

LEVEL 1 REPORT

Section C – Warralily at Armstrong Creek

DAMS:
1, 2, 3, 4, 5

Armstrong Creek Development Corporation

INFONHIL00752AC
11 October 11

11 October 2011

Armstrong Creek Development Corporation
C/o Brenton Downing, Metricon Properties
501 Blackburn Rd, Mt Waverley VIC

Attention: Brenton Downing

Dear Brenton

**RE: Section C – Warralily at Armstrong Creek
Dams: 1, 2, 3, 4, 5**

Level 1 Compaction Control

This letter presents a report by Coffey Information Pty Ltd (Coffey) on Level 1 Testing Services undertaken during the construction of fill at dams within Section C – Warralily at Armstrong Creek. Two bound copies and one electronic copy is provided.

Please do not hesitate to contact the undersigned should there be any queries regarding this report. For and on behalf of Coffey Information Pty Ltd



Stuart Kelaher

VIC/TAS Manager

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1 INTRODUCTION

This report presents the results of compaction control and laboratory testing services provided by Coffey Information Pty Ltd (Coffey) during the dam infill's (1, 2, 3, 4, 5) construction of the fill at Section C – Warralily at Armstrong Creek.

Coffey was engaged by the Armstrong Creek Development Corporation to provide Level 1 testing services for the duration of these works in accordance with the specification supplied. The work was commissioned by Ms Wendy Scroggie.

Level 1 testing, as defined in AS3798 – 2007 section 8 “Guidelines on Earthworks for Commercial and Residential Development”, provides for full-time inspection of the construction of controlled fill and compaction testing in accordance with AS1289 “Methods of Testing Soils for Engineering Purposes”. The Level 1 testing was undertaken by technicians from Coffey during the period from 13 May to 19 May 2011.

2 SCOPE OF WORK

2.1 Area of Work

Coffey provided Level 1 testing of the fill placed as indicated in the drawing detailed in the daily records. Material selection and condition, as well as compaction testing, were conducted during the construction of the fill. Coffey also inspected stripping of topsoil and unsuitable sub grade material to ensure sub grade was free from organic material before placement of fill.

2.2 Placement Specification

In summary, the project specification requires that earthworks comply with the Geotech Brief L1 Cert issued on the 16/08/2010, Project Number 3440163E.

- Level 1 Supervision in accordance with AS3798-2007 section 8
- Fill to be compacted in near horizontal layers not exceeding 250mm loose thickness and compacted to at least 95% standard dry density ratio
- Moisture ratio of the fill material to be within +/-3% of the optimum moisture content

3 CONSTRUCTION PLANT

The following construction plant was used on site as required:

- 1 x 825 compactor
- 2 x excavator
- 5 x dump trucks
- 2 x bulldozers
- 1 x grader

4 INSPECTION AND TESTING

4.1 Construction Materials

The Armstrong Creek improvement works was the source of the material utilised in the fill operations in Section C. Fill material was excavated from the CK2B-1 area, as indicated on the drawings in the daily site records, and transported to the work area by dump trucks and placed at each dam. Over size material was found within Dam 5 and to this end was removed in accordance of AS3798. No oversize was present in the construction fill material. Material was observed to be close to optimum moisture content and as such did not require further conditioning.

4.2 Fill Placement

Material delivered to the work area was pushed over and spread by bulldozer. No oversize rock was present requiring no further action prior to being spread by bulldozer and compaction with an 825 compactor. Where the material was not at or near optimum moisture content; wet or dry materials was mixed in to ensure material was at or near optimum moisture content.

The surface of each completed layer was ripped to prevent lamination and benching was used to provide a keyed in finish.

Coffey's Level 1 inspector was on site on a full time basis during the placement, compaction and testing of the engineered fill.

Compaction tests with a nuclear density gauge were done on completed layers to ensure compliance with the specification and samples of the fill material were tested in Coffey's NATA accredited laboratory to determine the density ratio and moisture variation.

The following tests in Table1 are outside of the specification. Coffey have reviewed these results and given the relatively shallow fill volume generally below 600mm these results will not impact on the performance of the engineered fill. Table 2 summarises all results.

Table 1: Out of Specification Results

Work Order	Field No.	Location: Section C	Layer	Date	HDR %	MR %	Moisture Variation
2789	430	Dam 1	2	16/09/2011	108.5	84	4.0 Dry
2789	431	Dam 1	3	16/09/2011	105.5	79	5.0 Dry
2789	432	Dam 1	4	16/09/2011	101.5	79	5.0 Dry
2789	429	Dam 3	4	16/09/2011	103	78	5.0 Dry
2790	433	Dam 4	2	19/09/2011	105	82	4.5 Dry
2790	437	Dam 4	6	19/09/2011	94.5	103	0.5 Wet

SECTION C – WARRALILY AT ARMSTRONG CREEK

The following table contains a summary of test results:

Work Order	Field No.	Location: Section C	Layer	Date	HDR %	MR %	Moisture Variation
2789	430	Dam 1	2	16/09/2011	108.5	84	4.0 Dry
2789	431	Dam 1	3	16/09/2011	105.5	79	5.0 Dry
2789	432	Dam 1	4	16/09/2011	101.5	79	5.0 Dry
2788	424	Dam 2	2	15/09/2011	98	100	OMC
2788	425	Dam 2	3	15/09/2011	96.5	102	0.5 Wet
2788	426	Dam 2	4	15/09/2011	97	99	OMC
2788	427	Dam 3	2	15/09/2011	95.5	104	0.5 Wet
2788	428	Dam 3	3	15/09/2011	96.5	100	OMC
2789	429	Dam 3	4	16/09/2011	103	78	5.0 Dry
2790	433	Dam 4	2	19/09/2011	105	82	4.5 Dry
2790	434	Dam 4	3	19/09/2011	106	79	5.0 Dry
2790	435	Dam 4	4	19/09/2011	96	103	0.5 Wet
2790	436	Dam 4	5	19/09/2011	96	102	0.5 Wet
2790	437	Dam 4	6	19/09/2011	94.5	103	0.5 Wet
2814	438	Dam 5	2	20/09/2011	97.5	100	OMC
2814	439	Dam 5	3	20/09/2011	100.5	97	0.5 Dry
2814	440	Dam 5	4	20/09/2011	99	98	0.5 Dry
2814	441	Dam 5	5	20/09/2011	98.5	101	OMC
2814	442	Dam 5	6	20/09/2011	96.5	98	0.5 Dry
2814	443	Dam 5	7	20/09/2011	100	98	0.5 Dry
2815	444	Dam 5	8	21/09/2011	98	98	0.5 Dry
2815	445	Dam 5	9	21/09/2011	100	91	2.0 Dry
2815	446	Dam 5	10	21/09/2011	97	99	OMC
2815	447	Dam 5	11	21/09/2011	98	96	0.5 Dry
2859	448	Dam 5	12	22/09/2011	103	89	2.5 Dry
2859	449	Dam 5	13	22/09/2011	103.5	110	2.0 Wet
2859	450	Dam 5	14	22/09/2011	101	92	2.0 Dry
2859	451	Dam 5	15	22/09/2011	104.5	90	2.5 Dry
2859	452	Dam 5	16	22/09/2011	105	91	2.5 Dry
2860	453	Dam 5	17	23/09/2011	102.5	94	1.5 Dry
2860	454	Dam 5	18	23/09/2011	104	98	0.5 Dry
2861	455	Dam 5	19	26/09/2011	102	98	0.5 Dry

Copies of all test certificates are included in Appendix A of this document.

5 STATEMENT OF COMPLIANCE

Coffey personnel have provided Level 1 inspection and testing services in accordance with AS3798-2007 and the level 1 works comply with the specifications and drawings during the construction of the fill at Section C – Warralily at Armstrong Creek. A technician from Coffey was on site on a full time basis during fill placement and observed the construction techniques adopted.

Based on observations made by Coffey personnel and the results of field and laboratory tests, we consider that the fill has been placed in general accordance with the intent of the specification and in accordance with AS3798.

For and on behalf of Coffey Information
Pty Ltd

A handwritten signature in black ink, appearing to read 'Stuart Kelaher', with a long horizontal flourish extending to the right.

Stuart Kelaher

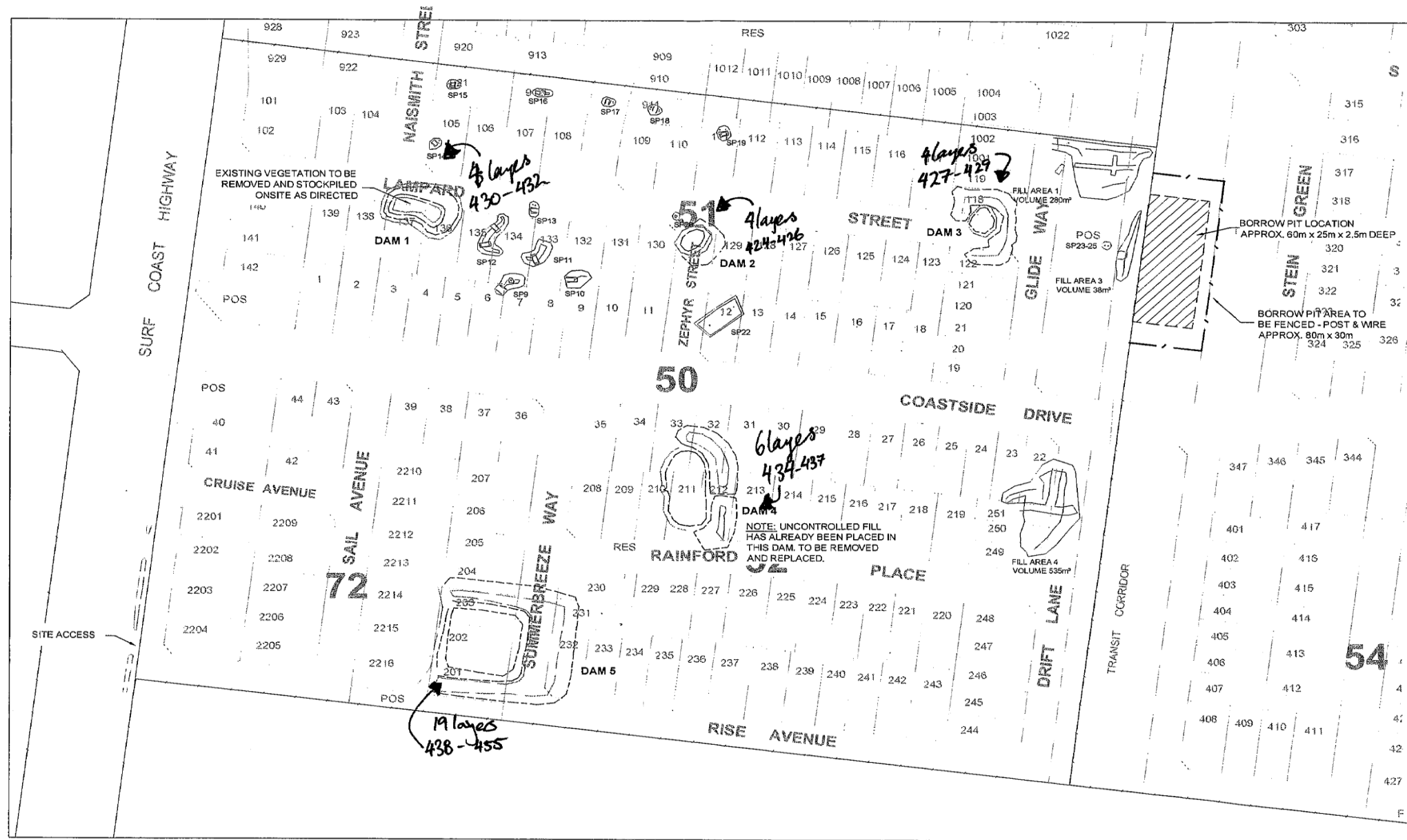
VIC/TAS Manager

Appendix A

Test Results

Appendix B

Test Locations

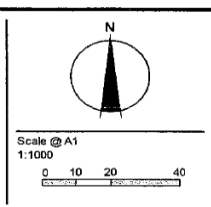


REVISION	DATE	ISSUED	BY	APPD
A	30.6.11	ISSUED TO CLIENT	AB	AC

Principal

Designed
 Drawn
 Checked
 Authorised
 Date
 August

Scale @ A1
 1:1000
 0 10 20 40



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Warralily Estate
 Soil Management & Dam Filling
 680 Surf Coast Highway
 Armstrong Creek Section C

Drawing No. 0595ESB-SK17 Rev A
 Sheet No. 1 of 1

Preliminary Plan
 Not to be used for construction