

**Shadforth Civil Pty Ltd**  
99 Sandalwood Lane,  
Forest Glen, QLD, 4556

**Project Number:** PTP/08985  
**Letter Number:** PTP/08985 – 0002 – Rev1  
**Project Name:** The Pocket – Stage 2,  
Collingwood Park

**Attention:** Josh Cumming  
**Email:** josh.cumming@shadcivil.com.au

**Report on Level 1 Earthworks**  
**The Pocket – Stage 2**  
**Goss Drive,**  
**Collingwood Park, QLD, 4301**

## 1. Introduction

This report summarises the results of inspection and testing provided by Protest Engineering (Protest) for the bulk earthworks as part of The Pocket - Stage 2 project located at Collingwood Park undertaken between 19 April 2022 to 20 April 2022. The works were undertaken at the request of Shadforth Civil Pty Ltd.

The scope of inspection and testing undertaken was in general accordance with AS3798-2007 *Guidelines on Earthworks for Commercial and Residential Developments*. As part of the inspection and testing undertaken, Protest provided Level 1 supervision in accordance with Section 8.2 of AS3798-2007.

The frequency of field density testing adopted for this project was based on AS3798-2007, Table 8.1 with a minimum of three tests per visit for a *Type 3 – Concentrated Operation*.

The minimum relative compaction requirements were not specified and therefore the criteria in AS3798, Table 5.1 was adopted. A summary of the criteria is summarized in Table 1.

**Table 1. Test Request Compaction and Moisture Content Specification**

Fill Types	Maximum Dry Density Ratio (%)	Optimum Moisture Content Variation (%)
Residential – lot, fill, house, sites	>95%	±2% (Dry/Wet of OMC <sup>(1)</sup> )

(Notes: <sup>(1)</sup> Optimum Moisture Content)

## 2. Earthworks Activities

Foundation preparation observed by Protest comprised the removal of topsoil and unsuitable materials across the cut to fill area exposing the underlying natural materials. A test roll was performed on the natural soils using a pad foot roller and no noticeable movement was observed on the final pass.

Following successful proof rolling, filling operations comprised the placement and compaction of material obtained from onsite cuts which were typically sandy gravelly clays. Filling materials were placed onsite in uniform layers not exceeding 150mm thick compacted layers with the plant detailed below. The material used as fill was moisture conditioned at the fill source and during placement and blended to achieve suitable moisture content for compaction. The following heavy plant were used throughout the bulk earthworks component:

- Water Truck
- Dump Trucks
- Moxys
- Compactor

A total of six (6) field density ratio tests were undertaken at select locations during the filling operations. Field density testing was carried out using a nuclear gauge and in accordance with the test method outlined in AS1289.5.8.1. The relative compaction was then determined by comparing the recorded field density with the laboratory maximum dry density (standard compaction) outlined in test method AS1289.5.1.1.

A summary of the test results is presented in Table 2 with the individual reports attached and the approximate test locations are shown on the marked earthworks layout plan attached.

**Table 2. Summary of Density Testing**

Item	Compaction	Moisture Variation
No. of tests	6	6
Mean	99%	0.5% (Dry of OMC <sup>(1)</sup> )

(Notes: <sup>(1)</sup> Optimum Moisture Content)

### 3. Compliance

As far as it has been able to determine, it is our opinion that the bulk earthworks placed and compacted at The Pocket - Stage 2 in Collingwood Park by Shadforth Civil between 19 April 2022 to 20 April 2022 comply with the above-mentioned specifications and can be considered as Level 1 'controlled' or structural fill.

