Details: **Agri Plant Solutions Ltd - MCL, Teesworks**

Date:	16/03/2026	Material:	RCC
Test Number:	CBR 2	Moisture Content:	Not requested
Location/Reference:	RCC Pad	Reaction Load:	23T Excavator
Test Depth:	Existing GL	Weather:	Dry 11.0°C
Plate Diameter:	300mm	Test Requested By:	M Sutton
Plate to Excavation Wall:	NA	Test Conducted By:	G Bewick

Deformation/Time



Pressure/Deformation



Authorised By:

G. Bewick
G Bewick

Proprietor
AG Site Testing

Date:

16/03/2026

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