25 September 2023
Job No: 0053246.9000

Beach Road Estates Limited
28B Moorhouse Ave
PO Box 2056
shanef@momentumprojects.co.nz
CHRISTCHURCH 8140

Attention: Shane Fairmaid

Dear Shane

Beach Grove Subdivision, Kaiapoi
Scala penetrometer testing
Stage 5C-D

1 Introduction

This letter presents the results of the bearing capacity tests undertaken by Tonkin & Taylor Ltd (T+T) on the engineered hard fill prepared for Stage 5C-D lots 221 to 225, 229 to 233, 241 to 253, 268 to 284, 303 to 306, 389 and 395, Beach Grove subdivision, Beach Road, Kaiapoi. The work described in this document was commissioned by Beach Road Estates Ltd and was completed in accordance with the terms and conditions which are outlined in T+T's Variation No. 24 dated 14 March 2023, under project No. 53246.9000.

2 Scala penetrometer results

46 Scala penetrometer tests were carried out on the Stage 5C-D lots on 11 August 2023. One Scala penetrometer test was completed on each lot. The locations of the Scala tests are shown on Figure 1, Appendix A.

The results of the Scala penetrometer logs are attached in Appendix C.

3 Summary of Scala penetrometer testing and indicated bearing capacity

The bearing capacity of the hardfill platform assessed from the Scala penetrometer test results (Appendix B) show that the lots tested meet the intent for a TC2 equivalent complying foundation, such as a rib-raft or similar.

All Scala penetrometer testing of subgrade and placed hardfill during construction indicated that all material met the requirements of the specification[1].

[1] Tonkin & Taylor Ltd (October 2022). Earthworks specification titled Stages 5 & 6 McIntosh Drain Earthworks Specification. Prepared for Beach Grove Estates Limited. T+T ref 53246.9000, Rev 1.

Tonkin & Taylor Ltd | Level 3, PwC Centre, 60 Cashel Street, West End, Christchurch 8013, New Zealand
PO Box 13055, Christchurch 8141 P +64-3-363 2440 F +64-9-307 0265 E chc@tonkintaylor.co.nz

Once the building foundation excavations have been carried out, the exposed subbase surface should be observed and tested by a suitably competent geo-professional to verify the building foundation conditions are consistent with the design report[2] and the bearing capacity described in this letter report.

4 Applicability

This report has been prepared for the exclusive use of our client Beach Road Estates Limited, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

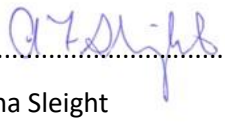
Tonkin & Taylor Ltd

Report prepared by:

.....

Peter Lee
Geotechnical Engineer

Authorised for Tonkin & Taylor Ltd by:



.....

Anna Sleight
Project Director

25-Sep-23
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[2] Tonkin & Taylor Ltd (November 2021). *Beach Grove Stage 5 – 6 Geotechnical report for subdivision,* T+T Ref 53246.9000.

Appendix A Site Plan

Legend

- Scala Penetrometer Test Location (11/08/2023)

REVISION DETAILS		INT	DATE	SURVEYED		BEACH ROAD KAIAPOI 7630	BEACHGROVE	BEACH GROVE - STAGES 5C & 5D		STATUS		REV
				DESIGNED						SCALE		
				DRAWN						COUNCIL	WAIMAKARIRI DISTRICT	
				CHECKED						DWG NO		
				APPROVED								

Appendix B Table of indicative bearing capacity

Lot number / Scala ID	Scala penetration into fill (mm)	Average number of blows per 50 mm over top 300 mm or refusal depth	Allowable bearing capacity (kPa)	ULS bearing capacity (kPa)	Geotechnical ultimate bearing capacity (kPa)
221	250	4.5	220	440	660
222	250	5.0	250	500	750
223	200	4.5	220	440	660
224	250	4.0	210	420	630
225	350	5.0	250	500	750
229	200	4.5	220	440	660
230	150	5.0	250	500	750
231	200	4.0	210	420	630
232	200	5.0	250	500	750
233	250	4.5	220	440	660
241	150	4.5	220	440	660
242	100	5.5	260	520	780
243	250	3.5	180	360	540
244	250	4.5	220	440	660
245	250	4.5	220	440	660
246	150	5.5	260	520	780
247	300	4.5	220	440	660
248	150	4.5	220	440	660
249	200	5.5	260	520	780
250	200	4.5	220	440	660
251	200	4.5	220	440	660
252	250	5.5	260	520	780
253	150	4.5	220	440	660
268	300	3.5	180	360	540
269	250	4.0	210	420	630
270	100	5.5	260	520	780
271	250	4.5	220	440	660
272	300	5.0	250	500	750
273	200	5.0	250	500	750
274	100	5.5	260	520	780
275	150	5.0	250	500	750
276	100	5.5	260	520	780
277	200	4.0	210	420	630

Lot number / Scala ID	Scala penetration into fill (mm)	Average number of blows per 50 mm over top 300 mm or refusal depth	Allowable bearing capacity (kPa)	ULS bearing capacity (kPa)	Geotechnical ultimate bearing capacity (kPa)
278	250	5.0	250	500	750
279	200	4.5	220	440	660
280	200	6.0	280	560	840
281	250	4.0	210	420	630
282	250	4.5	220	440	660
283	300	4.5	220	440	660
284	250	3.5	180	360	540
303	350	4.5	220	440	660
304	200	4.5	220	440	660
305	250	5.0	250	500	750
306	300	4.5	220	440	660
389	250	5.0	250	500	750
395	150	4.0	210	420	630

Appendix C Scala test results

Tonkin + Taylor

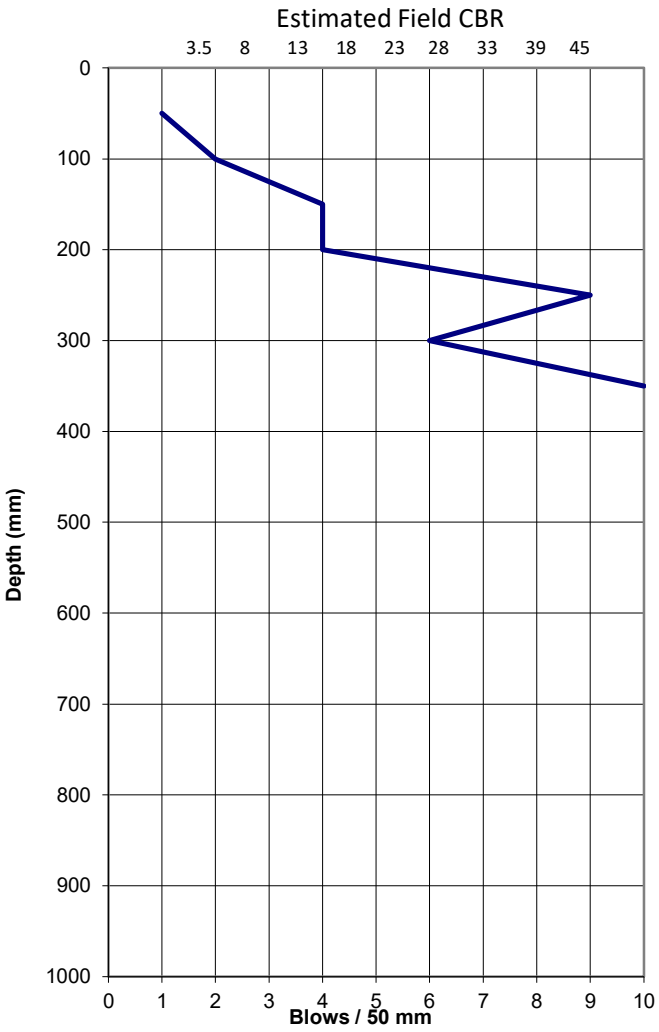
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***225***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*2*
150	*4*
200	*4*
250	*9*
300	*6*
350	*10*
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

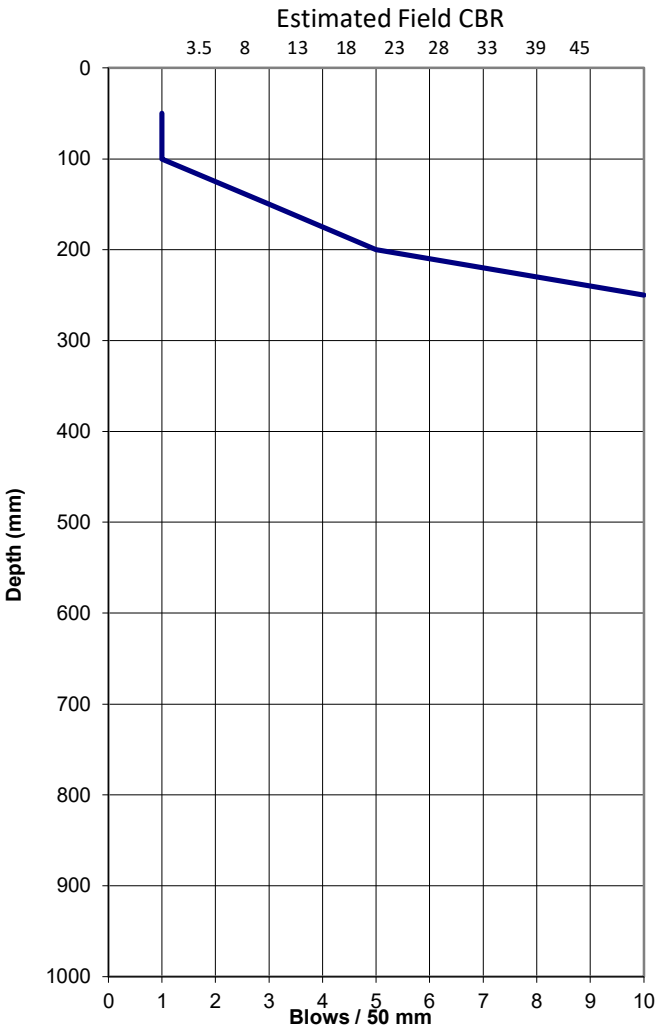
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***224***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*1*
150	*3*
200	*5*
250	*10*
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

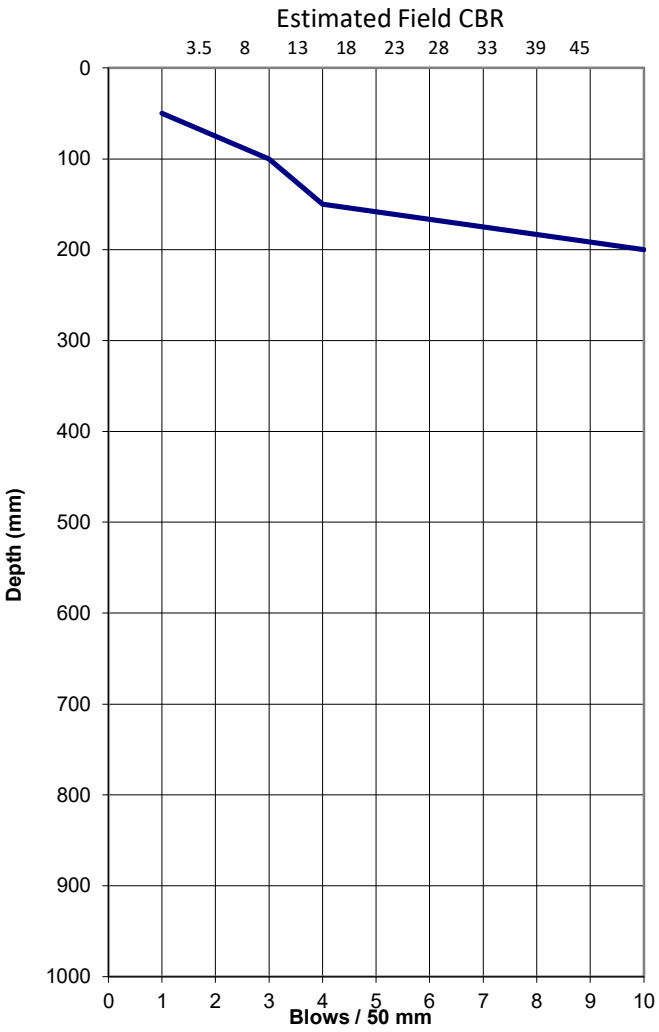
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***223***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*3*
150	*4*
200	*10*
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

