

# **A P P E N D I X**

## **CONCEPT DESIGN AND STAGING DRAWINGS**

### **B**



# Stage 3 Emplacement West Cliff Colliery Concept Engineering Design



## DRAWING SCHEDULE

1700	COVER SHEET
1701	EMPLACEMENT PHASE 1 CONCEPT DESIGN PLAN
1702	EMPLACEMENT PHASE 2 CONCEPT DESIGN PLAN
1703	EMPLACEMENT PHASE 3 CONCEPT DESIGN PLAN
1704	EMPLACEMENT PHASE 4 CONCEPT DESIGN PLAN
1705	EMPLACEMENT PHASE 5 CONCEPT DESIGN PLAN
1706	EMPLACEMENT PHASE 6 CONCEPT DESIGN PLAN
1707	EMPLACEMENT PHASE 7 CONCEPT DESIGN PLAN
1708	EMPLACEMENT LONGITUDINAL SECTION
1709	EMPLACEMENT CROSS SECTIONS SHEET 1
1710	EMPLACEMENT CROSS SECTIONS SHEET 2
1711	EMPLACEMENT POND 1 (EP1) DETAIL LAYOUT PLAN
1712	EMPLACEMENT POND 2 (EP2) DETAIL LAYOUT PLAN
1713	EMPLACEMENT POND 3 (EP3) DETAIL LAYOUT PLAN
1714	EMPLACEMENT POND 4 (EP4) DETAIL LAYOUT PLAN

FOR:

Illawarra Coal

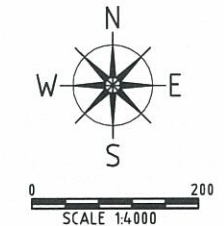
PREPARED BY:

Cardno Forbes Rigby Pty Ltd

bhpbilliton  
ILLAWARRA COAL









**IF IN DOUBT ASK**



2

1

FINALISE STAGE 2 EMPLACEMENT  
IN THIS AREA



DRAWING TITLE PHASE 2 CONCEPT ENGINEERING DESIGN PLAN			
Project No.	Com No.	Drawing No.	REV
107045	1	1702	2



DO NOT SCALE IF IN DOUBT ASK

**NOTE:**  
THIS DRAWING SHOWS THE WORKS REQUIRED TO BE INSTALLED BEFORE THE EMPLACEMENT CAN ADVANCE FROM THE PREVIOUS PHASE, AND THE MAXIMUM EXTENT OF EMPLACEMENT WITH SUCH WORKS INSTALLED IN THE CURRENT PHASE.  
THEREFORE, TO ENABLING A CONTINUOUS OPERATION, WORKS FROM THE FOLLOWING PLAN WILL NEED TO BE CONSTRUCTED BEFORE THE EMPLACEMENT CAN PROGRESS BEYOND THE EXTENT SHOWN ON THIS PLAN.

**PHASE 3 DESCRIPTION:**  
MAXIMUM EXTENT OF EMPLACEMENT BEFORE DECOMMISSIONING OF POND EP1

CREATE LEVEL SPREADER WITHIN BYPASS CHANNEL TO DISCHARGE WATER OVER A 100m WIDTH TO ENSURE NO ADDITIONAL EROSION AND SCOUR DOWN HILLSLOPE

CONSTRUCT DAM WALL TO CREATE EP2 EP2 VOLUME TO BE 30-35ML AT A TWL OF APPROXIMATELY RL +268m AHD

CONSTRUCT NEW HAUL ROAD TO GAIN ACCESS TO EP2 AND PROVIDE CLEAN WATER CUTOFF

EXTEND STAGES 1 & 2 UNDER-DRAINAGE THROUGH EP2 AND DISCHARGE DOWNSTREAM OF EP2

EXTEND CLEAN WATER CUTOFF DRAIN TO DISCHARGE DOWNSTREAM OF EP2

EXTEND BRENNANS CREEK BYPASS CHANNEL BY APPROX. 450m TO ENSURE DISCHARGE IS DOWNSTREAM OF EP2

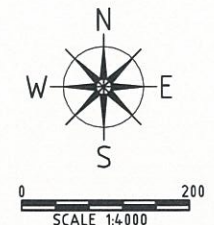
MAXIMUM LIMIT OF EMPLACEMENT ADVANCEMENT DOWNSTREAM UNDER THIS PHASE

ENSURE MAXIMUM ACTIVE EMPLACEMENT AREA DOES NOT EXCEED 18.8 HECTARES

MAKE GOOD EMPLACEMENT AREA TO EXISTING WALL OF P4A

HATCHING DENOTES THE REQUIRED EXTENT OF REVEGETATION REQUIRED BEFORE EMPLACEMENT CAN PROGRESS TO THE NEXT PHASE

EMPLACEMENT CAN BE BUILT TO DESIGN LEVELS IN THIS AREA



REV	DATE	BY	APP.	DETAILS
1	28/06/07	AJB	CJM	MINOR AMENDMENTS AS NOTED

DRAWING STATUS			
DESIGN BY	N/A	--/04/07	
DRAWN BY	AJB	30/04/07	
DRAFTING CHECK			
DESIGN CHECK			
FINAL APPROVAL			
FOR APPROVAL			