### 4. Comments

Based on the results of the inspections and field density testing whilst Protest were on-site, it is considered that the bulk earthworks at The Pocket - Stage 2 between 19 April 2022 to 20 April 2022 have been undertaken in general accordance with AS3798-2007 *Guidelines on Earthworks for Commercial and Residential Developments*. Protest believes consideration should be given to the following:

- I. This report only certifies the bulk earthworks activities supervised by Protest between 19 April 2022 to 20 April 2022. Protest does not take responsibility for any other bulk earthworks activities that have occurred before or after these dates;
- II. The installation of services or any activities that may cause disruption of the compacted filling;

- 
- III. The suitability of the filled land to support the proposed structures; and
  - IV. Any variation in filling depth of extent of areas that is not noted within this report or on the individual test report sheets.
  - V. At the start of the project's development, Protest was made aware of a potential mineshaft location on-site based on early Council mapping. However, during the bulk earthworks and civil works of this project, we can confirm that there is no evidence of a mineshaft in this location and capping is therefore not required in this instance.

## 5. Constraints

- I. Protest has prepared this report for the bulk earthworks at The Pocket - Stage 2, Collingwood Park. This report was produced for the sole use of Shadforth Civil. It should not be used by or depended upon for other projects or purposes on the same or other site or by a third party. In the preparation of this report Protest has relied upon information provided by the client and/or their agents.
- II. The results provided in this report are indicative of the subsurface conditions on the site only at the specific sampling or testing locations, and then only to the depths investigated along with the time the work was carried out. It is known that subsurface conditions can suddenly change due to irregular geological processes and as a result of human influences. Such changes may occur after Protest field testing has been completed.
- III. Certain ground conditions and the materials behaviour observed or contained at the test locations may alter from those which may be encountered elsewhere on the site. Should variations in subsurface conditions be encountered, then additional advice should be sought from Protest and, if required, amendments made.
- IV. Protest cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion given in this report.

We trust that the above information is suitable for your present requirements. Should you have any queries, please do not hesitate to contact the undersigned.

### Written By:



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Laboratory Branch Managers Assistant

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### Reviewed By:



**Sam Bamford**

Branch Manager

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- Attachments:
- 1. Site Images;
  - 2. Test Location Plan;
  - 3. Density Reports;
  - 4. Referenced Drawings.

