Douglas Partners
Geotechnics / Environment / Groundwater

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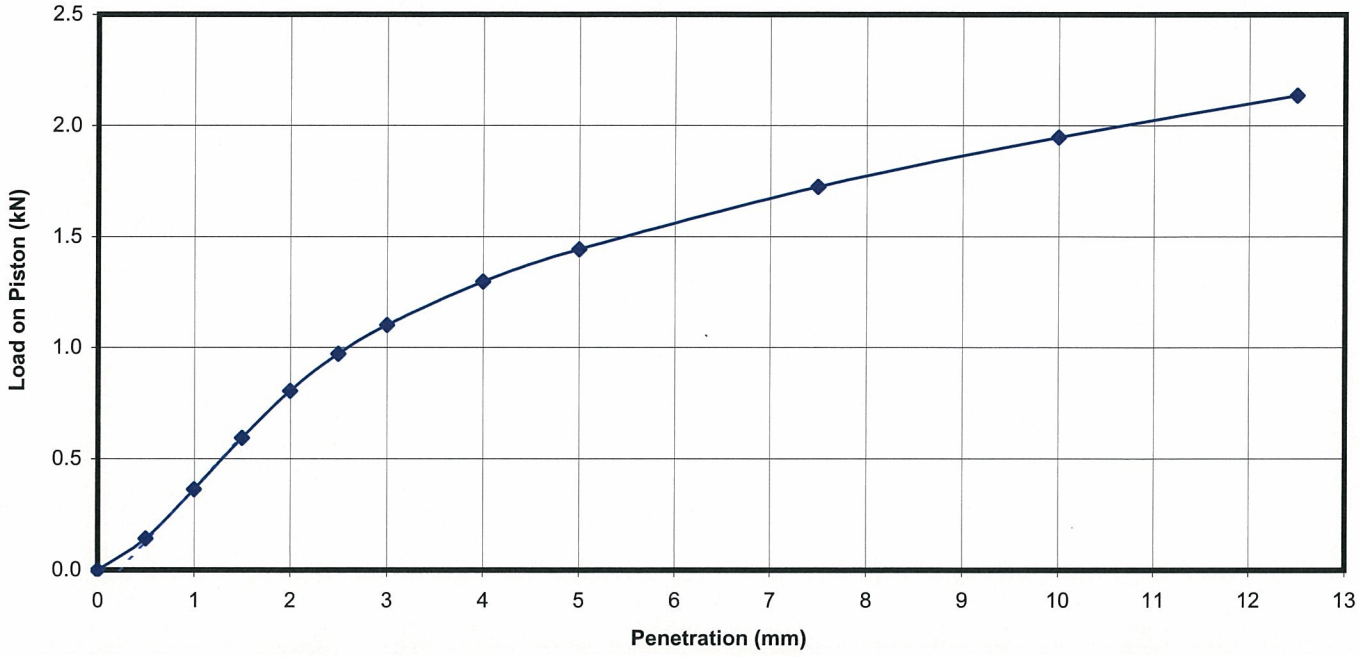
Result of California Bearing Ratio Test

Client :	HEALTH INFRASTRUCTURE	**Project No. :**	72320
		Report No. :	S11 - 063 F
Project :	WAGGA WAGGA BASE HOSPITAL	**Report Date :**	19/04/2011
		Date Sampled :	1-7/04/2011
Location :	EDWARD STREET - WAGGA WAGGA	**Date of Test:**	14/04/2011
Test Location :	BH106		
Depth / Layer :	0.3	**Page:**	1 of 1



Description: SILTY CLAY - Brown silty clay

Test Method(s): AS 1289.6.1.1, AS 1289.2.1.1

Sampling Method(s): Sampled by Engineering Dept

Percentage > 19mm: 0.0%

LEVEL OF COMPACTION: 100% of STD MDD
MOISTURE RATIO: 98% of STD OMC
SURCHARGE: 4.5 kg
SOAKING PERIOD: 4 days
SWELL: 0.6%

CONDITION		MOISTURE CONTENT %	DRY DENSITY t/m^3
At compaction		13.7	1.83
After soaking		17.4	1.82
After test	Top 30mm of sample	17.7	-
	Remainder of sample	16.2	-
Field values		12.9	-
Standard Compaction		13.9	1.82

RESULTS		
TYPE	**PENETRATION**	**CBR (%)**
BOTTOM	**2.5 mm**	**8**
	5.0 mm	**7**

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ATA Accredited Laboratory Number: 828
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Tested: RA
Checked: NW