SCALE:  
(on A1 Original)  
1:4000  
HEIGHT DATUM  
AHD

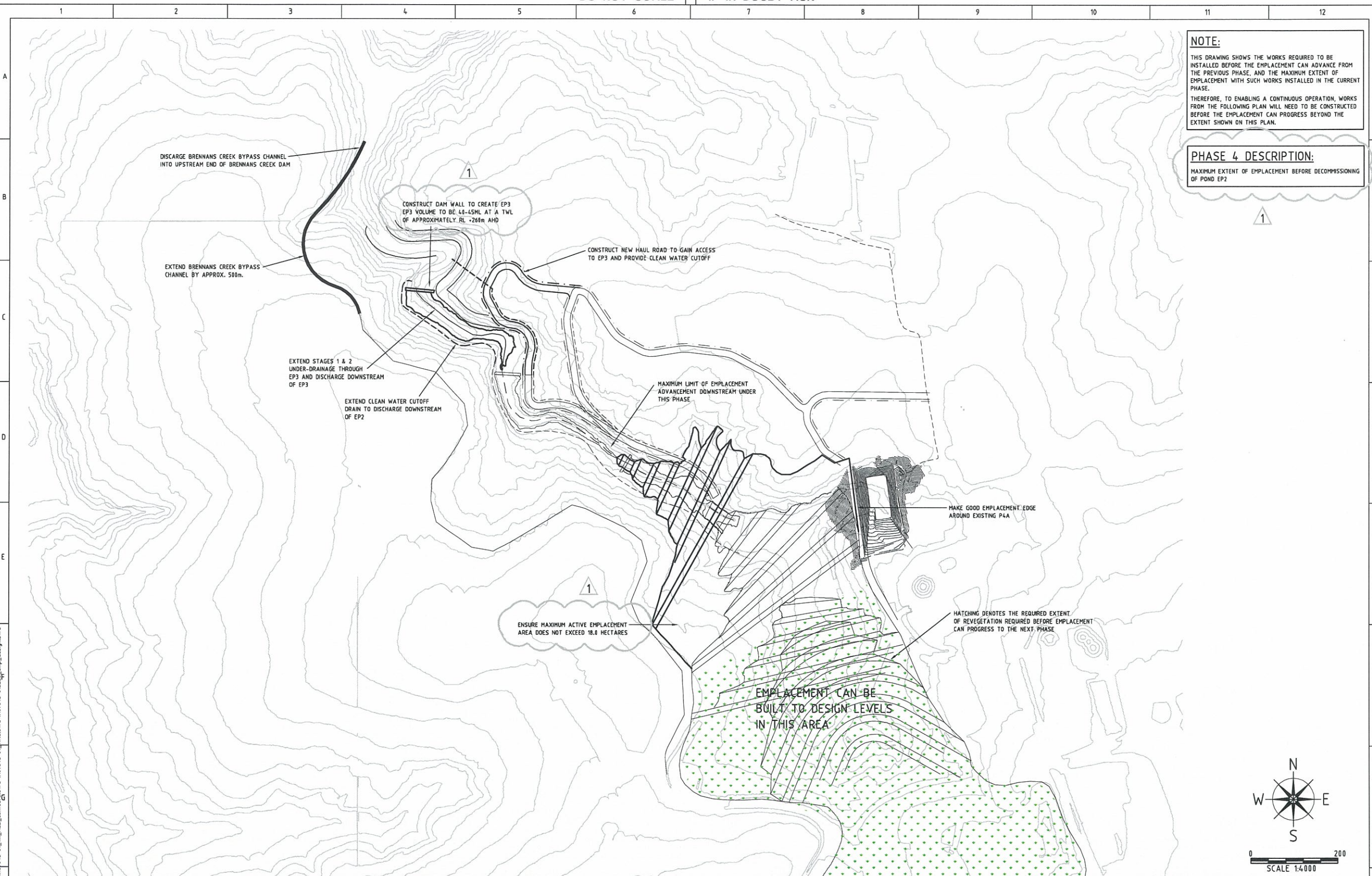
**Cardno Forbes Rigby**  
278 KEIRA STREET, WOLLONGONG, NSW 2500  
Ph: (02) 4228 4133 Facsimile: (02) 4228 6811 ACN: 051 074 992  
This drawing is subject to COPYRIGHT. It remains the property of Cardno Forbes Rigby Pty Ltd


PROJECT TITLE  
WEST CLIFF COLLIERY  
STAGE 3 EMPLACEMENT  
APPROVALS  
for  
ILLAWARRA COAL

DRAWING TITLE			
PHASE 3 CONCEPT ENGINEERING DESIGN PLAN			
Project No.	Com No.	Drawing No.	REV
107045	1	1703	1

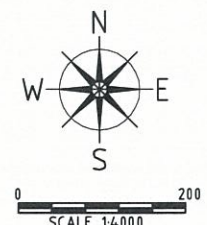


**IF IN DOUBT ASK**



REV	DATE	BY	APP.	DETAILS	DRAWING STATUS		SCALE: (on A1 Original)		PROJECT TITLE WEST CLIFF COLLIERY STAGE 3 EMPLACEMENT APPROVALS for ILLAWARRA COAL	DRAWING TITLE PHASE 4 CONCEPT ENGINEERING DESIGN PLAN			
1	28/06/07	AJB	CJM	MINOR AMENDMENTS AS NOTED	DESIGN BY	N/A	1:4000			Project No.	Com No.	Drawing No.	REV
					DRAWN BY	N/A				107045	1	1704	1
					DRAFTING CHECK	12/07/07							
					DESIGN CHECK	12/07/07							
					FINAL APPROVAL	12/07/07							
					FOR APPROVAL		HEIGHT DATUM AHD	278 KEIRA STREET, WOLLONGONG, NSW 2500 Ph: (02) 4228 4133 Facsimile: (02) 4228 6811 ACN: 051 074 992 This drawing is subject to COPYRIGHT. It remains the property of Cardno Forbes Rigby Pty Ltd					