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**Attachment 1**

**Site Images**



*Figure 1 – Moxi trucks removing excess material offsite.*



*Figure 2 – Pad Foot Roller working material along Road 02.*



*Figure 3 – Excavators loading material to be removed from site.*



*Figure 4 – Excavator placing fill with a Pad Foot Roller working the strip.*

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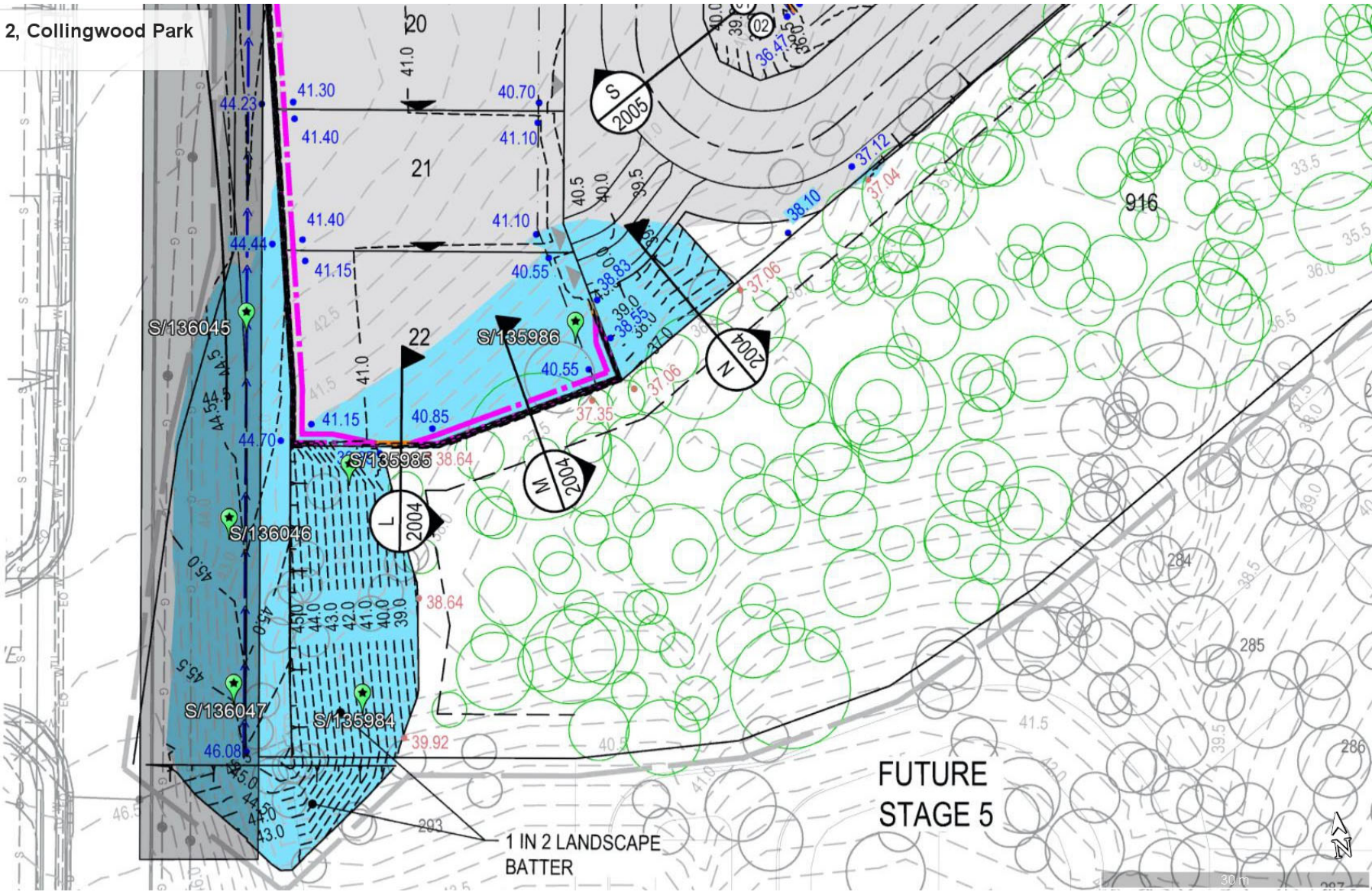
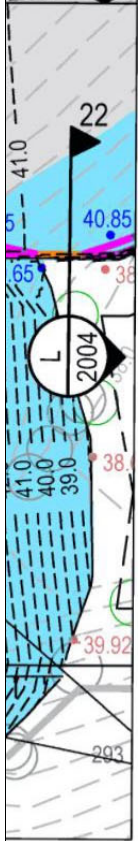
**Attachment 2**  
**Testing Location Plan**

# The Pocket - Stage 2, Collingwood Park

Field Density Test Location Plan

## Legend

Field Density



Google Earth  
Image © 2022 Maxar Technologies

FUTURE  
STAGE 5

Issue	Description	Date	DRN	CHK	APP
01	Field Density Test Location Plan	01/07/2022	LC	SB	SB



CLIENT  
Shadforth Civil

TITLE  
The Pocket – Stage 2,  
Collingwood Park

Job No.  
PTP/08985  
Drawing No.  
Lot 01





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**Attachment 3**  
**Density Reports**