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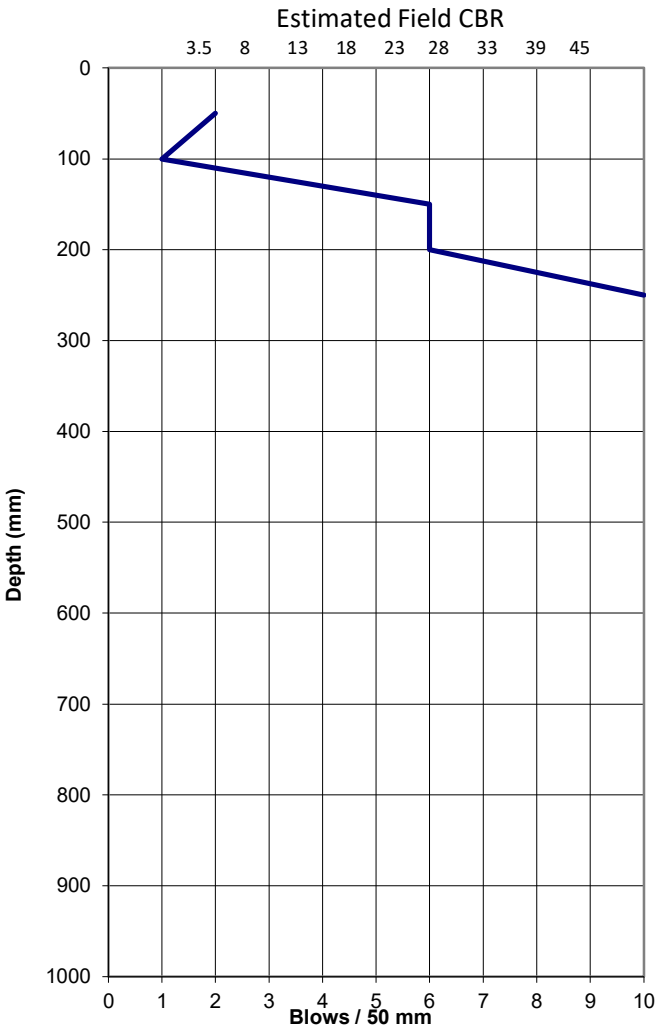
Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***222***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*2*
100	*1*
150	*6*
200	*6*
250	*10*
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***221***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*1*
150	*2*
200	*5*
250	*6*
300	*7*
350	*10*
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	

Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

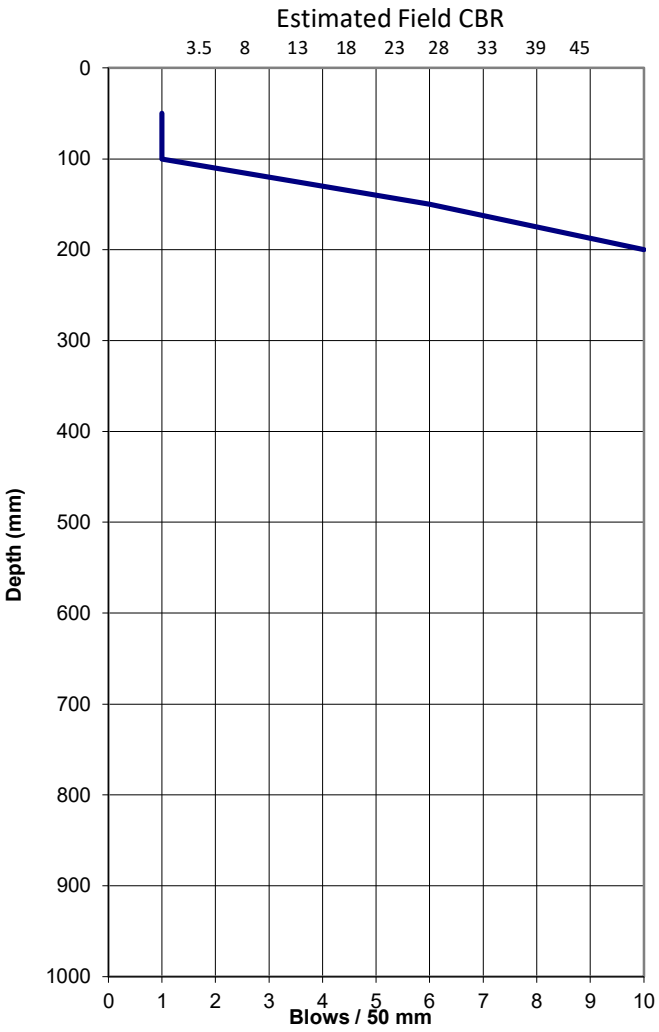
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***229***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*1*
150	*6*
200	*10*
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

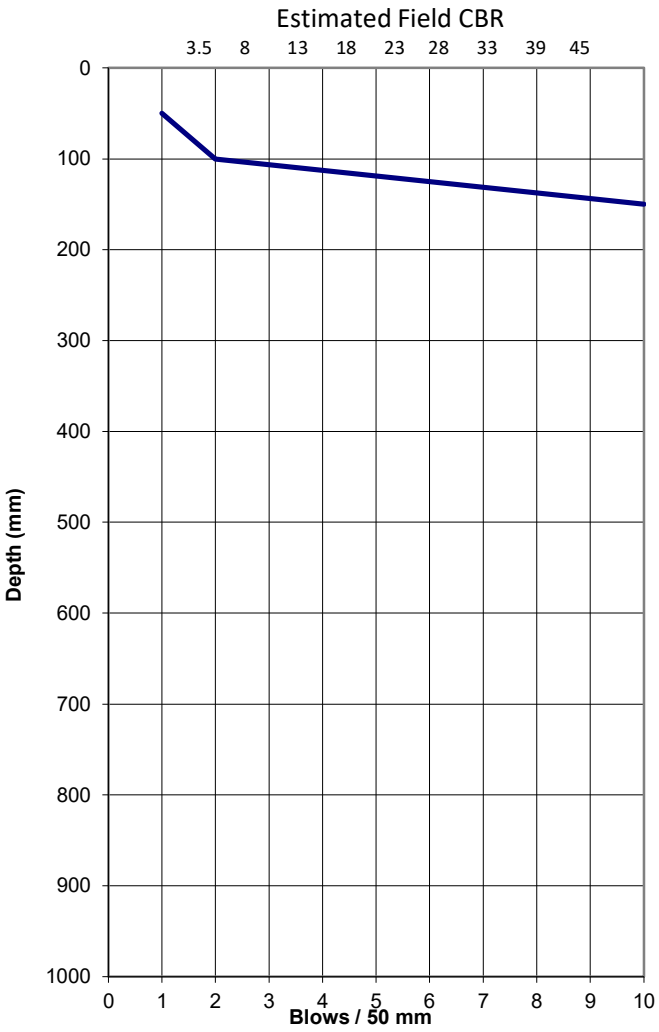
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***241***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*2*
150	*10*
200	
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

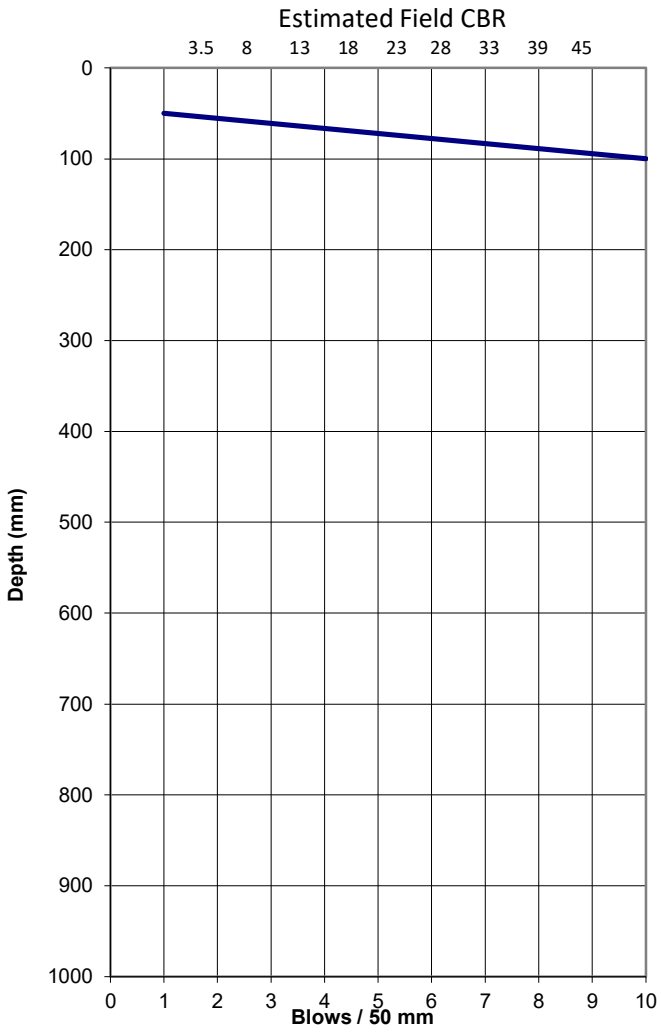
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***242***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*10*
150	
200	
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

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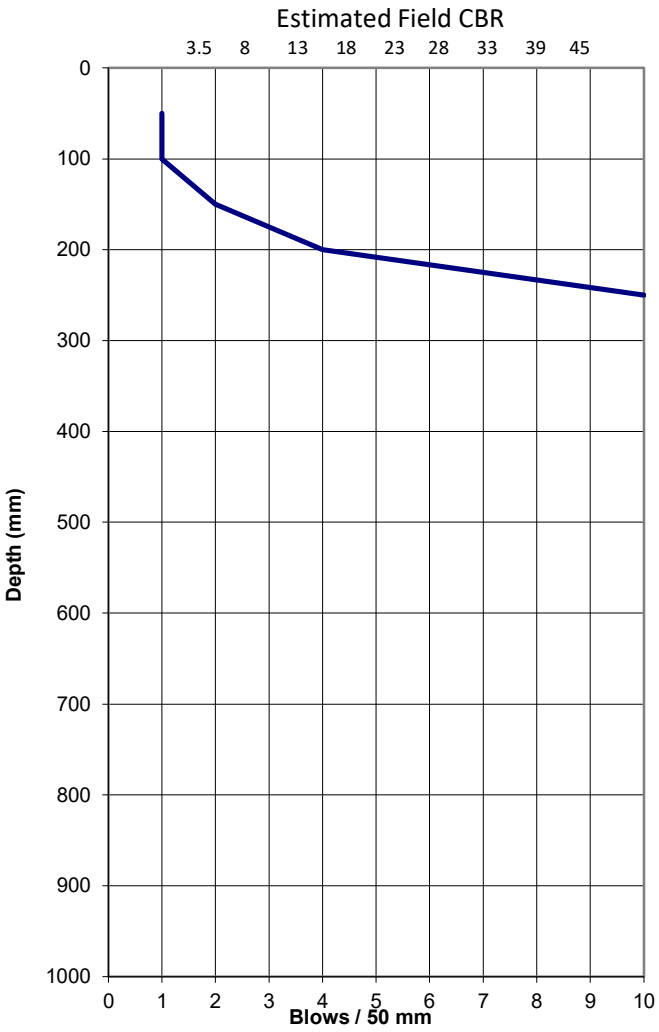
Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***243***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*1*
150	*2*
200	*4*
250	*10*
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***268***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*2*
100	*1*
150	*1*
200	*3*
250	*4*
300	*10*
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	

Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

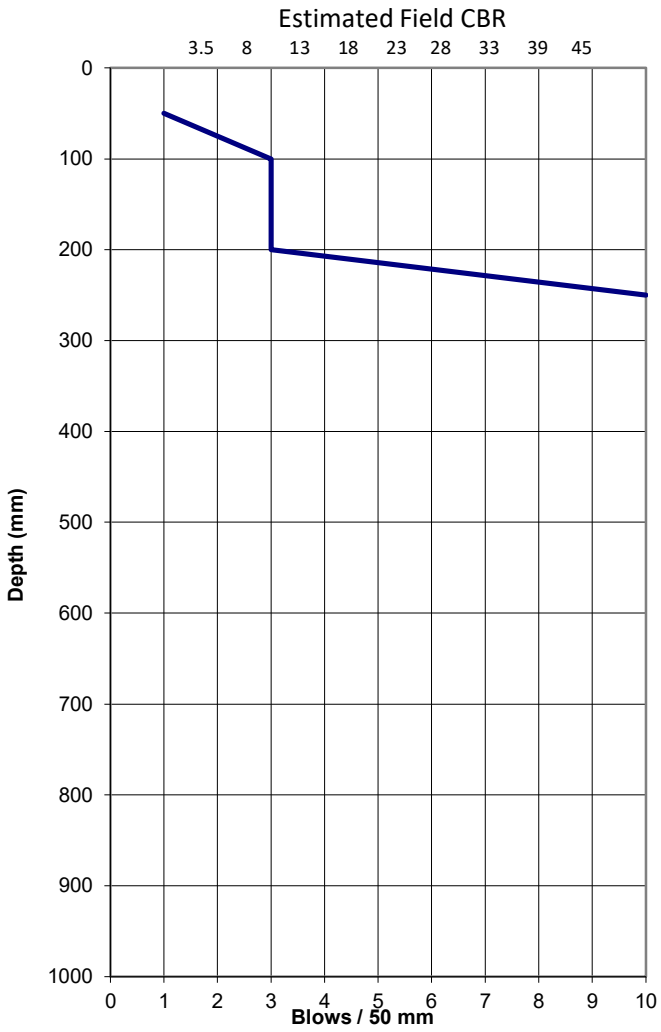
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***269***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*3*
150	*3*
200	*3*
250	*10*
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

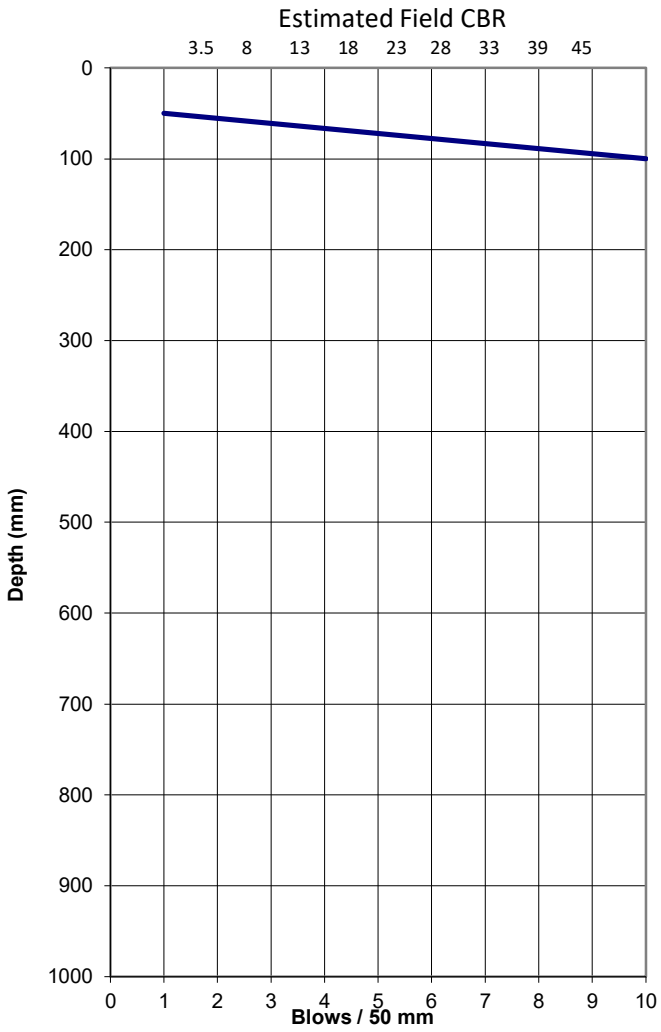
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***270***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*10*
150	
200	
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

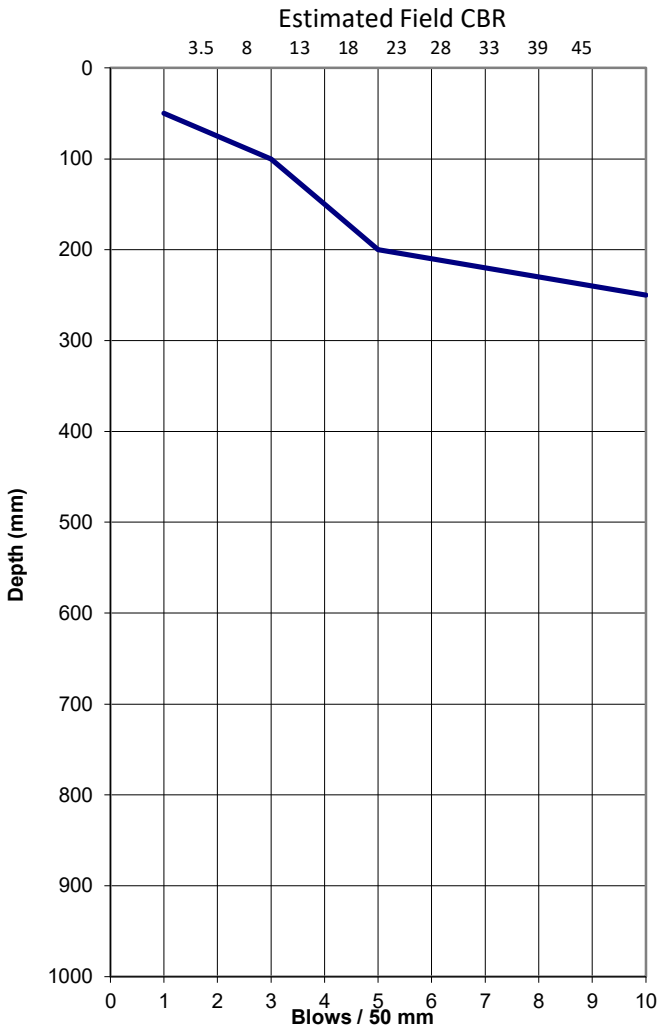
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***271***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*3*
150	*4*
200	*5*
250	*10*
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

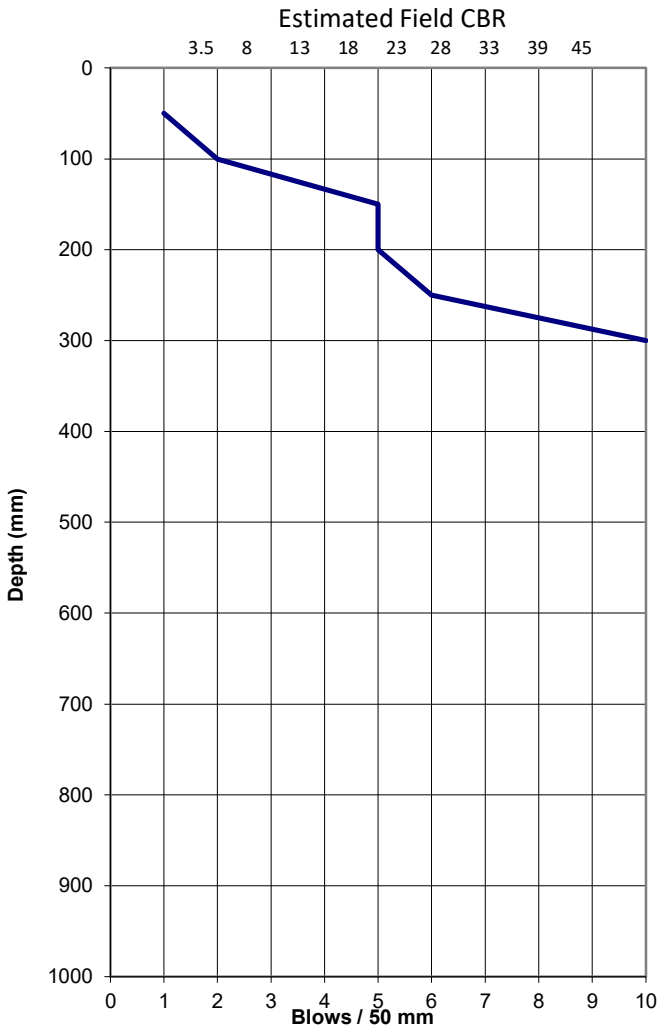
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***272***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*2*
150	*5*
200	*5*
250	*6*
300	*10*
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

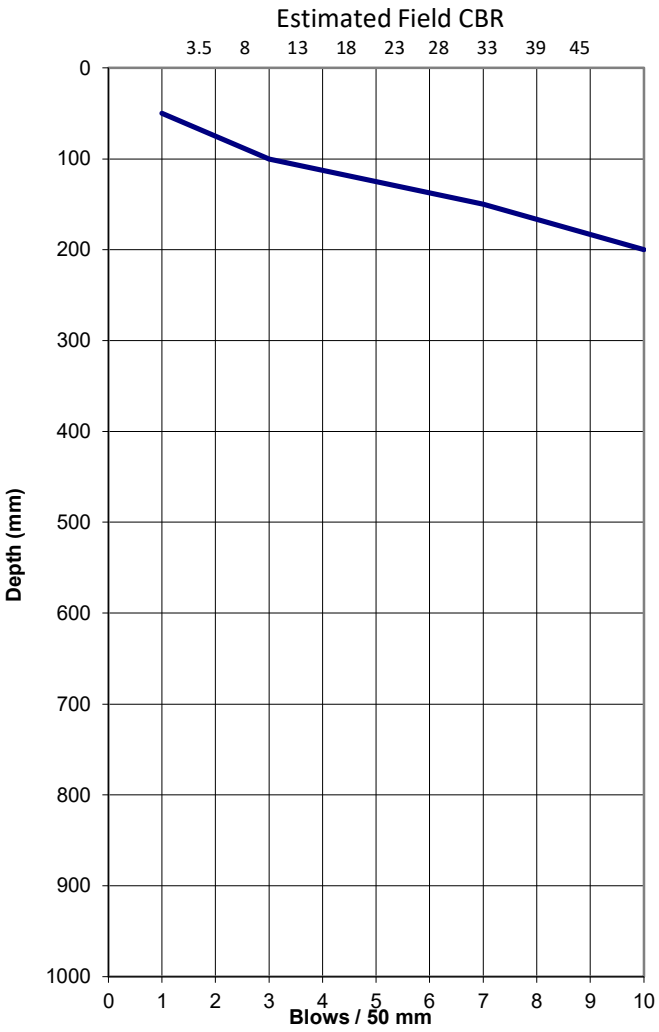
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***273***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*3*
150	*7*
200	*10*
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

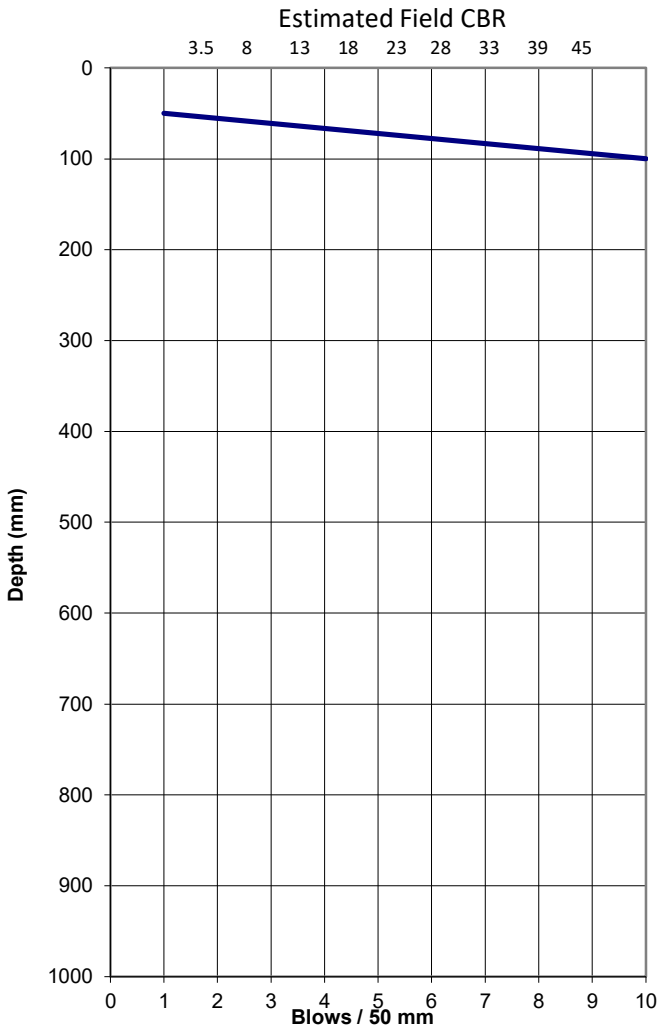
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***274***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*10*
150	
200	
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