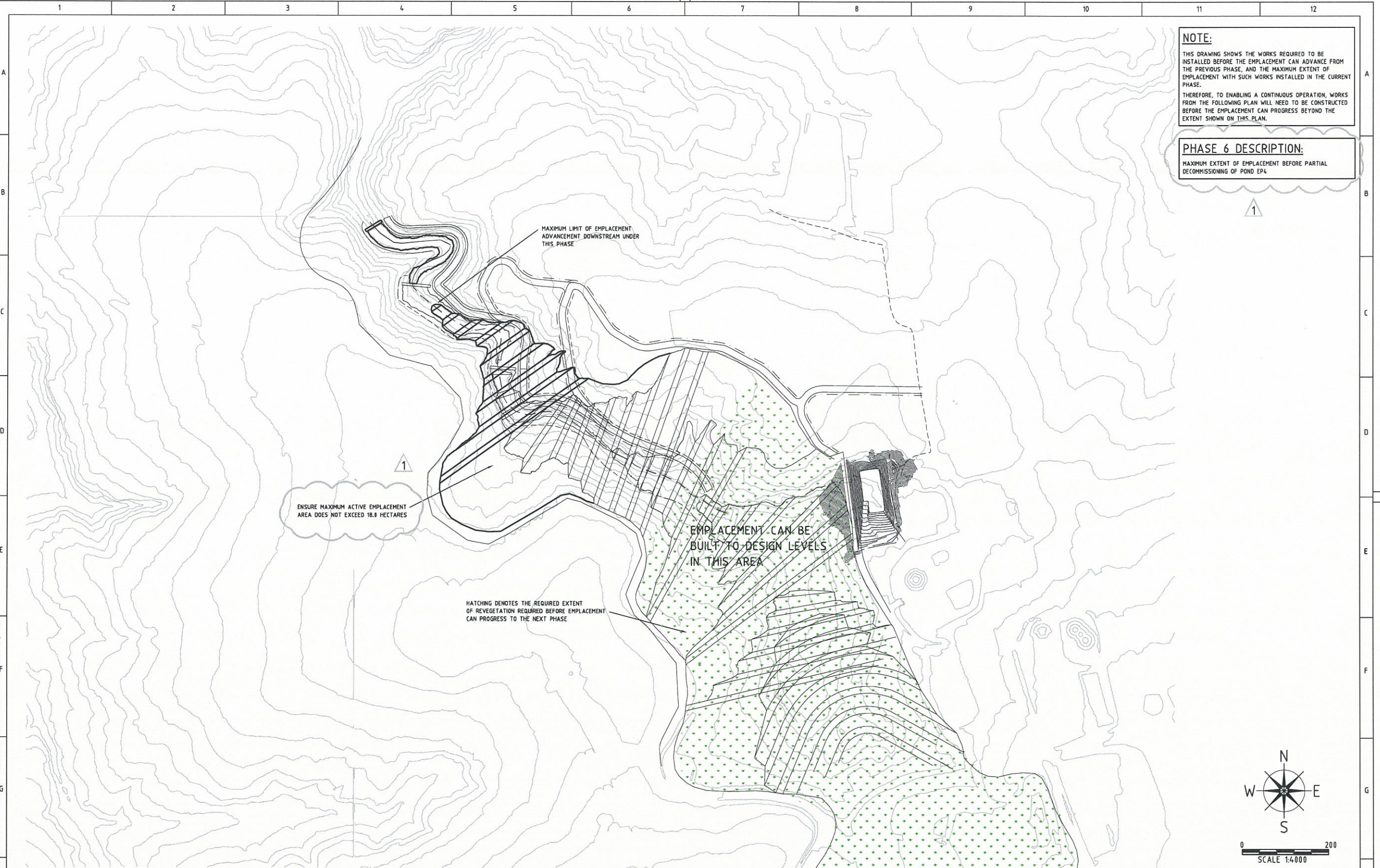








File Plotted: U:\2007\107-045-01 - WEST CLIFF STAGE 3 - APPROVALS\DRAWING\BUILD\7705 - PHASE 5 CONCEPT DESIGN PLANDWG  
June 20, 2007 3:22:23 p.m.  
Paths: x:\7045-01\_Drawing\_Note\_1.DWG x:\7045-01\_1m\_ALSContours.DWG x:\7045-01\_Hile.DWG x:\7045-01base\_emp\_design.DWG



**IF IN DOUBT ASK**



REV	DATE	BY	APP.	DETAILS	DRAWING STATUS		SCALE:		PROJECT TITLE	DRAWING TITLE					
1	28/06/07	AJB	CJM	MINOR AMENDMENTS AS NOTED	DESIGN BY	N/A --/04/07	(on A1 Original)		1:4000	WEST CLIFF COLLIERY STAGE 3 EMPACEMENT APPROVALS for ILLAWARRA COAL	PHASE 6 CONCEPT ENGINEERING DESIGN PLAN				
					DRAWN BY	AJB 30/04/07									
					DRAFTING CHECK	 12/7/07									
					DESIGN CHECK	 12/7/07									
					FINAL APPROVAL	 11/7/07									
					<b>FOR APPROVAL</b>			HEIGHT DATUM AHD			Project No. 107045	Com No. 1	Drawing No. 1706	REV 1	



DO NOT SCALE IF IN DOUBT ASK

**NOTE:**  
THIS DRAWING SHOWS THE WORKS REQUIRED TO BE INSTALLED BEFORE THE EMPLACEMENT CAN ADVANCE FROM THE PREVIOUS PHASE, AND THE MAXIMUM EXTENT OF EMPLACEMENT WITH SUCH WORKS INSTALLED IN THE CURRENT PHASE.  
THEREFORE, TO ENABLING A CONTINUOUS OPERATION, WORKS FROM THE FOLLOWING PLAN WILL NEED TO BE CONSTRUCTED BEFORE THE EMPLACEMENT CAN PROGRESS BEYOND THE EXTENT SHOWN ON THIS PLAN.