Norman Weimann
Laboratory Manager

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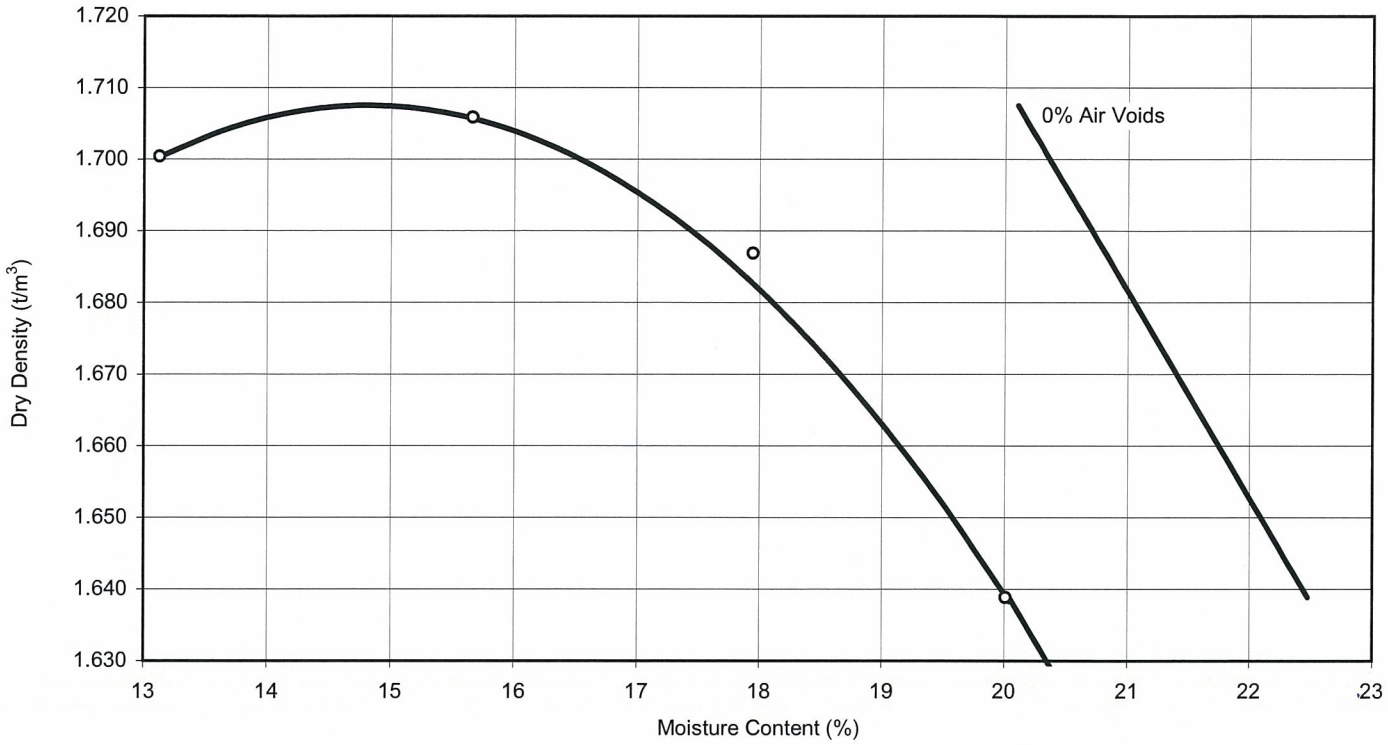
Results of Compaction Test

Client :	HEALTH INFRASTRUCTURE	**Project No. :**	72320
		Report No. :	S11 - 063 G
Project :	WAGGA WAGGA BASE HOSPITAL REDEVELOP	**Report Date :**	19/04/2011
Location :	EDWARD STREET - WAGGA WAGGA	**Date of Test:**	11/04/2011
		Page:	1 of 1



Sample Details: **Location:** BH 109
Depth: 0.4m

Particles > 19mm: 0%

Description: CLAY - Brown clay

Maximum Dry Density:	**1.71 t/m^3**
Optimum Moisture Content:	**15.0 %**

Remarks:

Test Methods: AS1289.5.1.1, AS1289.2.1.1

Sampling Methods: By Engineering Dept

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Laboratory Manager

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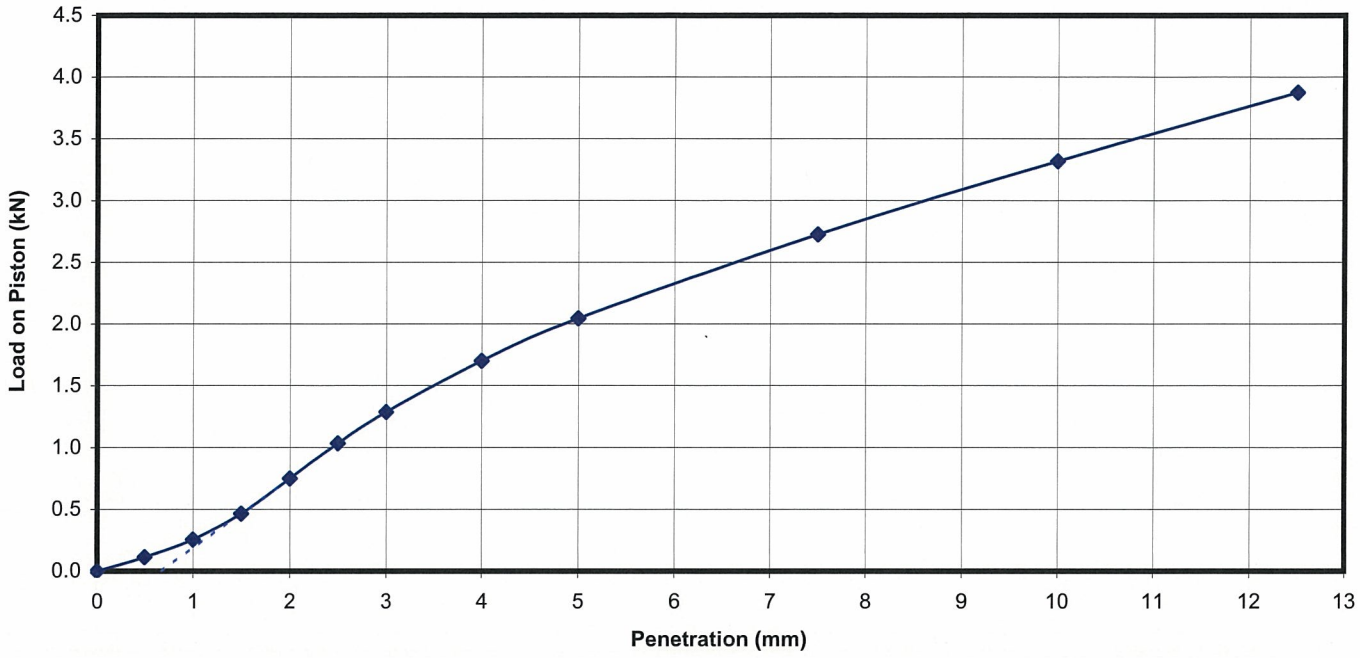
Result of California Bearing Ratio Test