### Soil Compaction and Density Tests Report - Compaction Control

Client :	Shadforth			Report Number :	SR/PTP/08985 - 2/1	
Client Address :	99 Sandalwood Lane, Forest Glen, 4556, QLD			Report Date :	3/05/2022	
Project Name :	The Pocket - Stage 2, Collingwood Park			Test Request :	-	
Project Number :	PTP/08985			Page 1 of 1		
Location :	Collingwood Park					
Test Methods :	AS1289.5.4.1, AS1289.5.8.1, AS1289.2.1.1, AS1289.5.7.1,					
Sample Number :	S/136045	S/136046	S/136047			
Date Tested :	20/04/2022	20/04/2022	20/04/2022			
Material Source :	Onsite	Onsite	Onsite			
For use as :	General Fill	General Fill	General Fill			
Test / Layer Depths :	150 / 175	150 / 175	150 / 175			
Sampling Method :	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b			
Time :	10:30	10:40	11:17			
Lot Number :	-	-	-			
Location 1 :	Adjacent Park Corridor E 485964.22	Adjacent Park Corridor E 485962.14	Adjacent Park Corridor E 485961.82			
Location 2 :	E 485964.22	E 485962.14	E 485961.82			
Location 3 :	N 6944638.1	N 6944630.6	N 6944620.8			
Location 4 :	R.L 41.1	R.L 42.0	R.L 42.8			
Test Fraction (mm) :	< 19mm	< 19mm	< 19mm			
Oversize Wet :	7%	2%	0%			
Oversize Density - Dry (t/m <sup>3</sup> ) :	2.56	2.48	-			
Assigned MDR (Yes/No) :	No	No	No			
MDR Sample Number :	S/136045	S/136046	S/136047			
MDR Test Date :	30/04/2022	30/04/2022	30/04/2022			
	Standard	Standard	Standard			
Soil Description :	Sandy Gravelly Clay. Brown	Sandy Gravelly Clay. Brown	Sandy Gravelly Clay. Brown			
<b>MDR Test Results</b>						
PCWD (t/m <sup>3</sup> ) :	2.08	2.09	2.07			
Moisture Variation :	2.0%	0.0%	-2.0%			
ADJ PCWD (t/m <sup>3</sup> ) :	2.11	2.10	-			
ADJ Moisture Variation :	2.0%	0.0%	-			
<b>Moisture Test Results</b>						
Field Moisture Content :	10.0%	11.5%	14.0%			
Moisture Specification :	-	-	-			
Variation from OMC :	2.0% Dry of OMC	0.0% Dry of OMC	2.0% Wet of OMC			
Relative Moisture Ratio (Q250) :	-	-	-			
Moisture Ratio :	N/A	N/A	N/A			
<b>Density Test Results</b>						
Field Wet Density (t/m <sup>3</sup> ) :	2.05	2.00	2.04			
Density Specification :	95%	95%	95%			
Wet Density Ratio :	97.0%	95.0%	98.5%			
Characteristic Value (Q020) :	CV(min) = 95.4%	CV(max) = 98.3%	Mean = 96.8%	Std. Dev. = 1.8%	n = 3	k = 0.828
	-	-	-			
Soil Particle Density (APD) t/m <sup>3</sup> :						
Soil Particle Density (APD) Date :						
Remarks :						
 <p>Note: The results contained in this report relate only to the item/s that were tested/sampled  <b>Accredited for Compliance with ISO/ IEC 17025 - Testing</b>          Protest Engineering (Gold Coast) Accreditation Number - 19667          Base Laboratory Site Number - 22838 - Gold Coast          Base Laboratory Address - 8/36 Blanck Street, ORMEAU, QLD 4208</p>	<b>APPROVED SIGNATORY</b>  Samuel Bamford - Signatory					