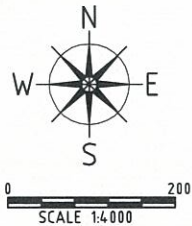
**PHASE 7 DESCRIPTION:**  
COMPLETION OF STAGE 3 EMPLACEMENT

MAXIMUM LIMIT OF STAGE 3 EMPLACEMENT ADVANCEMENT DOWNSTREAM UNDER THIS PHASE

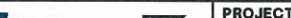
ENSURE MAXIMUM ACTIVE EMPLACEMENT AREA DOES NOT EXCEED 18.0 HECTARES

EMPLACEMENT CAN BE BUILT TO DESIGN LEVELS IN THIS AREA

HATCHING DENOTES THE REQUIRED EXTENT OF REVEGETATION REQUIRED BEFORE EMPLACEMENT CAN PROGRESS TO THE NEXT PHASE

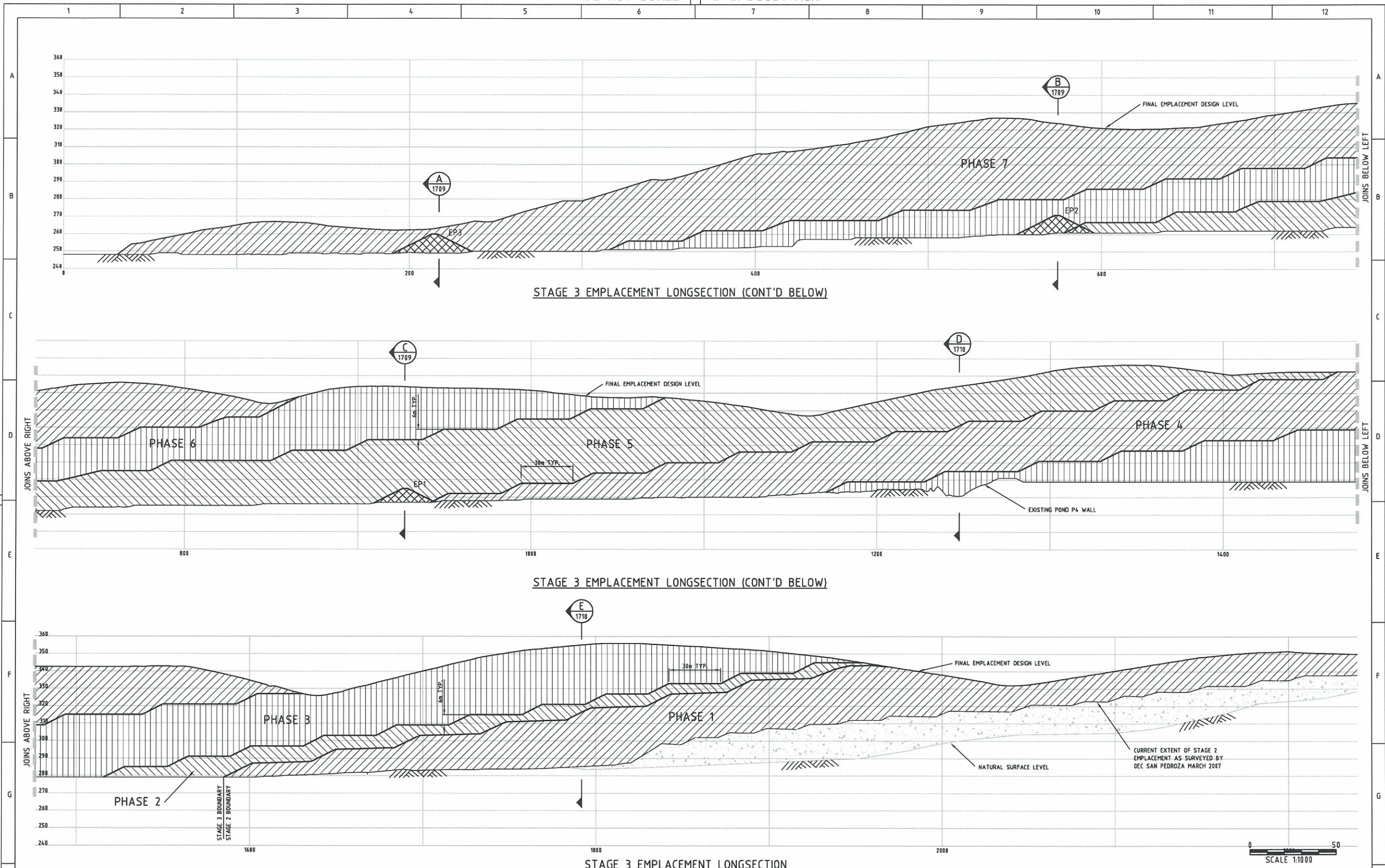




File Plotted: U:\2017\107-045-01 - WEST CLIFF STAGE 3 - APPROVALS\DRAWING\BUILD\107 - PHASE 7 CONCEPT DESIGN PLAN.DWG  
Date: 28/07/2017 14:45:50 a.m.  
User: x17045-01.Drawing  
Paths: x17045-01.Drawing

REV				DATE	BY	APP.	DETAILS		DRAWING STATUS		SCALE: (on A1 Original)  1:4000	  278 KEIRA STREET, WOLLONGONG, NSW 2500 Ph: (02) 4228 4133 Facsimile: (02) 4228 6811 ACN: 051 074 992 <i>This drawing is subject to COPYRIGHT. It remains the property of Cardno Forbes Rigby Pty Ltd</i>	PROJECT TITLE		DRAWING TITLE			
								DESIGN BY	N/A	--/04/07			WEST CLIFF COLLIERY STAGE 3 EMPLACEMENT APPROVALS		PHASE 7 CONCEPT ENGINEERING DESIGN PLAN			
								DRAWN BY	N/A	30/04/07			for		Project No.	Com No.	Drawing No.	REV
								DRAFTING CHECK	<i>[Signature]</i>	12/7/07			ILLAWARRA COAL		107045	1	1707	1
								DESIGN CHECK	<i>[Signature]</i>	12/7/07								
								FINAL APPROVAL	<i>[Signature]</i>	10/7/07								
									<b>FOR APPROVAL</b>				HEIGHT DATUM AHD					