Client :	HEALTH INFRASTRUCTURE	**Project No. :**	72320
		Report No. :	S11 - 063 H
Project :	WAGGA WAGGA BASE HOSPITAL	**Report Date :**	19/04/2011
		Date Sampled :	1-7/04/2011
Location :	EDWARD STREET - WAGGA WAGGA	**Date of Test:**	14/04/2011
Test Location :	BH109		
Depth / Layer :	0.4	**Page:**	1 of 1



Description: CLAY - Brown clay

Test Method(s): AS 1289.6.1.1, AS 1289.2.1.1

Sampling Method(s): Sampled by Engineering Dept

Percentage > 19mm: 0.0%

LEVEL OF COMPACTION: 101% of STD MDD
MOISTURE RATIO: 92% of STD OMC
SURCHARGE: 4.5 kg
SOAKING PERIOD: 4 days
SWELL: 1.3%

CONDITION		MOISTURE CONTENT %	DRY DENSITY t/m^3
At compaction		13.6	1.72
After soaking		18.7	1.70
After test	Top 30mm of sample	20.5	-
	Remainder of sample	18.4	-
Field values		15.7	-
Standard Compaction		14.8	1.71

RESULTS		
TYPE	**PENETRATION**	**CBR (%)**
BOTTOM	**2.5 mm**	**10**
	5.0 mm	**11**

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Checked: NW

Norman Weimann
Laboratory Manager

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CERTIFICATE OF ANALYSIS 54174

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Peter Hartcliff

Sample log in details:

Your Reference:	**72320, Wagga Wagga Base Hospital**
No. of samples:	4 Soils
Date samples received / completed instructions received	12/04/11 / 12/04/11

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	19/04/11 / 19/04/11
Date of Preliminary Report:	Not issued

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Results Approved By:

Nick Sarlamis
Inorganics Supervisor

Miscellaneous Inorg - soil					
Our Reference:	UNITS	54174-1	54174-2	54174-3	54174-4
Your Reference	----------	BH101/5.5-5.95	BH106/4.0-4.45	BH108/2.5-2.95	BH107A/11.5-11.95
Type of sample	----------	Soil	Soil	Soil	Soil
Date prepared	-	15/4/2011	15/4/2011	15/4/2011	15/4/2011
Date analysed	-	19/4/2011	19/4/2011	19/4/2011	19/4/2011
pH 1:5 soil:water	pH Units	8.5	8.1	7.8	8.0
Chloride, Cl 1:5 soil:water	mg/kg	24	21	<20	31
Sulphate, SO4 1:5 soil:water	mg/kg	<20	<20	64	<20
Resistivity in soil*	ohmm	150	140	100	100

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA 21st ED, 4500-H+.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA 21st ED, 4110-B.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell and dedicated meter, in accordance with APHA 21st ED 2510 and Rayment & Higginson.

Client Reference: 72320, Wagga Wagga Base Hospital

QUALITY CONTROL Miscellaneous Inorg - soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			15/4/2011	[NT]	[NT]	LCS-1	15/4/2011
Date analysed	-			19/4/2011	[NT]	[NT]	LCS-1	19/4/2011
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	LCS-1	102%
Chloride, Cl 1:5 soil:water	mg/kg	2	Inorg-081	<2	[NT]	[NT]	LCS-1	96%
Sulphate, SO4 1:5 soil:water	mg/kg	2	Inorg-081	<2	[NT]	[NT]	LCS-1	100%
Resistivity in soil*	ohmm	1	Inorg-002	<1.0	[NT]	[NT]	LCS-1	108%

Report Comments:

Chlride\Sulphate:PQL raised due to sample matrix.

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batched of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.