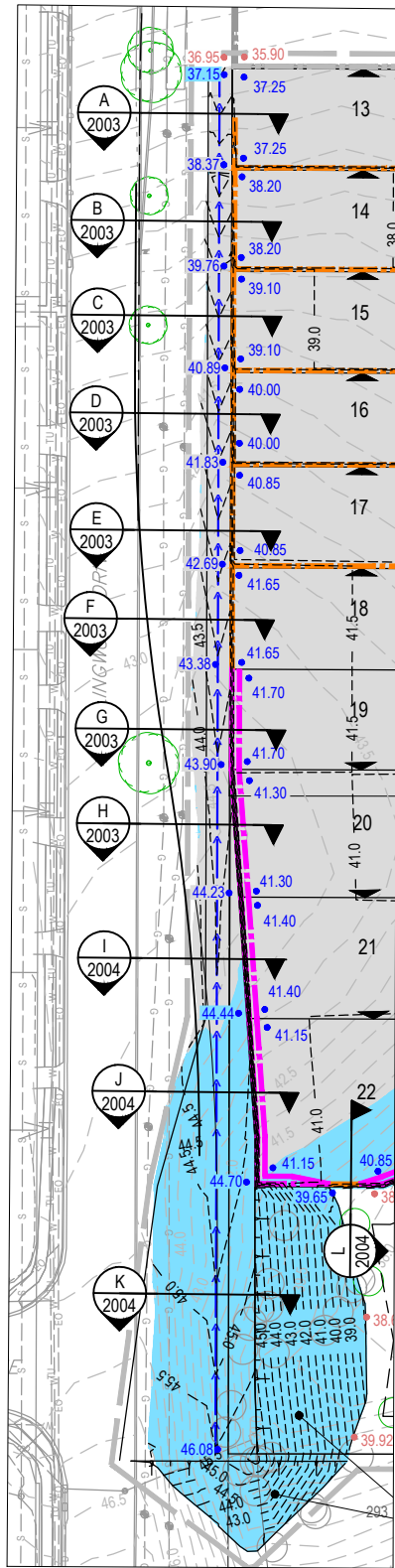
### Dry Density / Moisture Ratio Report

Client :	Shadforth			Report Number :	SR/PTP/08985 - 3/1	
Client Address :	99 Sandalwood Lane, Forest Glen, 4556, QLD			Report Date :	10/05/2022	
Project Name :	The Pocket - Stage 2, Collingwood Park			Test Request :	-	
Project Number :	PTP/08985			Page 1 of 1		
Location :	Collingwood Park					
Test Methods :	AS1289.5.4.1, AS1289.5.8.1, AS1289.2.1.1, AS1289.5.1.1,					
Sample Number :	S/135984	S/135985	S/135986			
Date Tested :	19/04/2022	19/04/2022	19/04/2022			
Material Source :	Onsite	Onsite	Onsite			
For use as :	General Fill	General Fill	General Fill			
Test / Layer Depths :	150 / 175	150 / 175	150 / 175			
Sampling Method :	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b			
Time :	13:00	13:05	13:35			
Lot Number :	-	-	-			
Location 1 :	Park Corridor	Park Corridor	Park Corridor			
Location 2 :	E 485959.16	E 455965.44	E 455958.86			
Location 3 :	N 6944596.88	N 6944602.32	N 6944607.7			
Location 4 :	R.L 40.1	R.L 41.2	R.L 41.5			
Test Fraction (mm) :	< 19mm	< 19mm	< 19mm			
Oversize Wet :	0%	0%	0%			
Oversize Dry :	0%	0%	0%			
Oversize Density - Dry (t/m <sup>3</sup> ) :	-	-	-			
Assigned MDR (Yes/No) :	No	No	No			
MDR Sample Number :	S/135984	S/135985	S/135986			
MDR Test Date :	20/04/2022	20/04/2022	21/04/2022			
Soil Description :	CLAY	CLAY	CLAY			
<b>MDR Test Results</b>						
MDD (t/m <sup>3</sup> ) :	1.73	1.71	1.77			
OMC :	13.0%	14.5%	14.0%			
ADJ MDD (t/m <sup>3</sup> ) :	-	-	-			
ADJ OMC :	-	-	-			
<b>Moisture Test Results</b>						
Field Moisture Content :	12.5%	13.0%	12.5%			
Moisture Specification :	-	-	-			
Variation from OMC :	0.5% Dry of OMC	1.5% Dry of OMC	1.5% Dry of OMC			
Relative Moisture Ratio (Q250) :	-	-	-			
Moisture Ratio :	96.0%	89.5%	88.5%			
<b>Density Test Results</b>						
Field Dry Density (t/m <sup>3</sup> ) :	1.76	1.71	1.78			
Density Specification :	95%	95%	95%			
Dry Density Ratio :	102.0%	100.5%	100.5%			
Characteristic Value (Q020) :	CV(min) = 100.3%		CV(max) = 101.7%	Mean = 101.0%	Std. Dev. = 0.9%	n = 3 k = 0.828
	-	-	-			
Soil Particle Density (APD) t/m <sup>3</sup> :						
Soil Particle Density (APD) Date :						
Remarks :						
 <p>Note: The results contained in this report relate only to the item/s that were tested/sampled  <b>Accredited for Compliance with ISO/ IEC 17025 - Testing</b>          Protest Engineering (Gold Coast) Accreditation Number - 19667          Base Laboratory Site Number - 22838 - Gold Coast          Base Laboratory Address - 8/36 Blanck Street, ORMEAU, QLD 4208</p>	<b>APPROVED SIGNATORY</b>  Samuel Bamford - Signatory					
	Document Number : RF1					

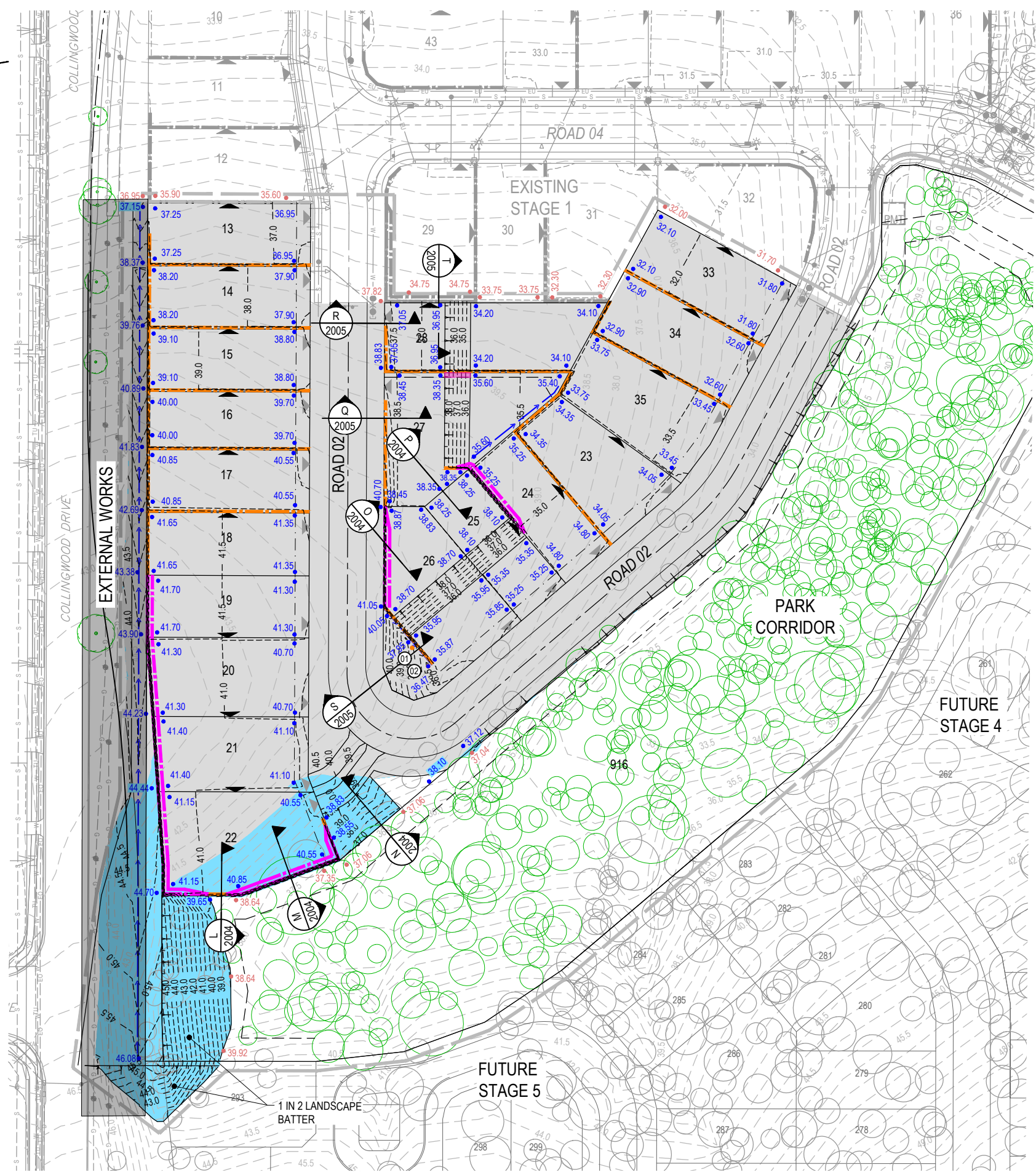
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**Attachment 4**  
**Referenced Drawings**