DO NOT SCALE IF IN DOUBT ASK

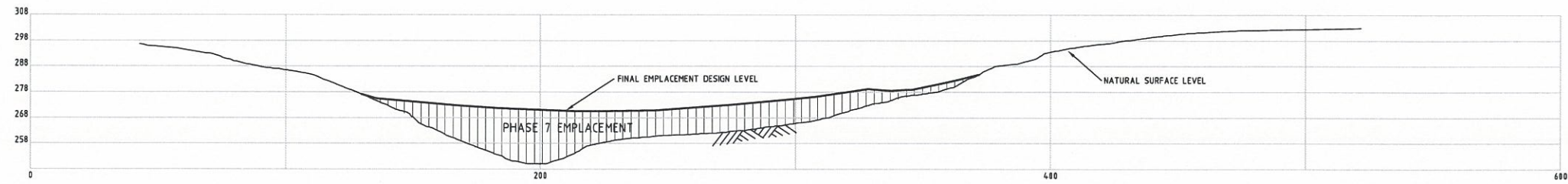


REV	DATE	BY	APP.	DETAILS	DRAWING STATUS		SCALE: (on A1 Original)	  278 KEIRA STREET, WOLLONGONG, NSW 2500 Ph: (02) 4228 4133 Facsimile: (02) 4228 6811 ACN: 051 074 992 This drawing is subject to COPYRIGHT. It remains the property of Cardno Forbes Rigby Pty Ltd	PROJECT TITLE WEST CLIFF COLLIERY STAGE 3 EMPLACEMENT APPROVALS for ILLAWARRA COAL	DRAWING TITLE STAGE 3 EMPLACEMENT LONGITUDINAL SECTION CONCEPT DESIGN				
					DESIGN BY	AJB	1:1000N				Project No. 107045	Com No. 1	Drawing No. 1708	REV 0
					DRAWN BY	AJB	HEIGHT DATUM AHD							
					DRAFTING CHECK	<i>[Signature]</i>								
					DESIGN CHECK	<i>[Signature]</i>								
					FINAL APPROVAL	<i>[Signature]</i>								
					<b>FOR APPROVAL</b>									

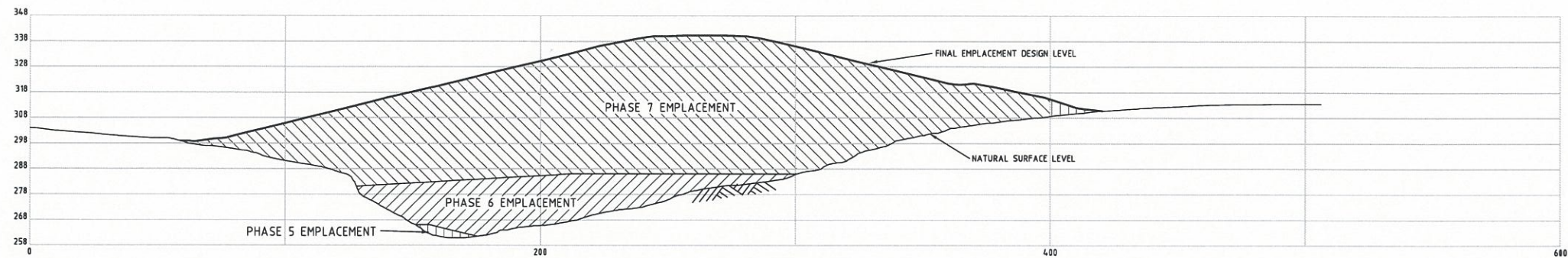
File Path: U:\2007\17-05-01 - WEST CLIFF STAGE 3 - APPROVALS\DRAWING\BUILD\1708 - LONGSECTION.DWG  
June 05, 2007 3:44:17 p.m.  
Xrefs: x1708-01, 1710-01