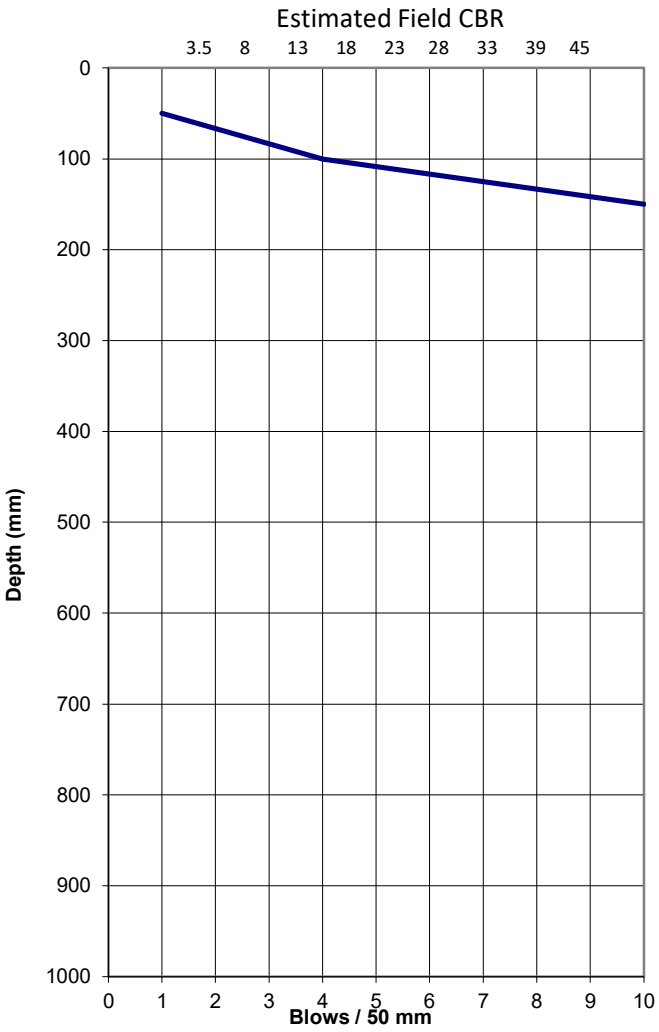
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***275***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*4*
150	*10*
200	
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

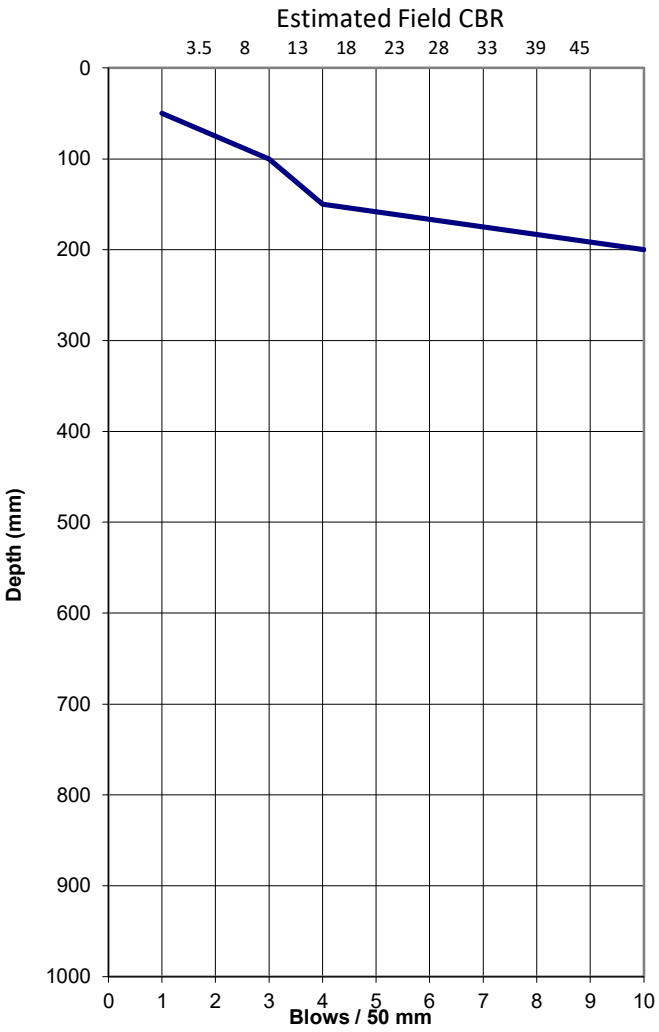
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***279***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*3*
150	*4*
200	*10*
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

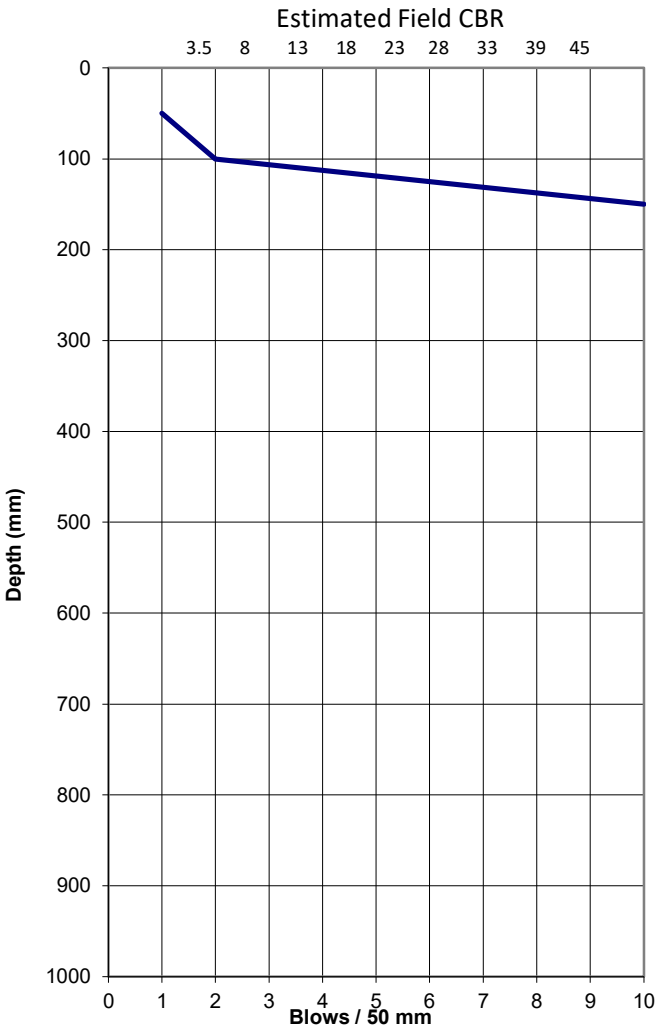
Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

SCALA PENETROMETER LOG

Job No: *53246.9000*	Date: *11/08/2023*	**Test No.**	***395***
Project: *Beach Grove Stage 5C & 5D*	Operated by: *PELE*		
Location: *Beach Grove , Kaiapoi*	Logged by: *PELE*	**Sheet**	***1***
RL: *Unknown*	Checked by: *HATI*	**of**	***1***

mm Driven	No. of Blows
50	*1*
100	*2*
150	*10*
200	
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

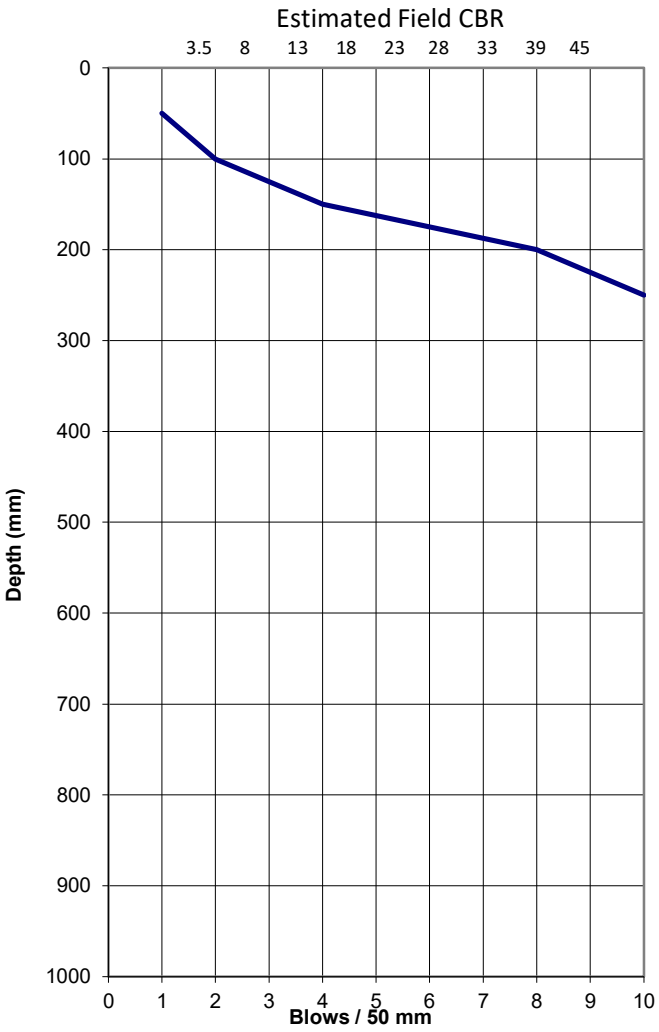
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***389***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*2*
150	*4*
200	*8*
250	*10*
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

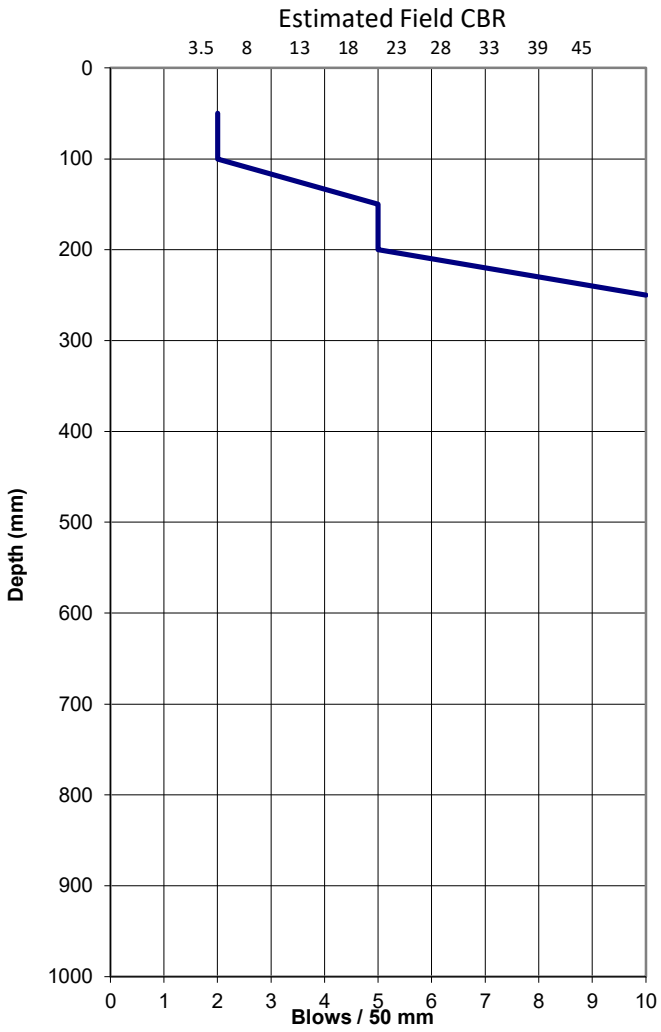
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***278***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*2*
100	*2*
150	*5*
200	*5*
250	*10*
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