**COLLINGWOOD DRIVE  
EXTERNAL WORKS**  
SCALE: 500 (A1)  
SCALE: 1000 (A3)



**LEGEND**

- PROPOSED SITE BOUNDARY
- PROPOSED CONCRETE SLEEPER RETAINING WALL - TYPE 1 & 2
- PROPOSED CONCRETE SLEEPER RETAINING WALL - TYPE 3 & 4
- PROPOSED SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- PROPOSED EARTHWORKS PAD SETBACK LINE
- PROPOSED DRAINAGE SWALE (1.0m WIDE, 100mm DEEP)
- EXISTING STORMWATER DRAINAGE PIPE
- EXISTING SEWERAGE MAIN
- EXISTING WATER MAIN
- EXISTING ELECTRICAL CABLE O/H
- EXISTING TELECOMMUNICATION CABLE U/G
- EXISTING GAS MAIN
- PROPOSED AREA OF CUT
- PROPOSED AREA OF FILL
- 34.00 EARTHWORKS SURFACE SPOT LEVEL
- 32.00 EXISTING SURFACE SPOT LEVEL
- EXISTING TREE TO BE RETAINED \*
- EXISTING TREE TO BE REMOVED \*
- PROPOSED 1.0m WIDE CONCRETE STAIRS AND HANDRAIL TO LOT 27 (AS PER A.S 1657)

\* THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH VEGETATION CLEARING & FAUNA MANAGEMENT PLAN 9641 E 01 VMP C PREPARED BY SAUNDERS HAVILL GROUP DATED 04.06.201

BATTERS STEEPER THAN 1 IN 6 ARE TO BE VEGETATED AND CERTIFIED AS STABLE BY AN EXPERIENCED AND SUITABLY QUALIFIED RPEQ ENGINEER.

BULK EARTHWORKS MUST REMAIN WITHIN SITE BOUNDARY.

**WARNING! - EXISTING SERVICES**  
EXTREME CARE SHOULD BE TAKEN WHEN EXCAVATING IN THIS AREA. THE FOLLOWING EXISTING SERVICES ARE LIKELY TO BE PRESENT IN THE VICINITY OF THE SITE:

- ELECTRICAL CABLES
- TELECOMMUNICATIONS CABLES
- GAS MAINS
- WATER MAINS
- SEWER MAINS

THE CONTRACTOR SHOULD CONTACT THE SERVICE PROVIDER FOR FURTHER INFORMATION AND SATISFY THEMSELVES OF ANY SPECIFIC TREATMENT OR REQUIREMENTS.

**RETAINING WALL SETOUT**

NUMBER	EASTING	NORTHING
01	6026.935	4676.938
02	6029.725	4672.490

REV	DATE	DESIGN	DRAWN	REVISION DETAILS
A	08.11.21	DC	SC	ISSUED FOR CONSTRUCTION

DRAWN	STATUS
DC	<b>ISSUED FOR CONSTRUCTION</b>
DESIGN	APPROVED
DC	TROY SCHULTZ RPEQ 20631
FOR AND ON BEHALF OF PEAKURBAN PTY LTD	

**PEAKURBAN**  
Achieve more.  
ENQUIRIES@PEAKURBAN.COM.AU

SCALE  
1:500 10 5 0 10 20 A1  
1:1000

**RECEIVED**  
By Document Control at 12:39 pm, Nov 24, 2021

CLIENT  
**HB QLD PTY LTD**

ASSOCIATED CONSULTANT  
SAUNDERS HAVILL GROUP  
1300 123 744

PROJECT NAME  
**THE POCKET - STAGE 2**

280 COLLINGWOOD DRIVE  
COLLINGWOOD PARK

<b>BULK EARTHWORKS LAYOUT PLAN</b>		
PROJECT No.	DRAWING No.	REVISION
<b>20-0240</b>	<b>2002</b>	<b>A</b>