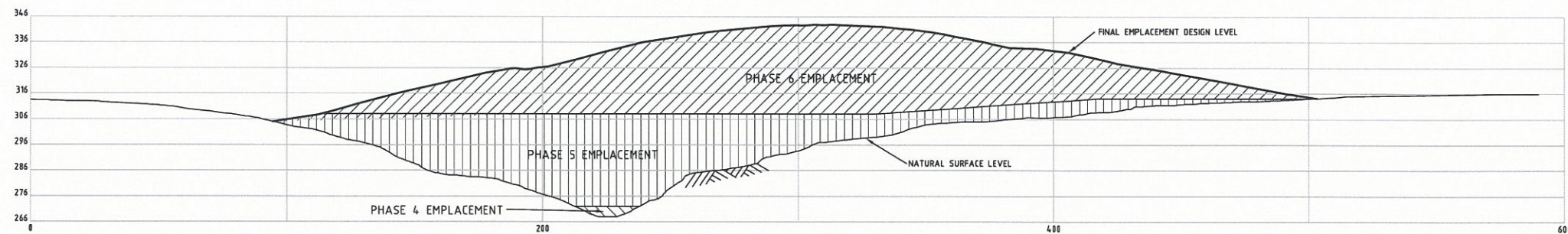
DO NOT SCALE IF IN DOUBT ASK



SECTION A  
SCALE 1:1000 1708




SECTION B  
SCALE 1:1000 1708



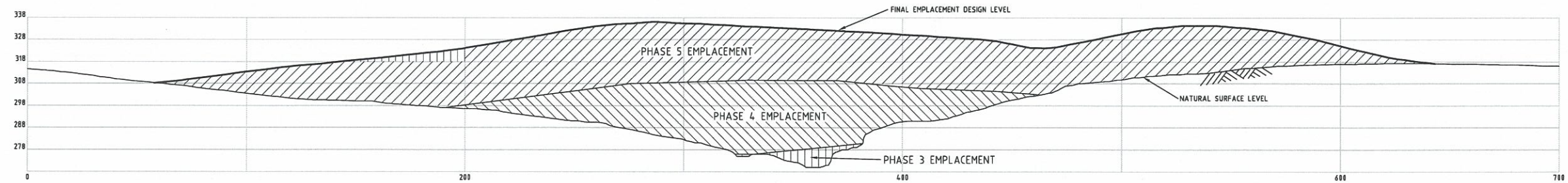
SECTION C  
SCALE 1:1000 1708

0 50  
SCALE 1:1000

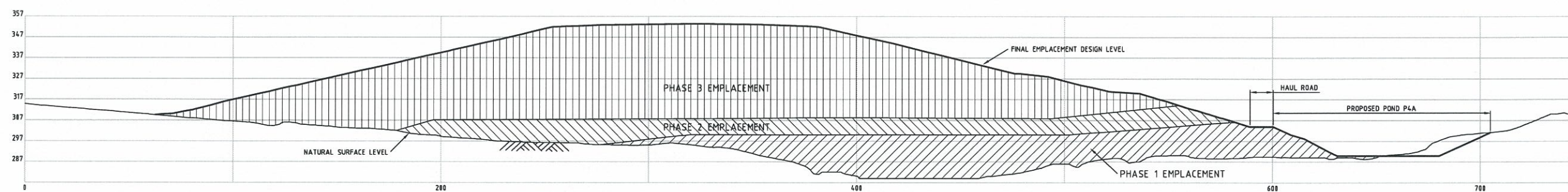
REV	DATE	BY	APP.	DETAILS	DRAWING STATUS		SCALE:		PROJECT TITLE	DRAWING TITLE			
					DESIGN BY	AJB	1:1000N			STAGE 3 EMPLACEMENT			
					DRAWN BY	AJB	HEIGHT DATUM	AHD	278 KEIRA STREET, WOLLONGONG, NSW 2500 Ph: (02) 4228 4133 Facsimile: (02) 4228 8811 ACN: 051 074 992 This drawing is subject to COPYRIGHT. It remains the property of Cardno Forbes Rigby Pty Ltd	APPROVALS	for	ILLAWARRA COAL	REV
					DRAFTING CHECK	AJB							
					DESIGN CHECK	AJB							
					FINAL APPROVAL	AJB							
					FOR APPROVAL								
										Project No.	Com No.	Drawing No.	
										107045	1	1709	0

File Plotted: U:\2007\07-04-05-01 - WEST CLIFF STAGE 3 - APPROVALS\DRAWINGS\BUILD\1708 - CROSS SECTIONS SHEET 1.DWG  
June 06, 2007 3:44:36 p.m.  
K:\d\1708-01\1708-01.dwg