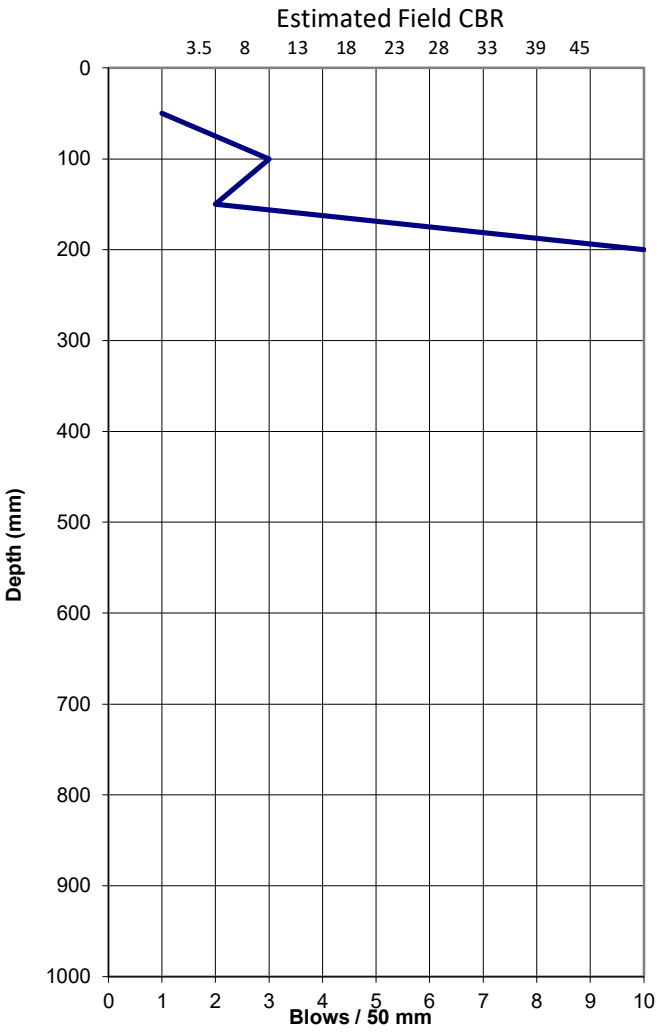
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***277***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*3*
150	*2*
200	*10*
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

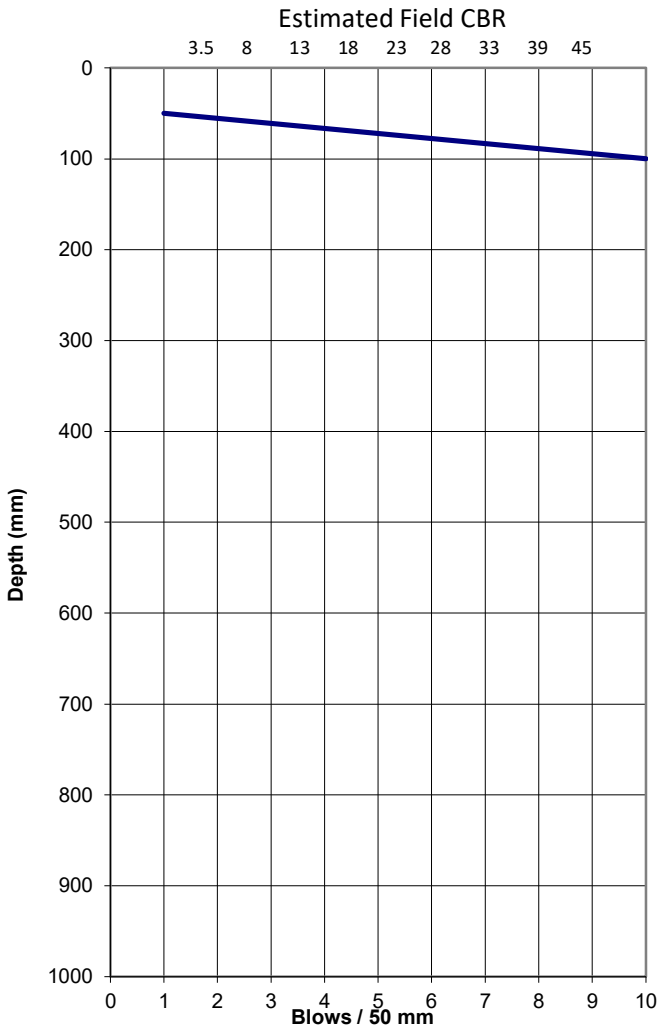
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***276***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*10*
150	
200	
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

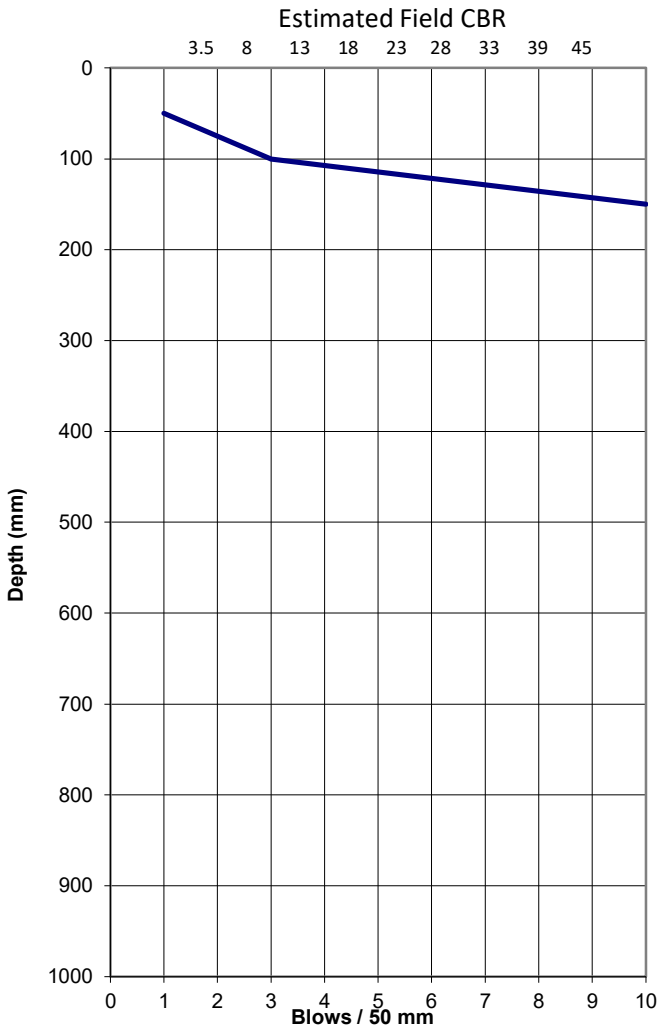
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***248***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*3*
150	*10*
200	
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

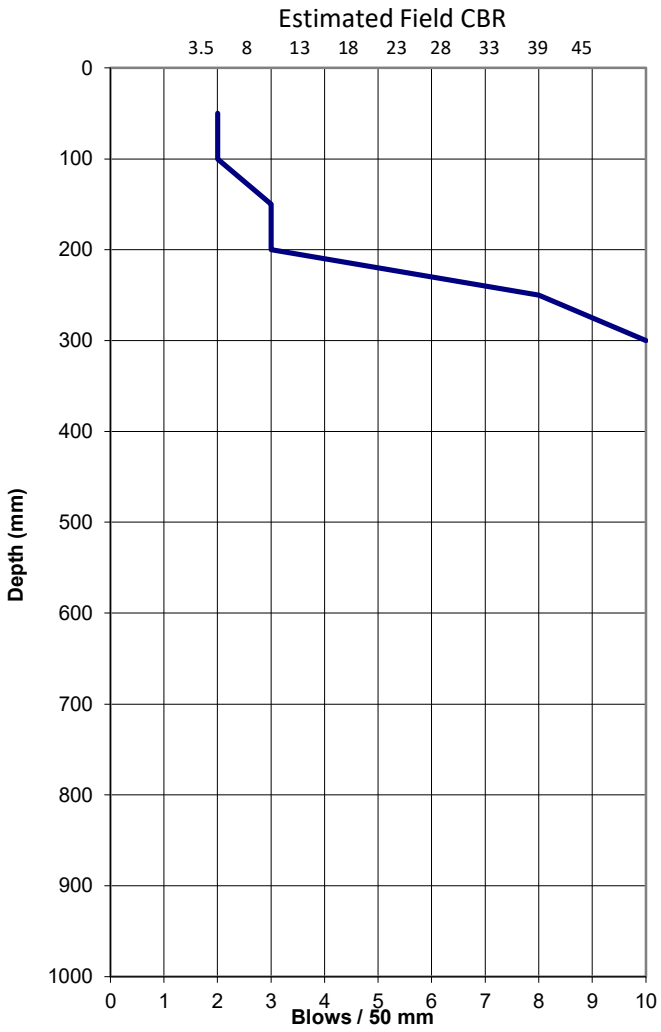
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***247***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*2*
100	*2*
150	*3*
200	*3*
250	*8*
300	*10*
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

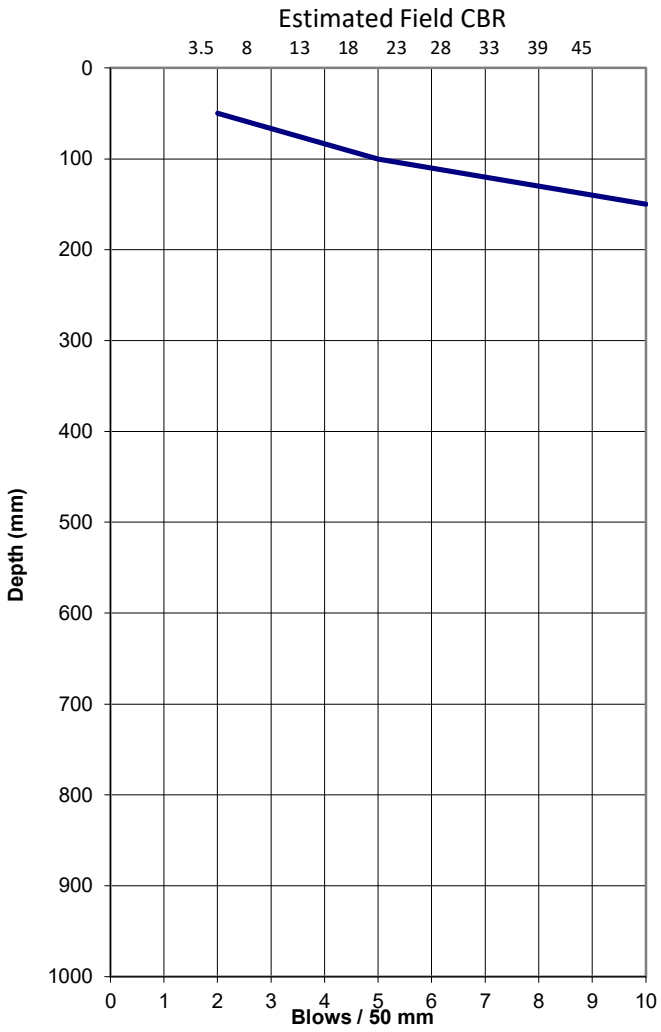
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***246***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*2*
100	*5*
150	*10*
200	
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***245***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*1*
150	*4*
200	*6*
250	*10*
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	

Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***244***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*3*
150	*3*
200	*2*
250	*7*
300	*6*
350	*10*
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	

Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

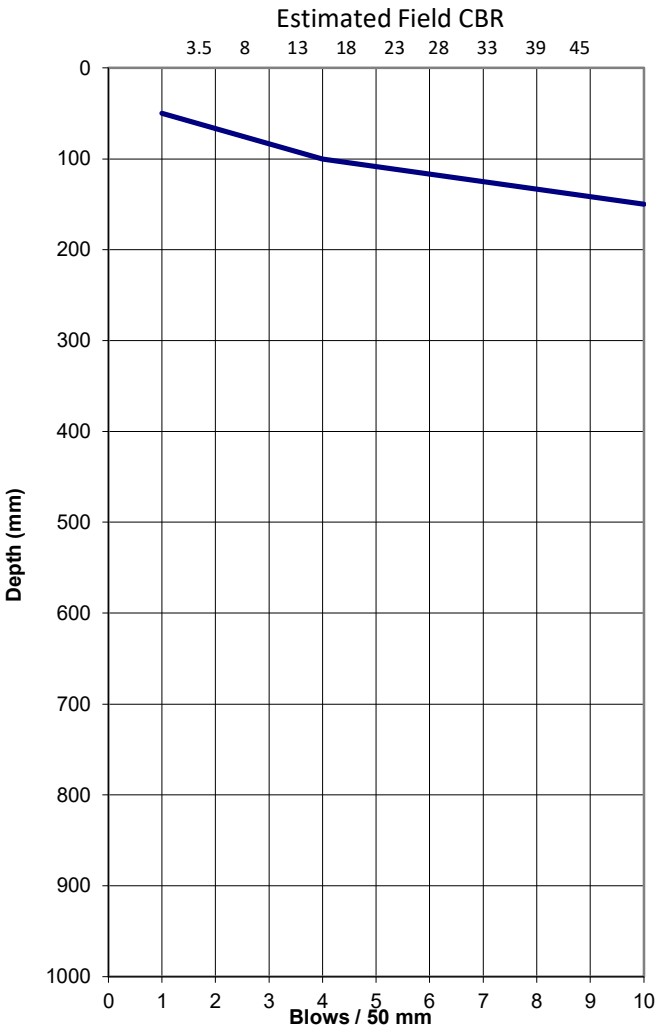
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***230***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*4*
150	*10*
200	
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

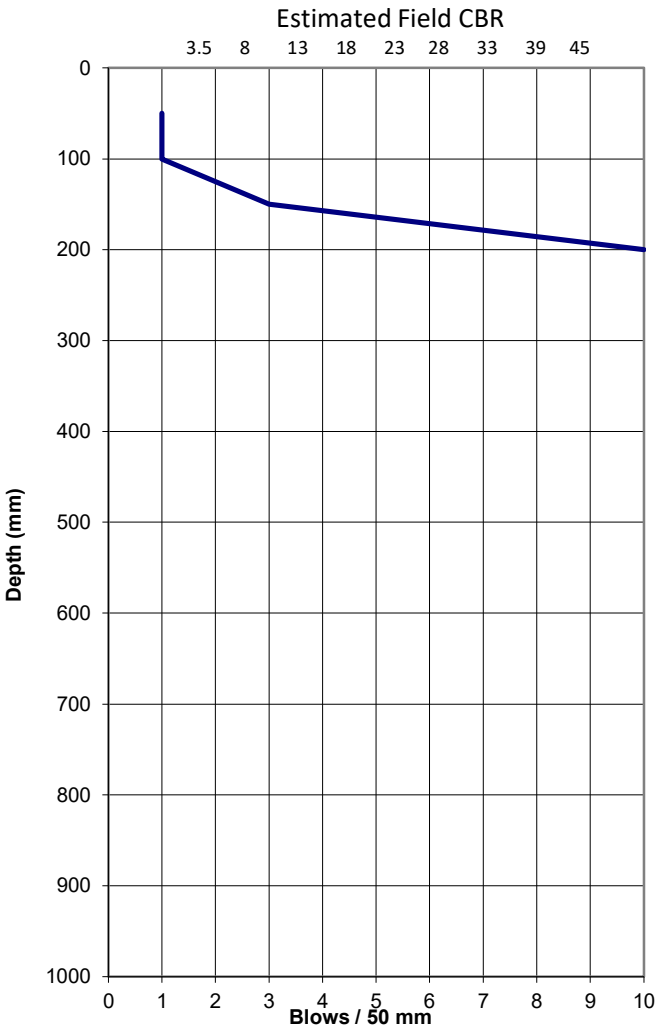
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***231***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*1*
150	*3*
200	*10*
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

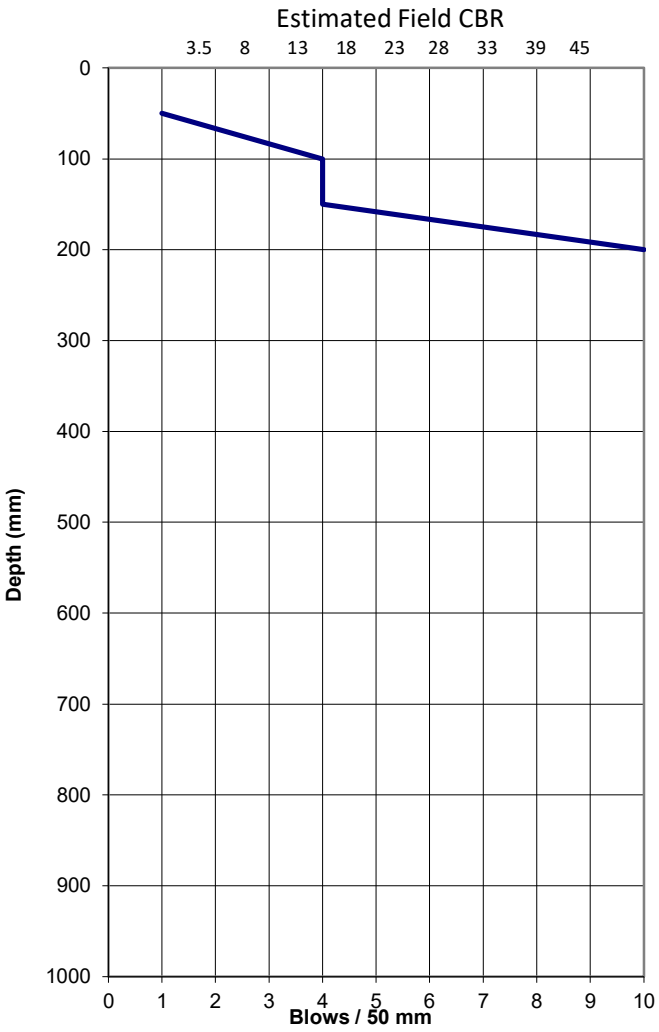
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***232***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*4*
150	*4*
200	*10*
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

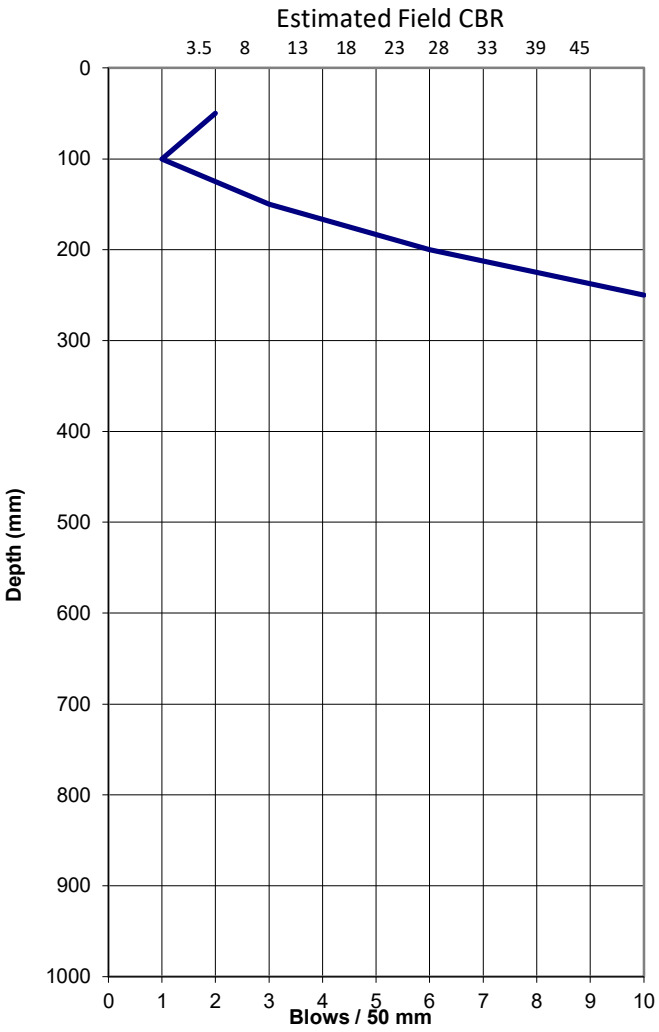
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***233***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*2*
100	*1*
150	*3*
200	*6*
250	*10*
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

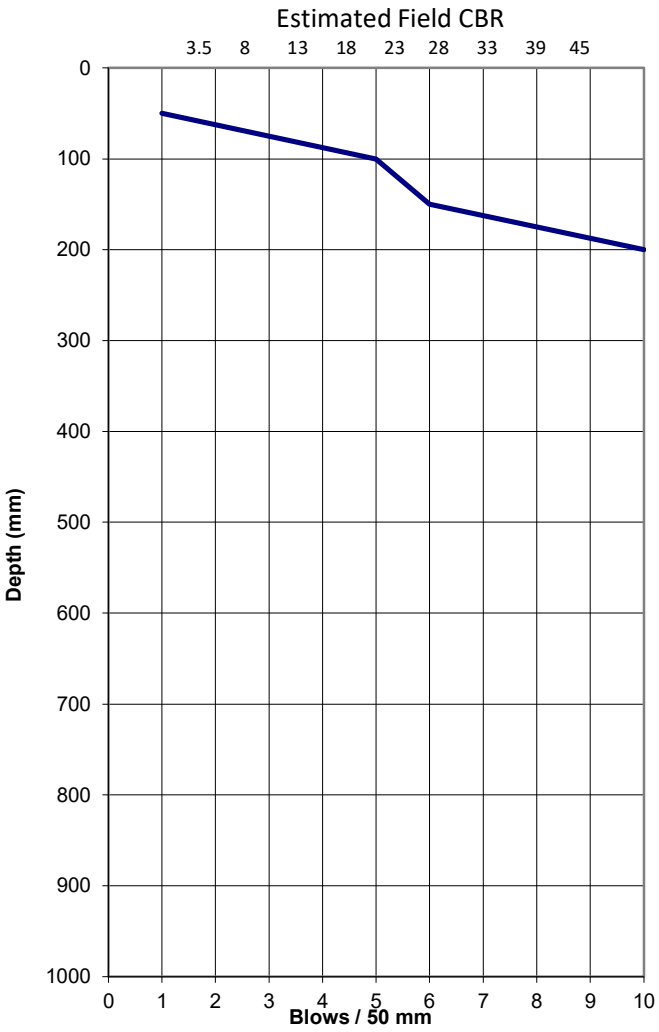
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***249***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*5*
150	*6*
200	*10*
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

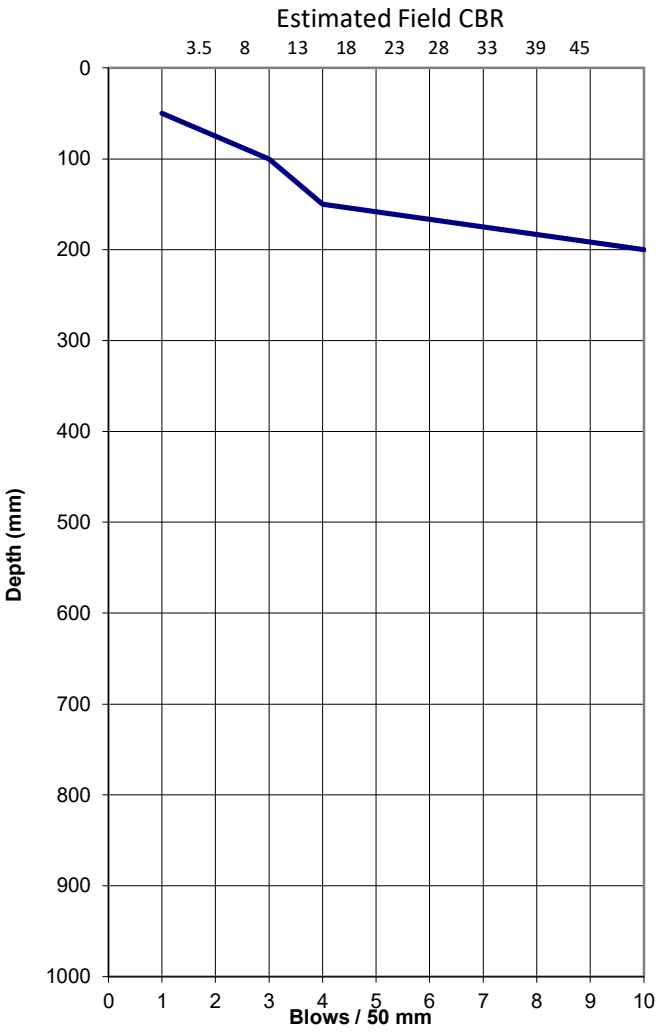
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***250***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*3*
150	*4*
200	*10*
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