SECTION D  
SCALE 1:1000 1708



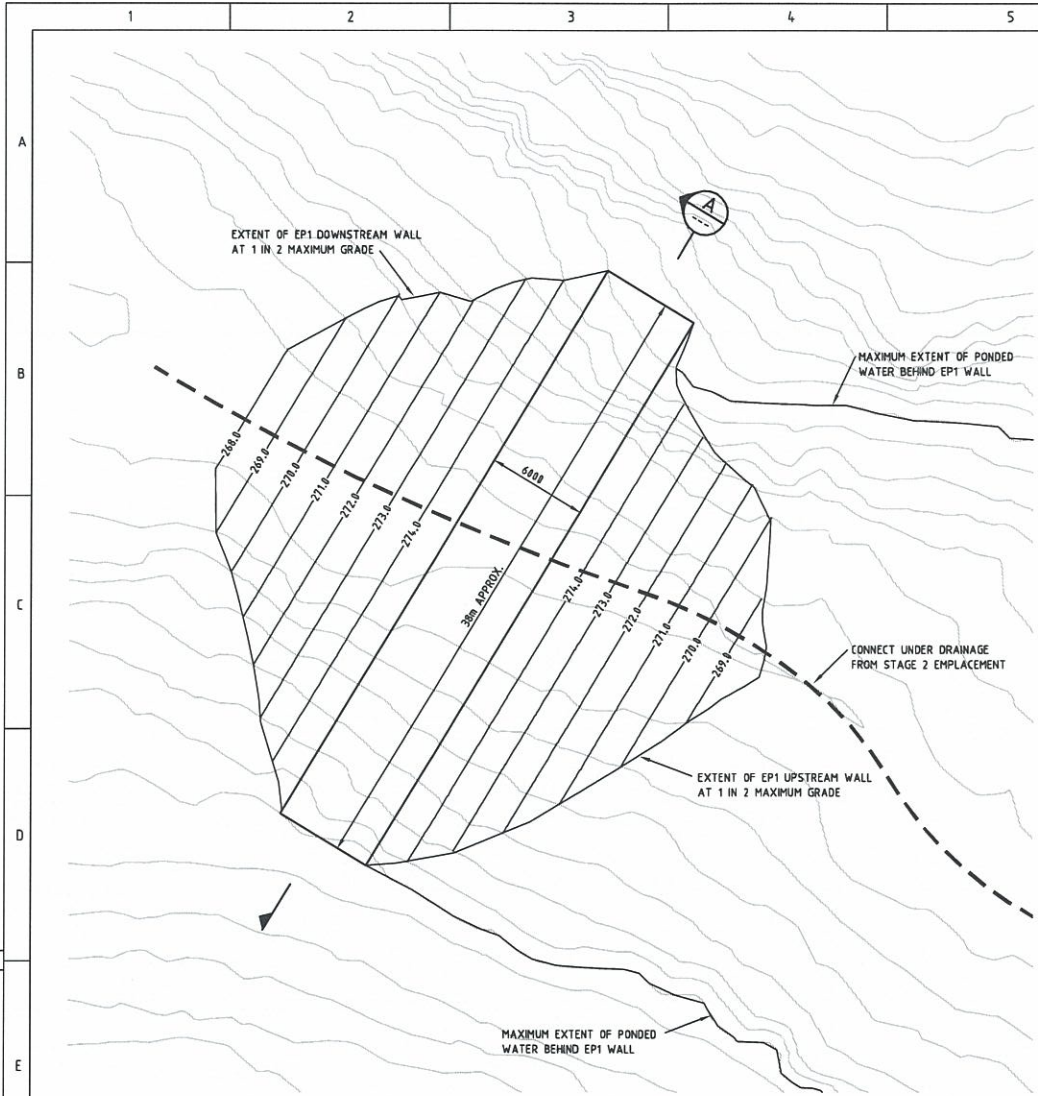
SECTION E  
SCALE 1:1000 1708



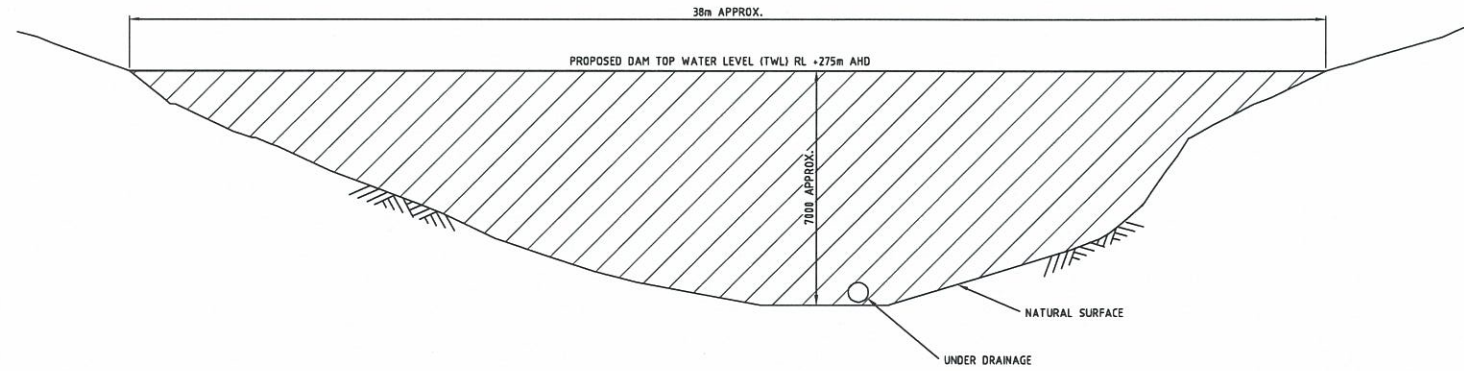
REV	DATE	BY	APP.	DETAILS	DRAWING STATUS		SCALE: (on A1 Original)	 <b>Cardno Forbes Rigby</b>  278 KEIRA STREET, WOLLONGONG, NSW 2500 Ph: (02) 4228 4133 Facsimile: (02) 4228 6811 ACN: 051 074 992 <i>This drawing is subject to COPYRIGHT. It remains the property of Cardno Forbes Rigby Pty Ltd</i>	PROJECT TITLE	DRAWING TITLE				
					DESIGN BY	AJB -- 04/07	1:1000N		WEST CLIFF COLLIERY STAGE 3 EMPLACEMENT APPROVALS for ILLAWARRA COAL	STAGE 3 EMPLACEMENT CONCEPT DESIGN CROSS SECTIONS SHEET 2				
					DRAWN BY	AJB 02/08/07				HEIGHT DATUM AHD	Project No. 107045	Com No. 1	Drawing No. 1710	REV 0
					DRAFTING CHECK	12/1/07								
					DESIGN CHECK	12/1/07								
					FINAL APPROVAL	12/1/07								
					<b>FOR APPROVAL</b>									



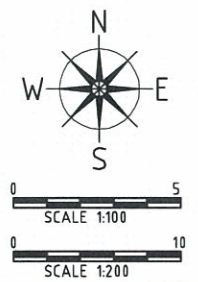
DO NOT SCALE	IF IN DOUBT ASK
--------------	-----------------



CONCEPT DESIGN PLAN ON EMPLACEMENT POND 1 (EP1)  
MAXIMUM CAPACITY 35ML



SECTION A  
SCALE 1:100



REV	DATE	BY	APP.	DETAILS	DRAWING STATUS	
					DESIGN BY	AJB -- /05/07
					DRAWN BY	AJB 03/05/07
					DRAFTING CHECK	<i>Blond</i> 05/07/07
					DESIGN CHECK	<i>JB</i> 05/07/07
					FINAL APPROVAL	<i>JB</i> 05/07/07
					<b>FOR APPROVAL</b>	

**FOR APPROVAL**

**SCALE:**  
(on A1 Original)

1:200

HEIGHT DATUM  
AHD



**278 KEIRA STREET, WOLLONGONG, NSW 2500**  
Ph: (02) 4228 4133 Facsimile: (02) 4228 6811 ACN 003 936 981  
*This drawing is subject to COPYRIGHT. It remains the property of Forbes Rigby Pty Ltd*

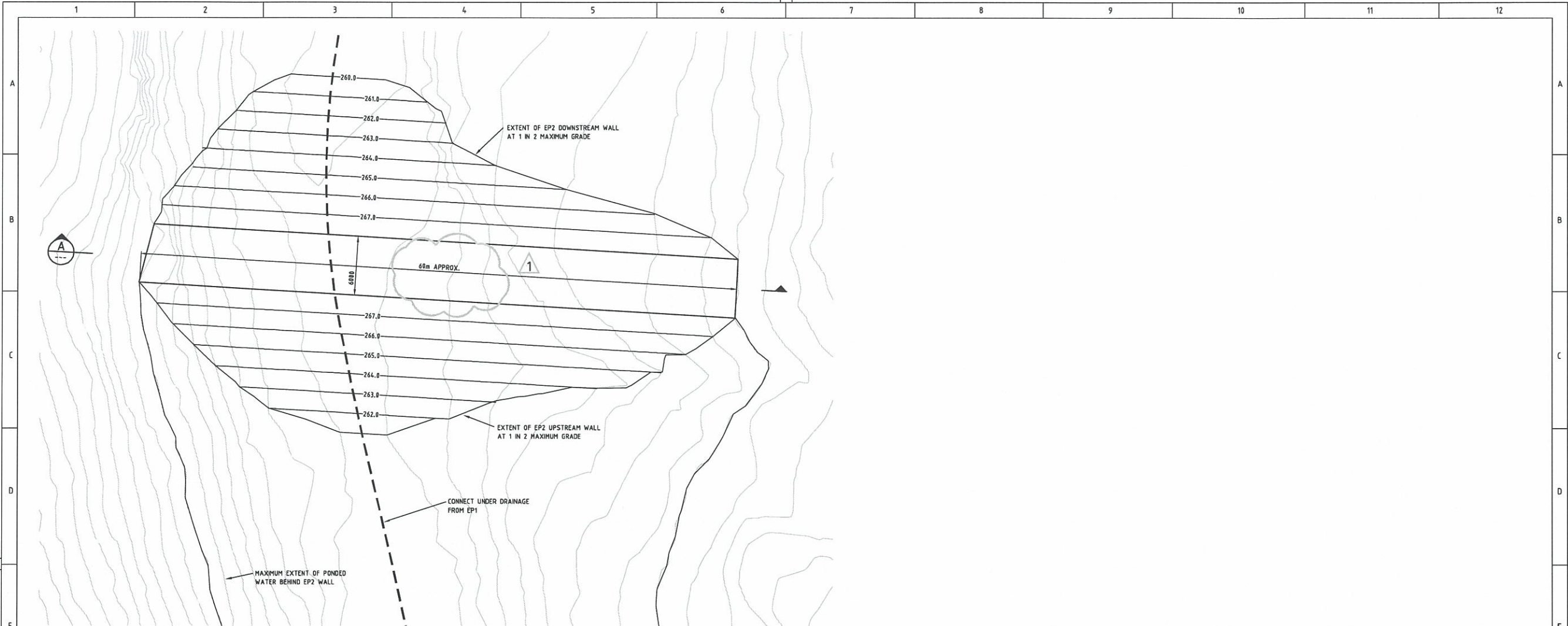
**PROJECT TITLE**  
WEST CLIFF COLLIERY  
STAGE 3 EMPLACEMENT  
APPROVALS  
for  
ILLAWARRA COAL

**DRAWING TITLE**  
CONCEPT DESIGN  
EMPLACEMENT POND  
EP1

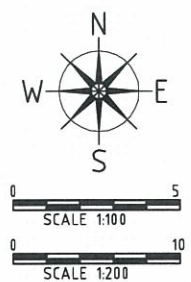
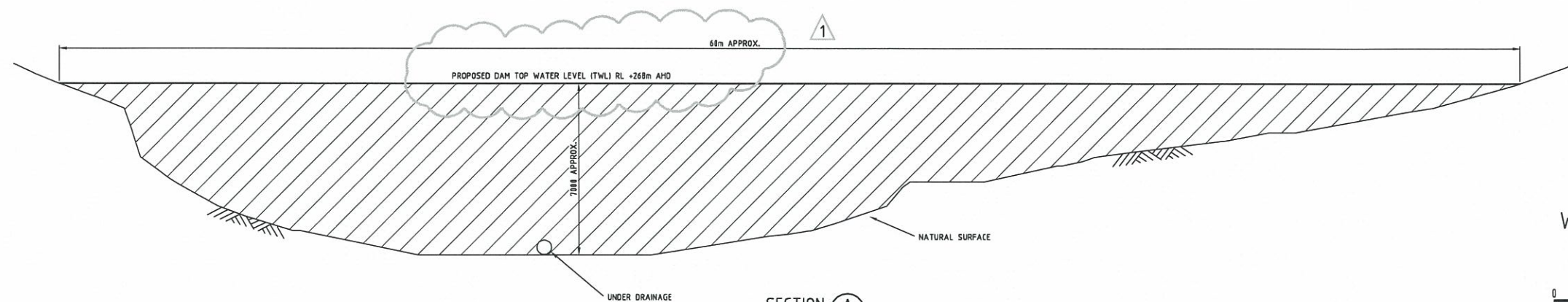
Project No.	Com No.	Drawing No.	REV
107045	1	1711	0



DO NOT SCALE IF IN DOUBT ASK



CONCEPT DESIGN PLAN ON EMPLACEMENT POND 1 (EP2)  
MAXIMUM CAPACITY 33.0ML



REV	DATE	BY	APP.	DETAILS	DRAWING STATUS
1	28/06/07	AJB	CJM	MINOR AMENDMENTS AS NOTED	DESIGN BY: AJB 28/06/07 DRAWN BY: AJB 03/05/07 DRAFTING CHECK: AJB 12/7/07 DESIGN CHECK: AJB 12/7/07 FINAL APPROVAL: AJB 12/7/07
					FOR APPROVAL

SCALE:  
(on A1 Original)  
1:200

HEIGHT DATUM  
AHD



278 KEIRA STREET, WOLLONGONG, NSW 2500  
Ph: (02) 4228 4133 Facsimile: (02) 4228 6811 ACN 003 936 981  
This drawing is subject to COPYRIGHT. It remains the property of Forbes Rigby Pty Ltd

PROJECT TITLE  
WEST CLIFF COLLIERY  
STAGE 3 EMPLACEMENT  
APPROVALS  
for  
ILLAWARRA COAL

DRAWING TITLE  
CONCEPT DESIGN  
EMPLACEMENT POND  
EP2

Project No.	Com No.	Drawing No.	REV
107045	1	1712	1





EXTENT OF EP3 UPSTREAM WALL  
AT 1 IN 2 MAXIMUM GRADE



**FOR APPROVAL**

HEIGHT DATUM  
AHD



This drawing is subject to COPYRIGHT. It remains the property of Forbes Rigby Pty Ltd

for  
ILLAWARRA COAL

Project No.	Com No.	Drawing No.	REV
107045	1	1713	0

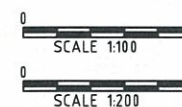




MAXIMUM EXTENT OF PONDED  
WATER BEHIND EP4 WALL



⊙  
A  
---



**FOR APPROVAL**

1:200

### HEIGHT DATA



**This drawing is subject to COPYRIGHT. It remains the property of Forbes Rigby Pty Ltd**

for  
ILLAWARRA COAL

Project No.	Com No.	Drawing No.	REV
107045	1	1714	0

Project No.	Com No.	Drawing No.	REV
107045	1	1714	0