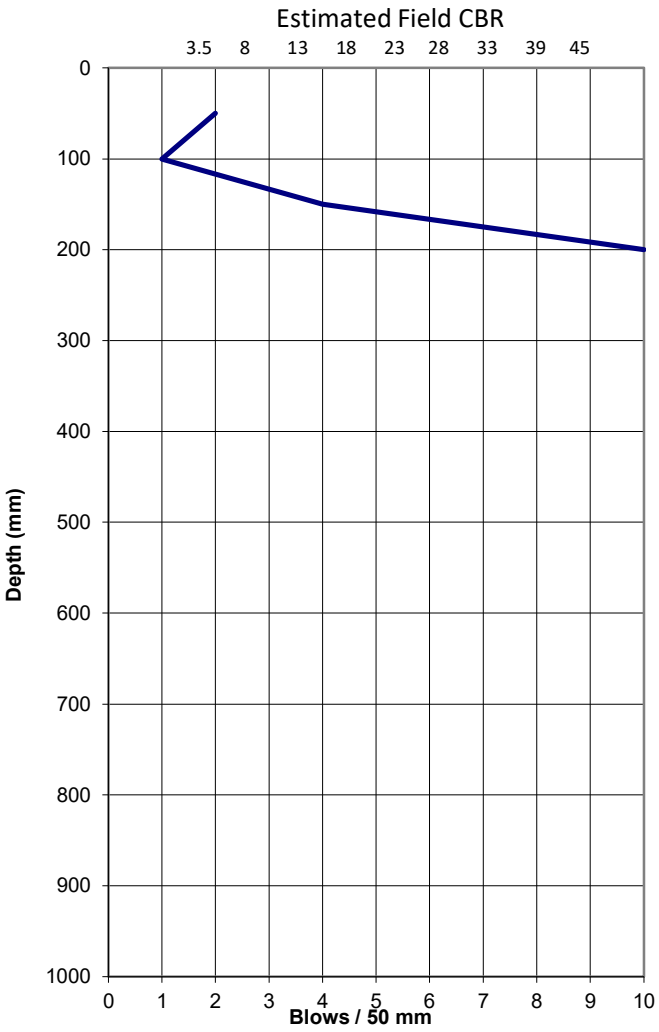
Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

SCALA PENETROMETER LOG

Job No:	*53246.9000*	Date:	*11/08/2023*	**Test No.**	***251***
Project:	*Beach Grove Stage 5C & 5D*	Operated by:	*PELE*		
Location:	*Beach Grove , Kaiapoi*	Logged by:	*PELE*	**Sheet**	***1***
RL:	*Unknown*	Checked by:	*HATI*	**of**	***1***

mm Driven	No. of Blows
50	*2*
100	*1*
150	*4*
200	*10*
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***252***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*5*
150	*5*
200	*7*
250	*10*
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	

Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

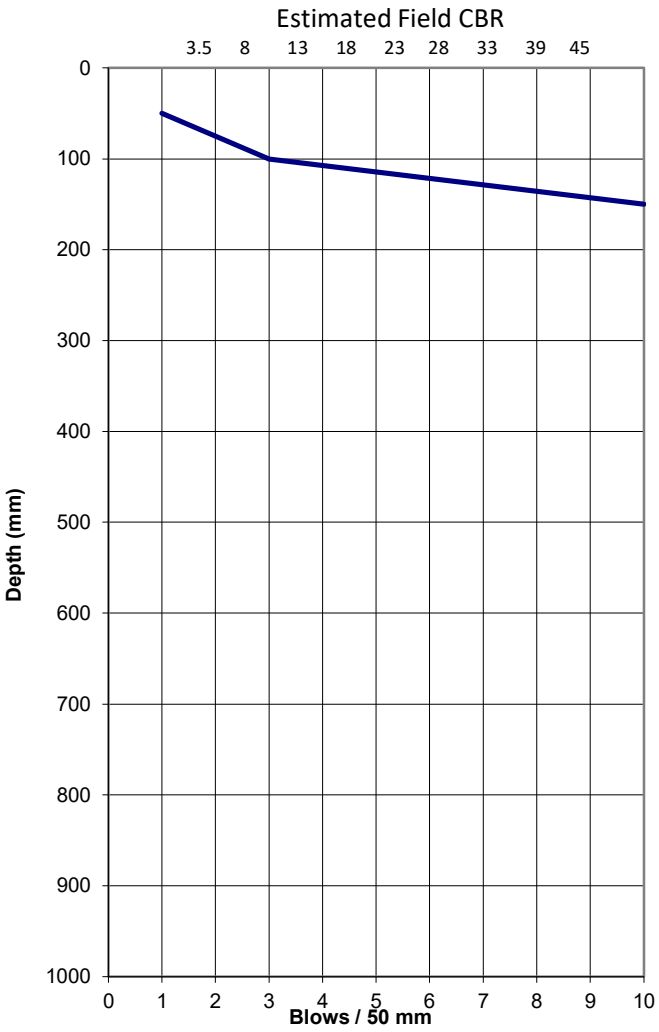
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***253***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*3*
150	*10*
200	
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***280***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*5*
150	*7*
200	*10*
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	

Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

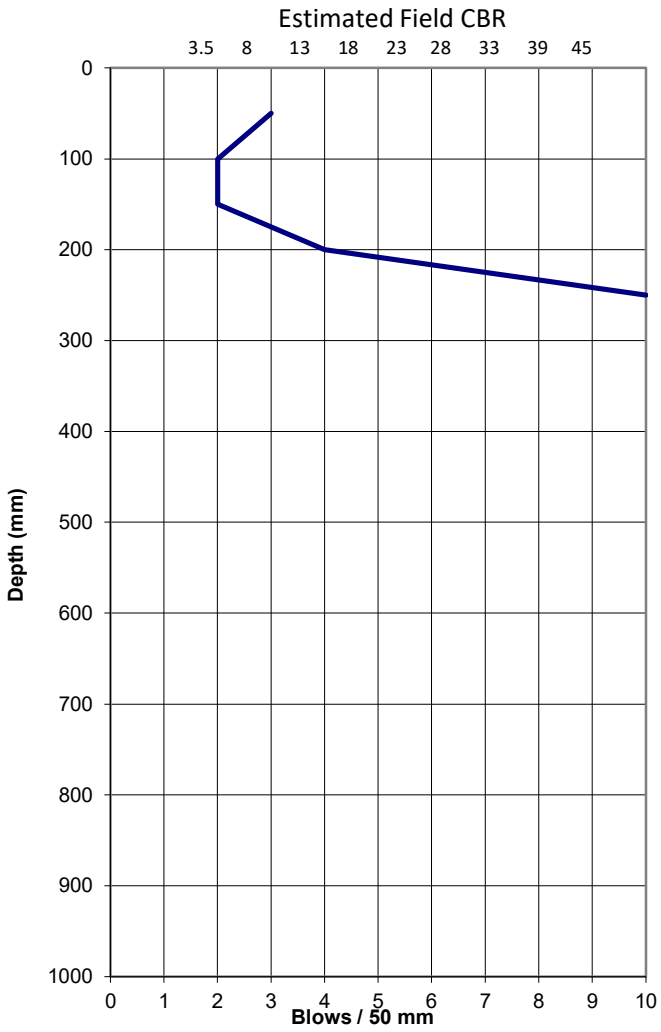
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***281***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*3*
100	*2*
150	*2*
200	*4*
250	*10*
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

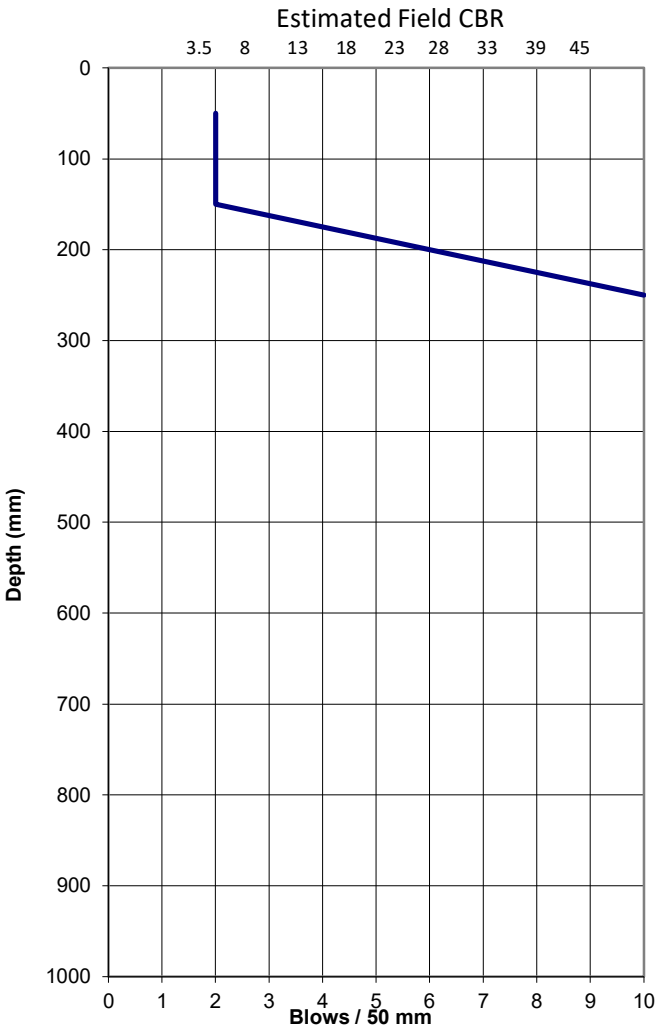
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***282***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*2*
100	*2*
150	*2*
200	*6*
250	*10*
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

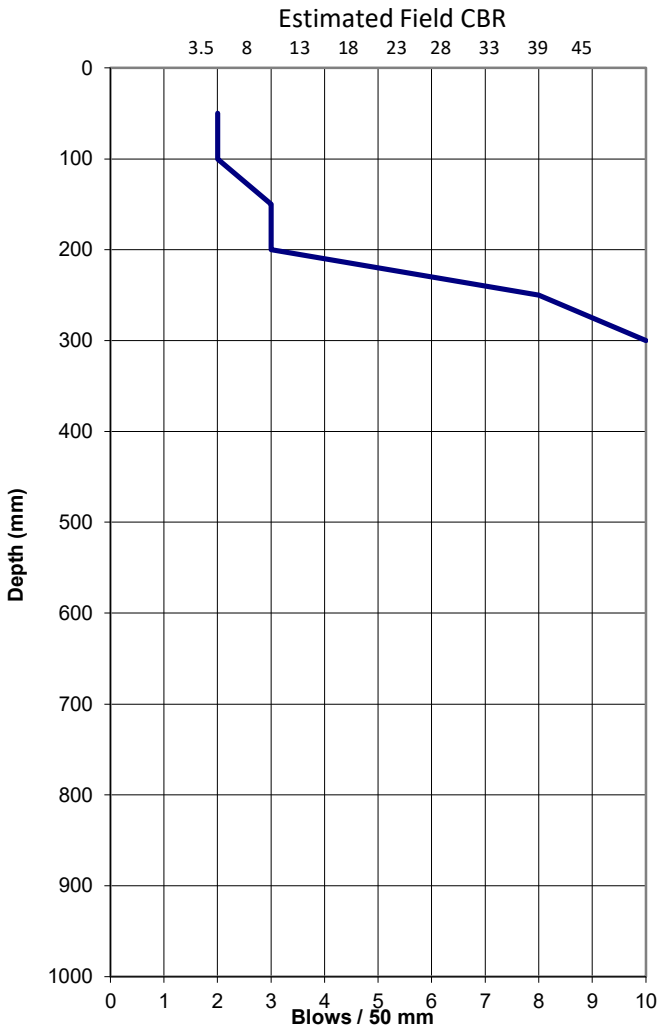
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***283***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*2*
100	*2*
150	*3*
200	*3*
250	*8*
300	*10*
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

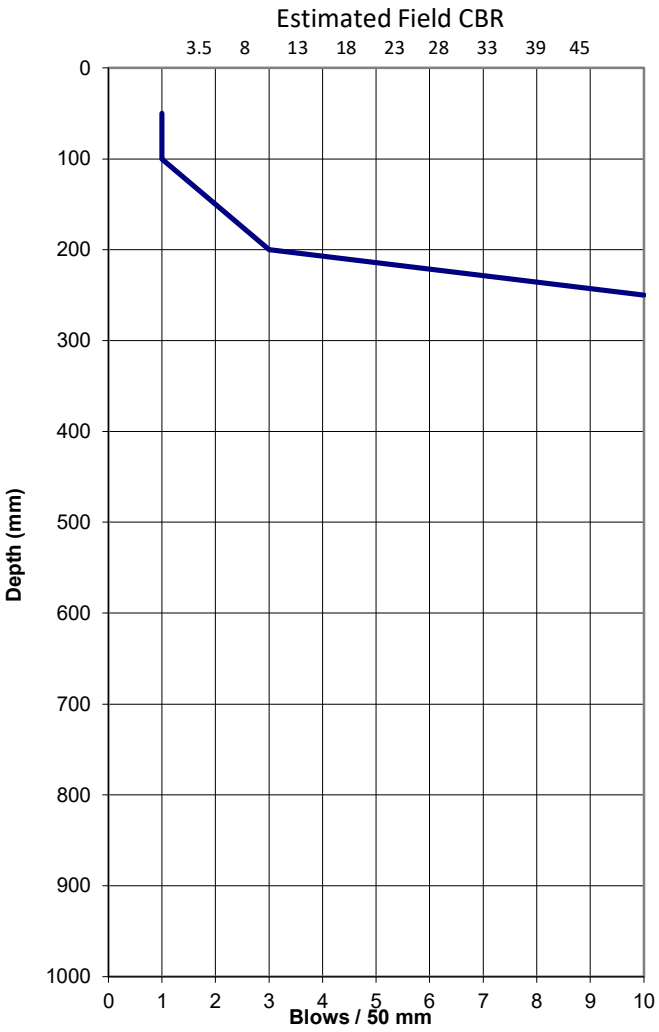
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***284***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*1*
150	*2*
200	*3*
250	*10*
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

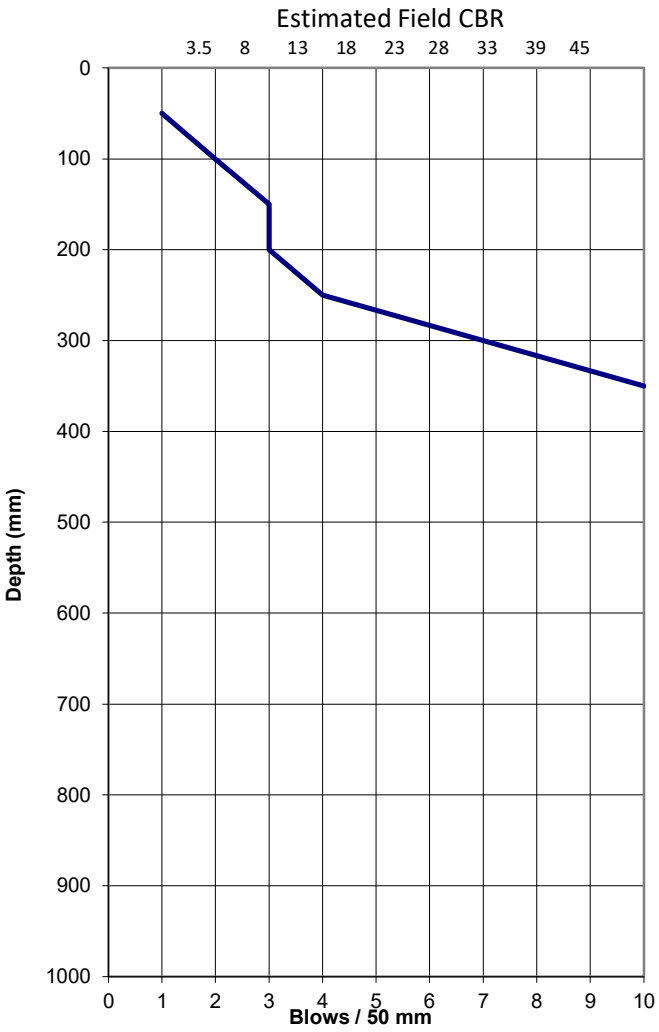
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***303***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*2*
150	*3*
200	*3*
250	*4*
300	*7*
350	*10*
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

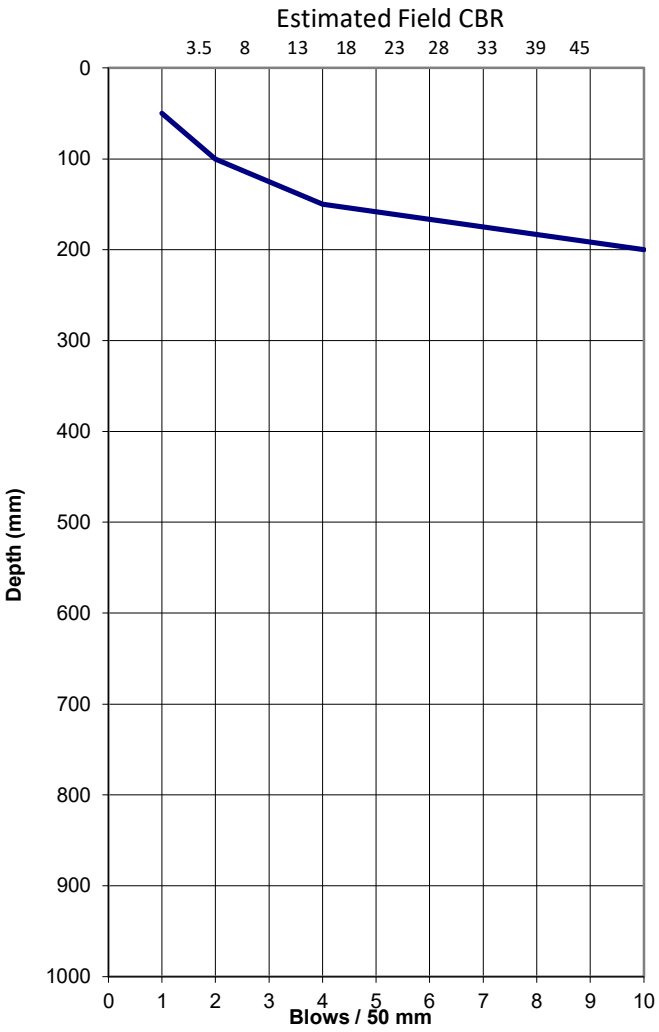
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***304***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*2*
150	*4*
200	*10*
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

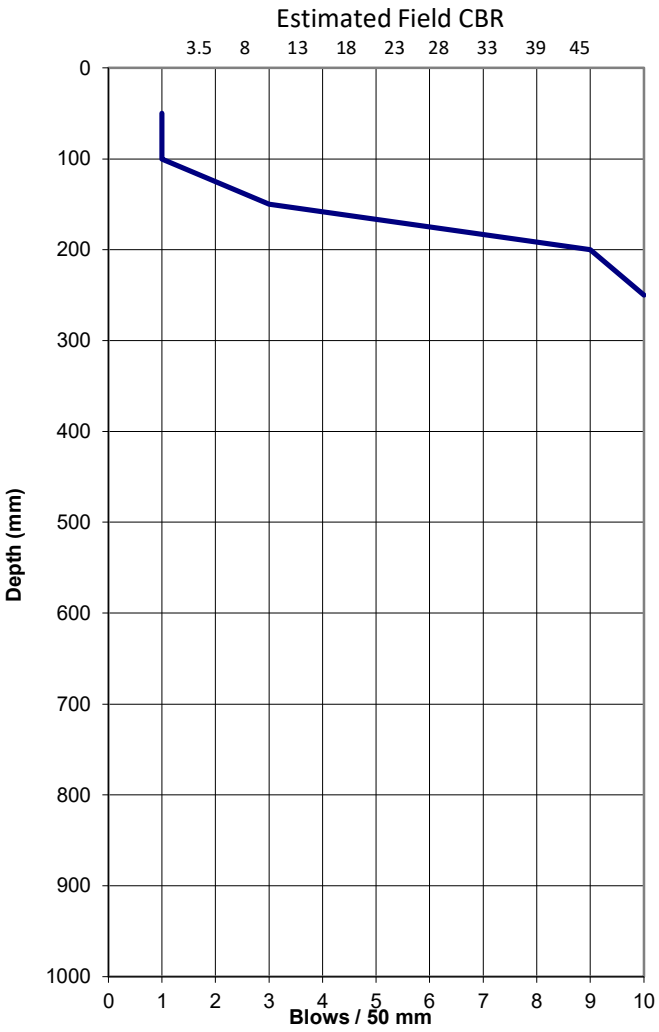
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***305***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*1*
150	*3*
200	*9*
250	*10*
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Tonkin + Taylor

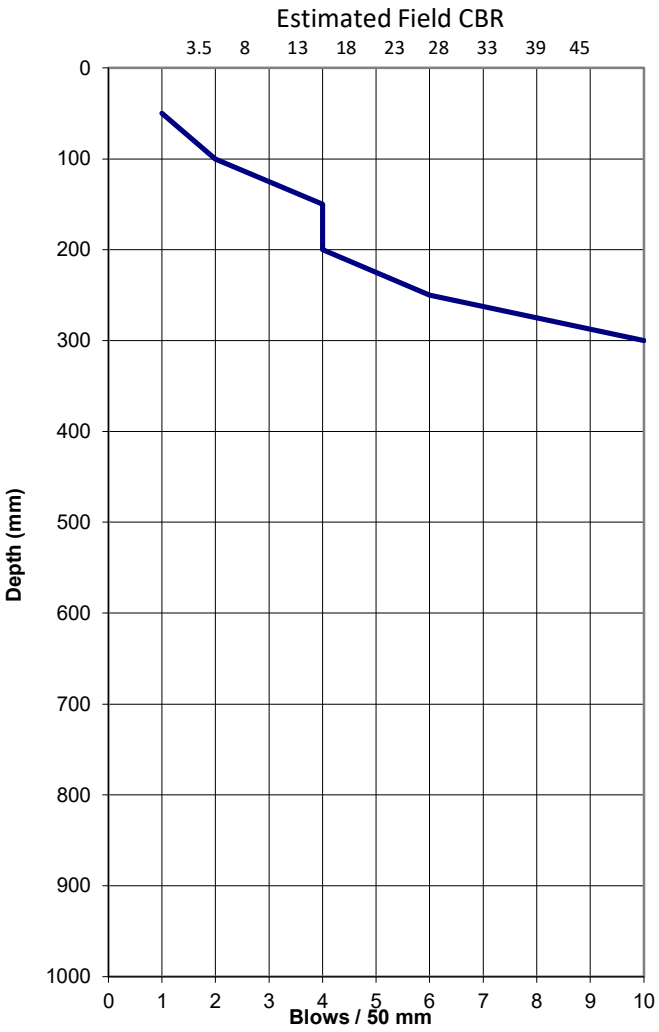
SCALA PENETROMETER LOG

Job No: *53246.9000*
Project: *Beach Grove Stage 5C & 5D*
Location: *Beach Grove , Kaiapoi*
RL: *Unknown*

Date: *11/08/2023*
Operated by: *PELE*
Logged by: *PELE*
Checked by: *HATI*

Test No. ***306***
Sheet ***1***
of ***1***

mm Driven	No. of Blows
50	*1*
100	*2*
150	*4*
200	*4*
250	*6*
300	*10*
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	



Note: The estimated CBR values are based upon Fig. 5, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (1992) 'Pavement Design - A Guide to the Structural Design of Road Pavements'

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer