SIMTA Intermodal Terminal Facility- Stage 1

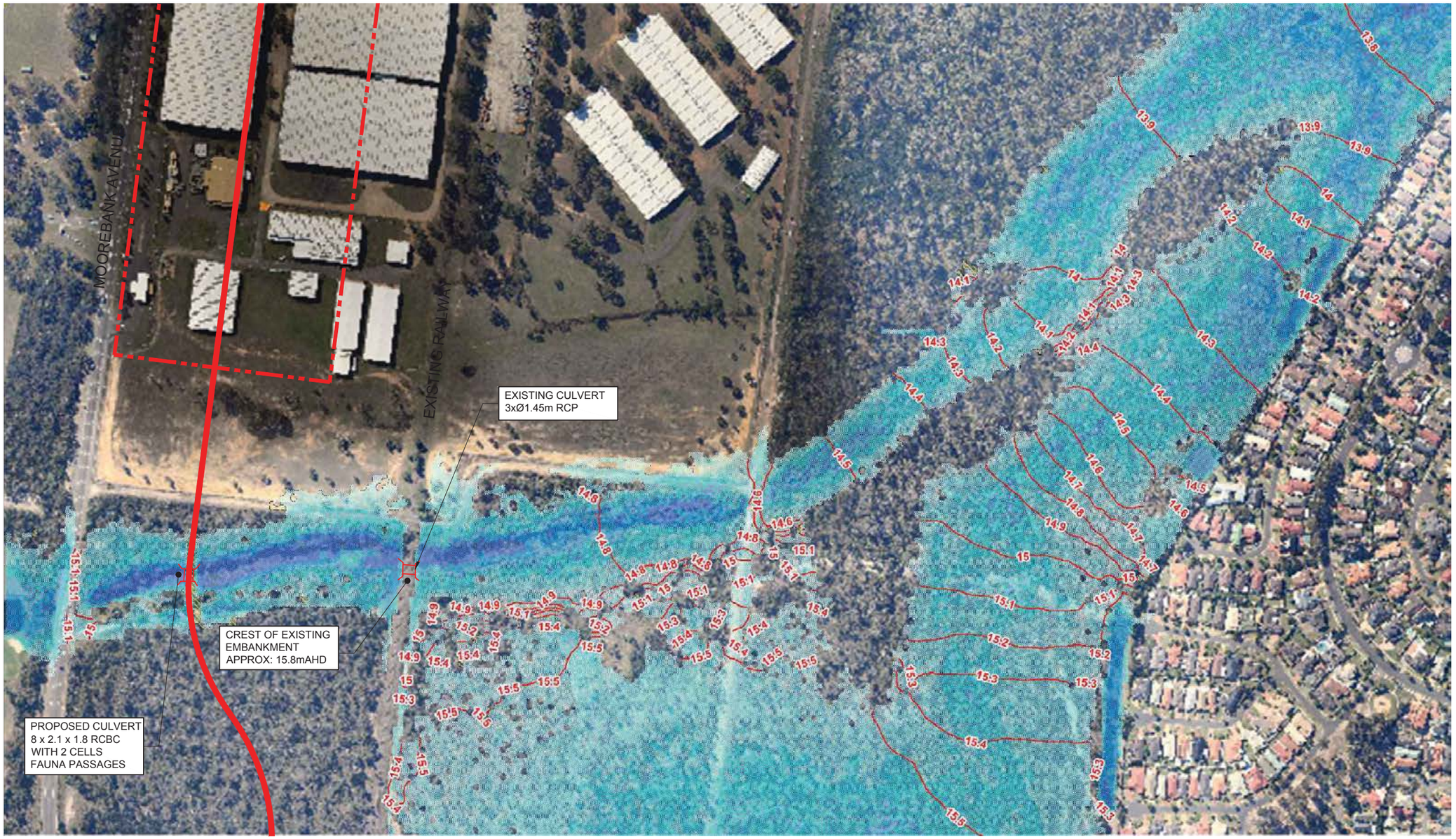
Response to Submissions - Stormwater and Flooding Supplementary Response Material

SIMTA

SYDNEY INTERMODAL TERMINAL ALLIANCE

Part 4, Division 4.1, State Significant Development

September 2015



LEGEND
WATER DEPTH (m)

- <0.1
- 0.1 to 0.2
- 0.2 to 0.4
- 0.4 to 0.6
- 0.6 to 0.8
- 0.8 to 1.0
- 1.0 to 1.5
- 1.5 to 2.0
- >2.0
- SITE BOUNDARY
- 20 FLOOD LEVEL (mAHD)
- WAS WET NOW DRY

Issue	Description	Date
01	RESPONSE TO COMMENT	22/07/15

0 50 100 150 200m

1 : 2000

100mm on Original

Client: SIMTA (Sydney Intermodal Terminal Alliance) — TACTICAL GROUP

Status: **PRELIMINARY**
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	AS SHOWN	Drawn	A.ZHAO
Original Size	A1	Designed	VINCENT NG
Height Datum	AHD	Checked	BRUCE CALDWELL
Grid	MGA	Approved	B.LUSTY
Filename:			

Project: MOOREBANK INTERMODAL TERMINAL FACILITY STAGE 1 (CONCEPT DESIGN)

Title: 100 YEAR ARI FLOOD LEVEL AND DEPTH ANZAC CREEK TO SOUTH SIMTA SITE POST DEVELOPMENT CONDITIONS

HYDER CONSULTING PTY LTD
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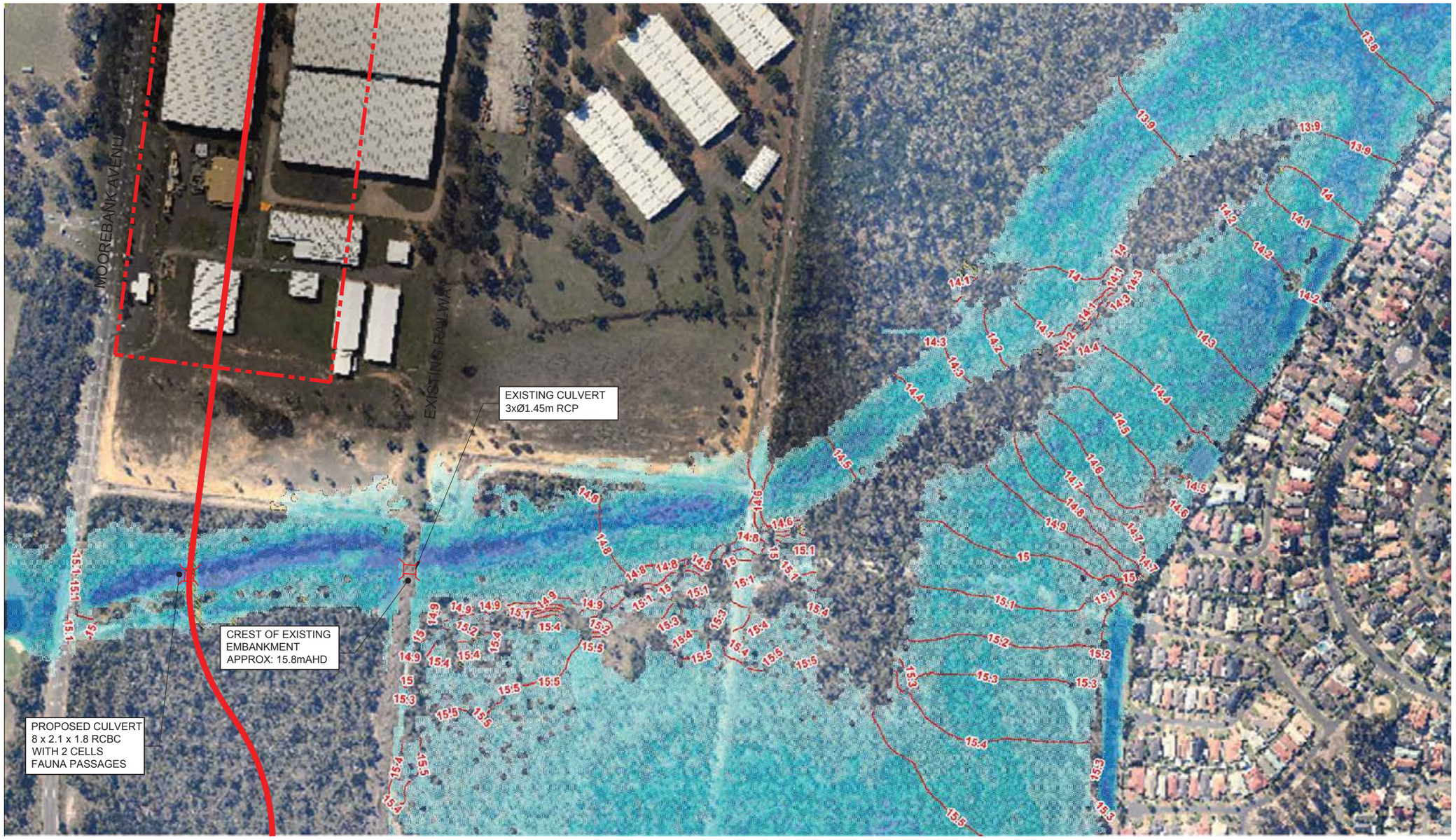
Drawing No.	Project No.	Issue
SKCS1033	AA003760	01

Date Plotted: 14 Aug 2015 - 12:24PM File Name: F:\AA003760\E-CAD\C-Civil\B-Sketches\SKCS1033-AA003760-NSD-PostDevelopment100YearARIFloodMap.dwg V1



LEGEND
WATER DEPTH (m)

- <0.1
- 0.1 to 0.2
- 0.2 to 0.4
- 0.4 to 0.6
- 0.6 to 0.8
- 0.8 to 1.0
- 1.0 to 1.5
- 1.5 to 2.0
- >2.0
- SITE BOUNDARY
- 20 — FLOOD LEVEL (mAHD)
- WAS WET NOW DRY

Issue	Description	Date
01	RESPONSE TO COMMENT	22/07/15

0 50 100 150 200m

1 : 2000

100mm on Original

Client: SIMTA Sydney Intermodal Terminal Alliance; TACTICAL GROUP

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Height Datum	AHD	Checked	BRUCE CALDWELL
Grid	MGA	Approved	B.LUSTY
Filename:			

Project: MOOREBANK INTERMODAL TERMINAL FACILITY STAGE 1 (CONCEPT DESIGN)

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Drawing No.	Project No.	Issue
SKCS1033	AA003760	01

Date Plotted: 14 Aug 2015 - 12:24PM File Name: F:\AA003760\E-CAD\C-Civil\B-Sketches\SKCS1033-AA003760-NSD-PostDevelopment100YearARIFloodMap.dwg V1

LEGEND

- LESS THAN -0.50
- -0.50 to -0.40
- -0.40 to -0.30
- -0.30 to -0.20
- -0.20 to -0.10
- -0.10 to -0.05
- -0.05 to -0.02
- -0.02 to -0.01
- -0.01 to 0.01
- 0.01 to 0.02
- 0.02 to 0.05
- 0.05 to 0.10
- 0.10 to 0.20
- 0.20 to 0.30
- 0.30 to 0.40
- 0.40 to 0.50
- GREATER THAN 5.0
- SITE BOUNDARY
- WAS DRY NOW WET

MINOR DRAINAGE SYSTEM HAS NOT BEEN INCLUDED IN THE MODEL. LOCAL CATCHMENT FLOW AND FLOOD REGIMES AWAY FROM MAIN CHANNELS AND WATERWAYS ARE APPROXIMATE ONLY.

FLOOD LEVEL SHOWN IS BASED ON THE 100 YEAR 9 HOUR EVENT.

NO BLOCKAGE ASSUMED ON CULVERT BENEATH MOOREBANK AVENUE.

BLOCKAGE OF 25% HAS BEEN APPLIED TO THE EXISTING CULVERT BENEATH THE EXISTING RAIL EMBANKMENT AS PER COUNCIL MODEL.

BLOCKAGE ON PROPOSED CULVERT ASSUMED 50% BLOCKAGE ON 6 CELLS AND 100% BLOCKAGE ON FAUNA PASSAGE (2 CELLS)

Issue	Description	Date
02	RESPONSE TO COMMENT	22/07/15
01	ISSUE FOR INFORMATION	06/02/15

100mm on Original

0 50 100 150 200m

1 : 2000

ANZAC CREEK (CULVERT) - 100 YEAR ARI FLOOD - CHANGE IN FLOODING DEPTH AND EXTENTS - POST DEVELOPMENT CONDITIONS.

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RAFTS MODEL FILE PATH: F:\AA003760\D-Calculations\Civil\A-Stormwater\F-RAFTS\Anzac_Hyder_Aug2012.

Client: SIMTA Sydney Intermodal Terminal Alliance; TACTICAL GROUP

Status: **PRELIMINARY**
NOT TO BE USED FOR CONSTRUCTION

Scales	AS SHOWN	Current Issue Signatures	
		Drawn	A.ZHAO
Original Size	A1	Designed	VINCENT NG
Height Datum	AHD	Checked	BRUCE CALDWELL
Grid	MGA	Approved	B.LUSTY
Filename:			

Project: MOOREBANK INTERMODAL TERMINAL FACILITY STAGE 1 (CONCEPT DESIGN)

Title: CHANGE IN 100 YEAR ARI FLOOD LEVEL ANZAC CREEK TO SOUTH SIMTA SITE POST DEVELOPMENT CONDITIONS

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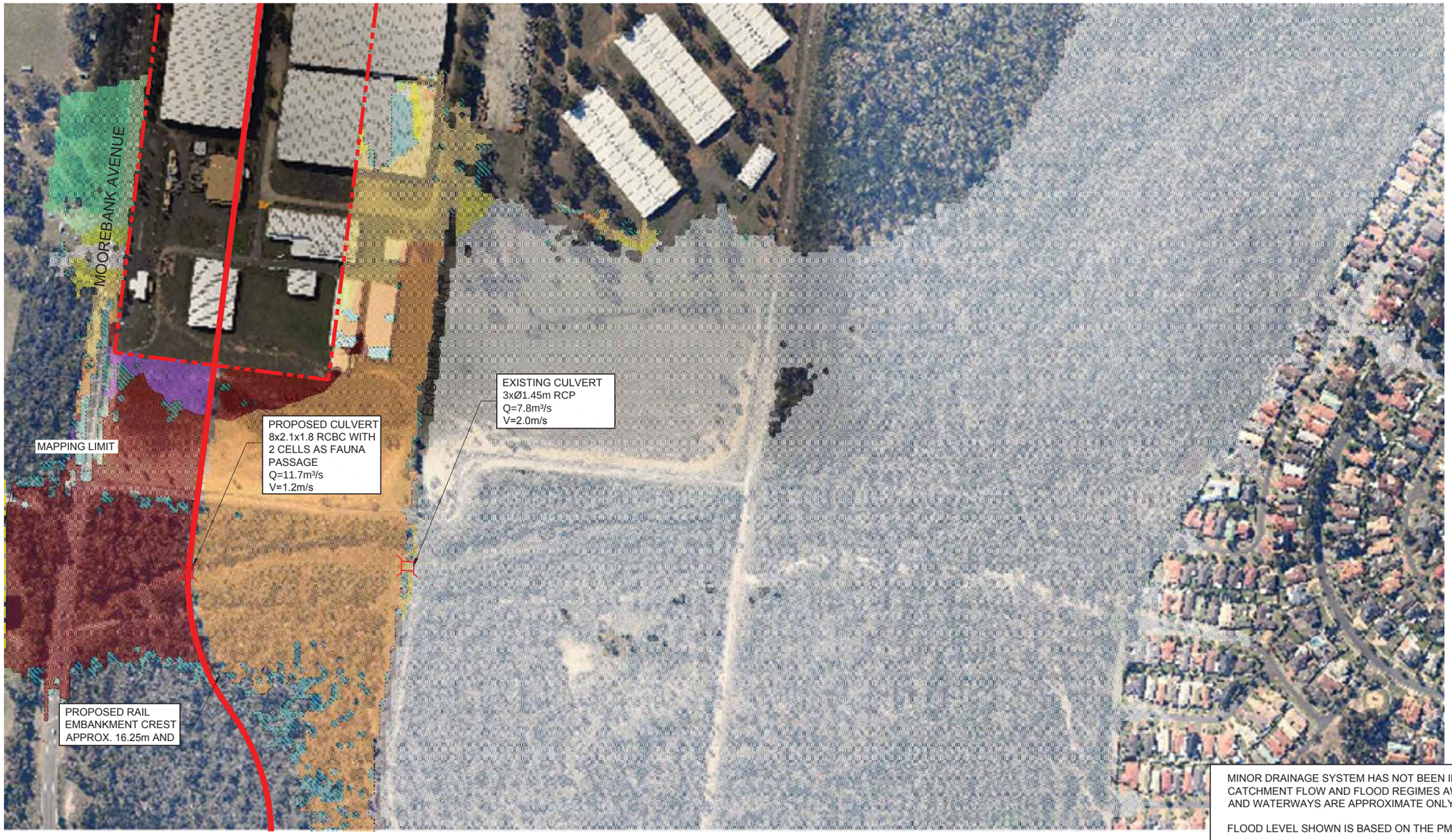
Drawing No.	Project No.	Issue
SKCS1031	AA003760	01

Date Plotted: 14 Aug 2015 - 12:26PM File Name: F:\AA003760\E-CAD\C-Civil\B-Sketches\SKCS1031-AA003760-NSD-PostDevelopment100YearARIFloodImpactMap.dwg V1



LEGEND

- LESS THAN -0.50
- -0.50 to -0.40
- -0.40 to -0.30
- -0.30 to -0.20
- -0.20 to -0.10
- -0.10 to -0.05
- -0.05 to -0.02
- -0.02 to -0.01
- -0.01 to 0.01
- 0.01 to 0.02
- 0.02 to 0.05
- 0.05 to 0.10
- 0.10 to 0.20
- 0.20 to 0.30
- 0.30 to 0.40
- 0.40 to 0.50
- GREATER THAN 5.0
- SITE BOUNDARY
- WAS DRY NOW WET

MINOR DRAINAGE SYSTEM HAS NOT BEEN INCLUDED IN THE MODEL. LOCAL CATCHMENT FLOW AND FLOOD REGIMES AWAY FROM MAIN CHANNELS AND WATERWAYS ARE APPROXIMATE ONLY.

FLOOD LEVEL SHOWN IS BASED ON THE PMF 1 HOUR EVENT.

NO BLOCKAGE ASSUMED ON CULVERT BENEATH MOOREBANK AVENUE.

BLOCKAGE OF 25% HAS BEEN APPLIED TO THE EXISTING CULVERT BENEATH THE EXISTING RAIL EMBANKMENT AS PER COUNCIL MODEL.

BLOCKAGE ON PROPOSED CULVERT ASSUMED 50% BLOCKAGE ON 6 CELLS AND 100% BLOCKAGE ON FAUNA PASSAGE (2 CELLS)

Issue	Description	Date
02	RESPONSE TO COMMENT	22/07/15
01	ISSUE FOR INFORMATION	06/02/15

100mm on Original

0 50 100 150 200m

1 : 2000

ANZAC CREEK (CULVERT) - PROBABLE MAXIMUM FLOOD - CHANGE IN FLOODING DEPTH AND EXTENTS - POST DEVELOPMENT CONDITIONS.

TUFLOW (BUILD: 2006-06-DB) RUN FILES,
- Az_Hy_ProB1_PMF1h_10.wor
- TUFLOW WORKSPACE FILE PATH - F:\AA003760\D-Calculations\Civil\A-Stormwater\D-TUFLOW\Tuflow_Anzac_Ck_model_Sept2012\runs\
RAFTS MODEL FILE PATH: F:\AA003760\D-Calculations\Civil\A-Stormwater\F-RAFTS\Anzac_Hyder_Aug2012.

Client: SIMTA Sydney Intermodal Terminal Alliance; TACTICAL GROUP

Status: **PRELIMINARY** NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	AS SHOWN	Drawn	A.ZHAO
Original Size	A1	Designed	VINCENT NG
Height Datum	AHD	Checked	BRUCE CALDWELL
Grid	MGA	Approved	B.LUSTY
Filename:			

Project: MOOREBANK INTERMODAL TERMINAL FACILITY STAGE 1 (CONCEPT DESIGN)

Title: CHANGE IN PROBABLE MAXIMUM FLOOD LEVEL ANZAC CREEK TO SOUTH SIMTA SITE POST DEVELOPMENT CONDITIONS

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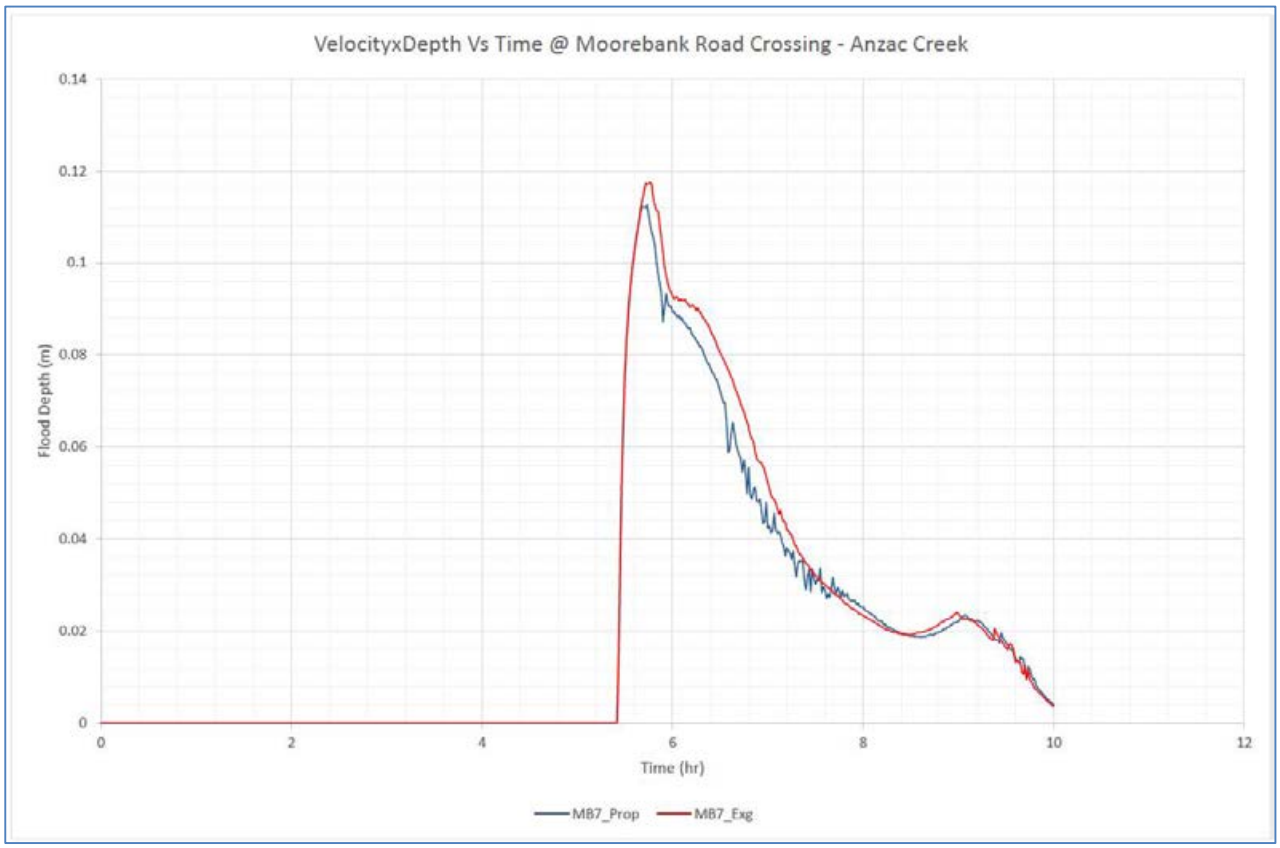
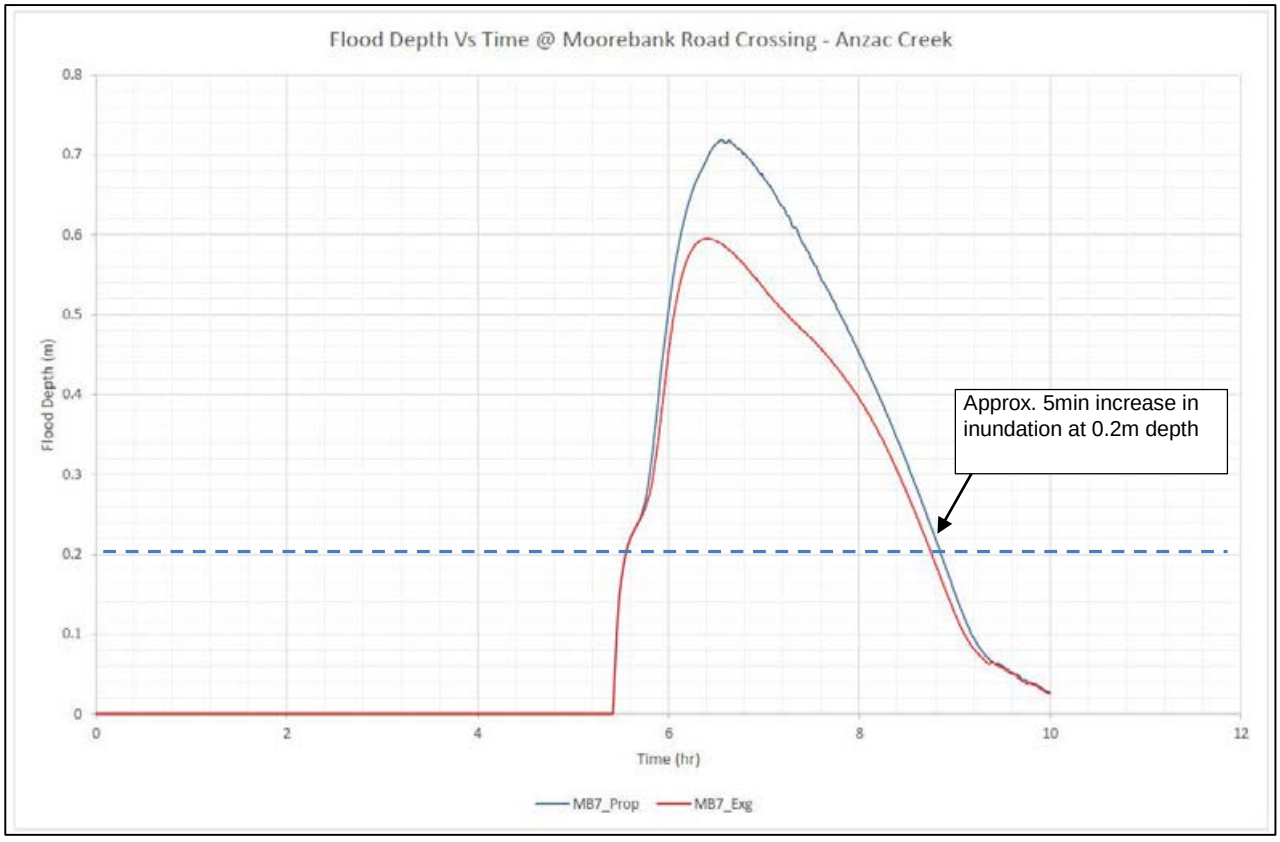
Drawing No.	Project No.	Issue
SKCS1032	AA003760	01

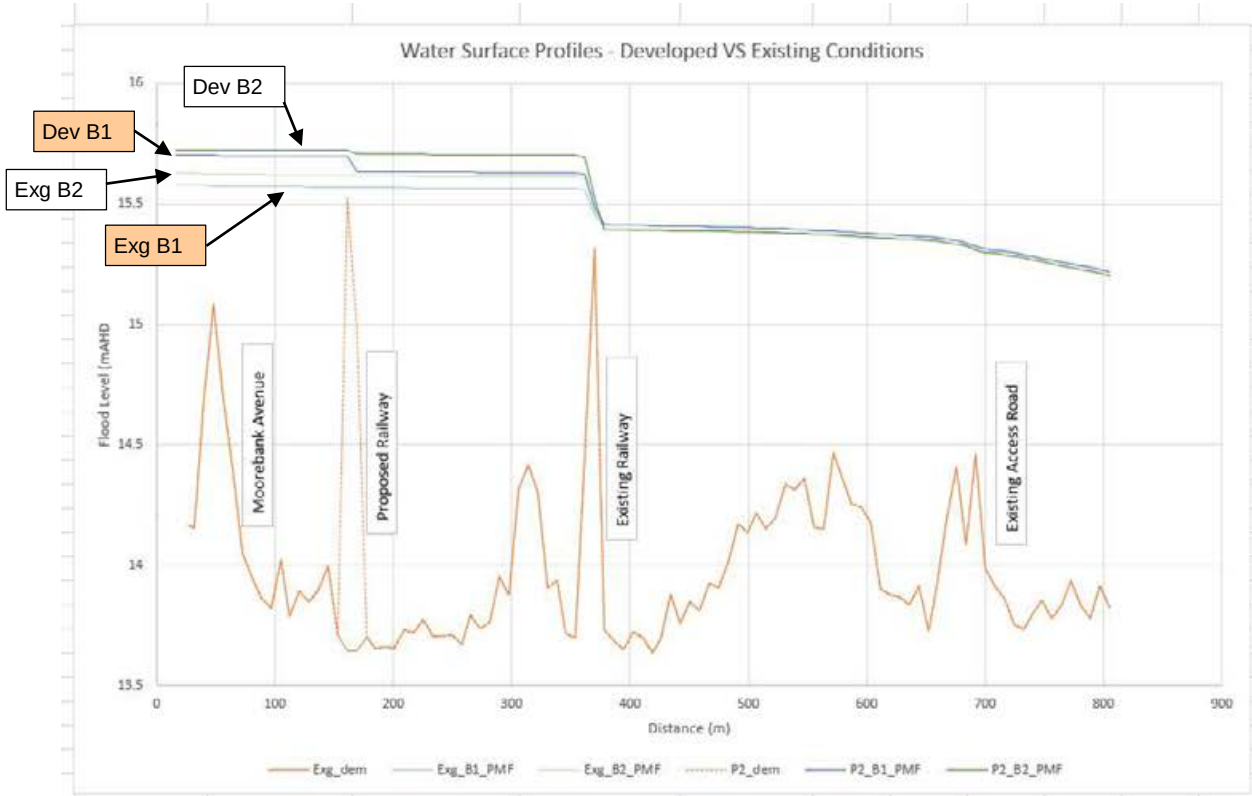
Date Plotted: 14 Aug 2015 - 12:20PM File Name: F:\AA003760\E-CAD\C-Civil\B-Sketches\SKCS1032-AA003760-NSD-PostDevelopmentProbableMaximumFloodImpactMap.dwg V1

PMF FLOOD AFFECTATION OF MOOREBANK AVENUE

At Anzac Creek Culvert



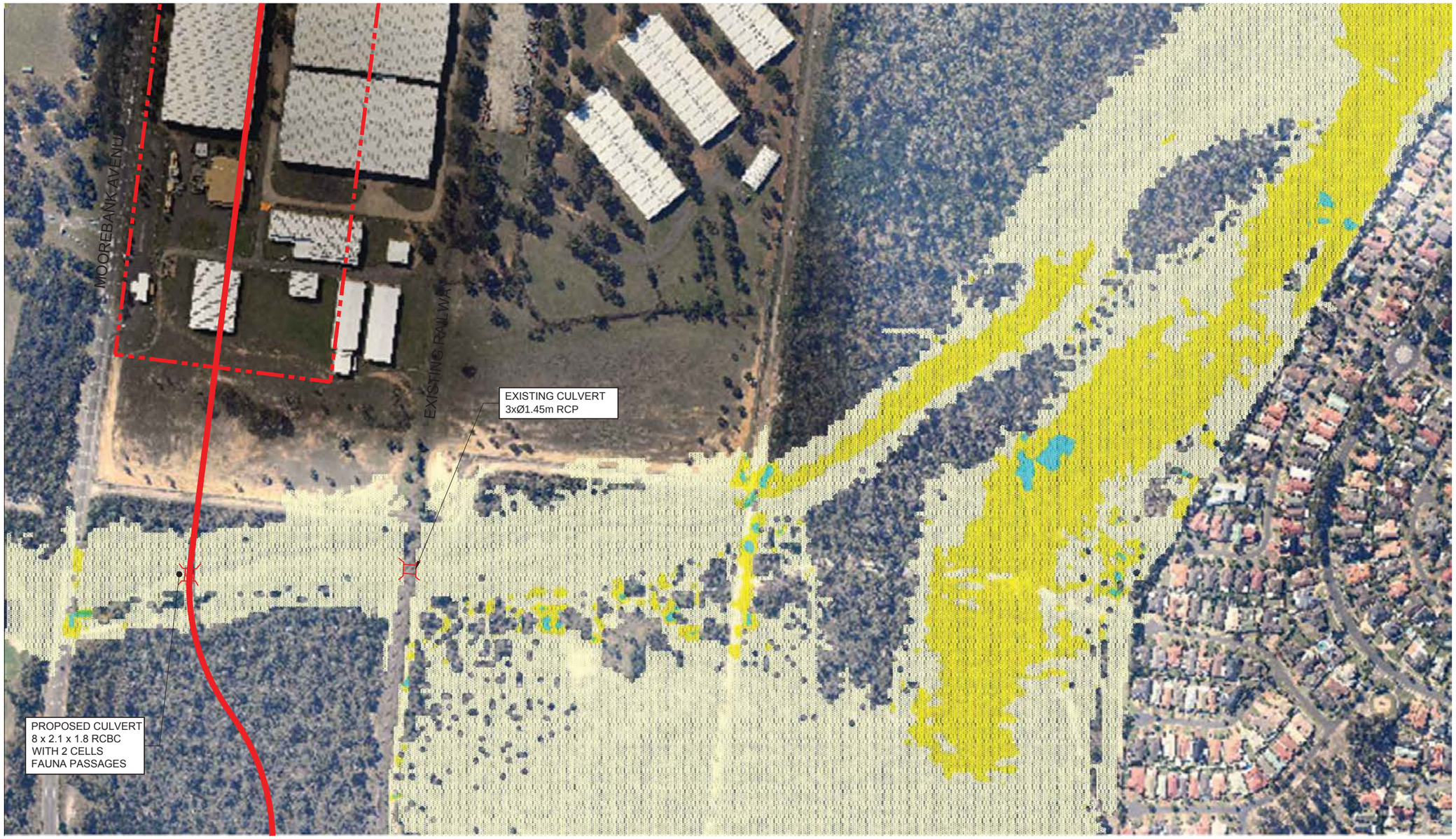




Blockage	Moorebank Ave	Proposed Railway	Existing Railway	Existing Access
	0.6x0.45 RCBC	6x2.1x1.8 RCBCs	3x1.45 RCPs	3x1.35 RCPs
Option B1	0%	50%	25%	25%
Option B2	0%	0%	100%	25%

Moorebank Ave (0.6x0.45 RCBC)

Blockage Option	Water Level (mAHD)
Exg_B1	15.58
Dev_B1	15.70
Exg_B2	15.63
Dev_B2	15.72



LEGEND

VELOCITY m/s

- 0.0 TO 0.25
- 0.25 TO 0.50
- 0.5 TO 0.75
- 0.75 TO 1.0
- 1.0 TO 1.5
- 1.5 TO 2.0
- 2.0 TO 2.5
- 2.5 TO 3.0
- GREATER THAN 3.0
- SITE BOUNDARY

Issue	Description	Date
01	RESPONSE TO COMMENT	22/07/15

0 50 100 150 200m

1 : 2000

Client: SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE; TACTICAL GROUP

Status: **PRELIMINARY**
NOT TO BE USED FOR CONSTRUCTION

Scales	AS SHOWN	Current Issue Signatures	
		Drawn	A.ZHAO
Original Size	A1	Designed	VINCENT NG
Height Datum	AHD	Checked	BRUCE CALDWELL
Grid	MGA	Approved	B.LUSTY
Filename:			

Project: MOOREBANK INTERMODAL TERMINAL FACILITY STAGE 1 (CONCEPT DESIGN)

Title: 100 YEAR ARI FLOOD FLOW VELOCITY ANZAC CREEK TO SOUTH SIMTA SITE POST DEVELOPMENT CONDITIONS

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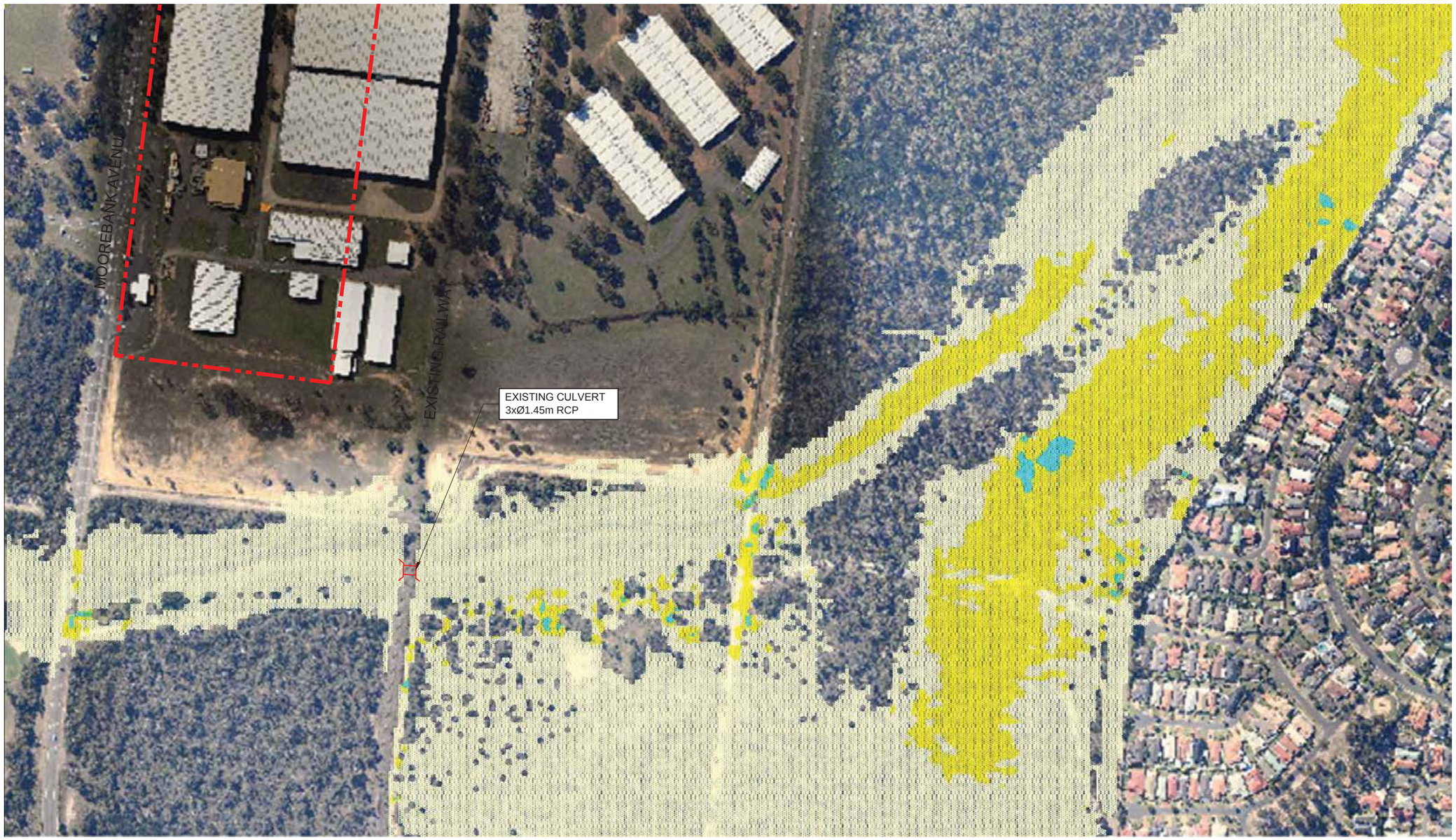
Drawing No.	Project No.	Issue
SKCS1035	AA003760	01

100mm on Original

Date Plotted: 14 Aug 2015 - 12:30PM File Name: F:\AA003760\E-CAD\C-Civil\B-Sketches\SKCS1035-AA003760-NSD-PostDevelopment100YearARIVelocityMap.dwg V1



LEGEND

VELOCITY m/s

- 0.0 TO 0.25
- 0.25 TO 0.50
- 0.5 TO 0.75
- 0.75 TO 1.0
- 1.0 TO 1.5
- 1.5 TO 2.0
- 2.0 TO 2.5
- 2.5 TO 3.0
- GREATER THAN 3.0
- SITE BOUNDARY

Issue	Description	Date
01	RESPONSE TO COMMENT	22/07/15

0 50 100 150 200m

1 : 2000

Client: SIMTA (Sydney Intermodal Terminal Alliance) / TACTICAL GROUP

Status: **PRELIMINARY**
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	AS SHOWN	Drawn	A.ZHAO
Original Size	A1	Designed	VINCENT NG
Height Datum	AHD	Checked	BRUCE CALDWELL
Grid	MGA	Approved	B.LUSTY

Filename:

Project: MOOREBANK INTERMODAL TERMINAL FACILITY STAGE 1 (CONCEPT DESIGN)

Title: 100 YEAR ARI FLOOD FLOW VELOCITY ANZAC CREEK TO SOUTH SIMTA SITE EXISTING CONDITIONS

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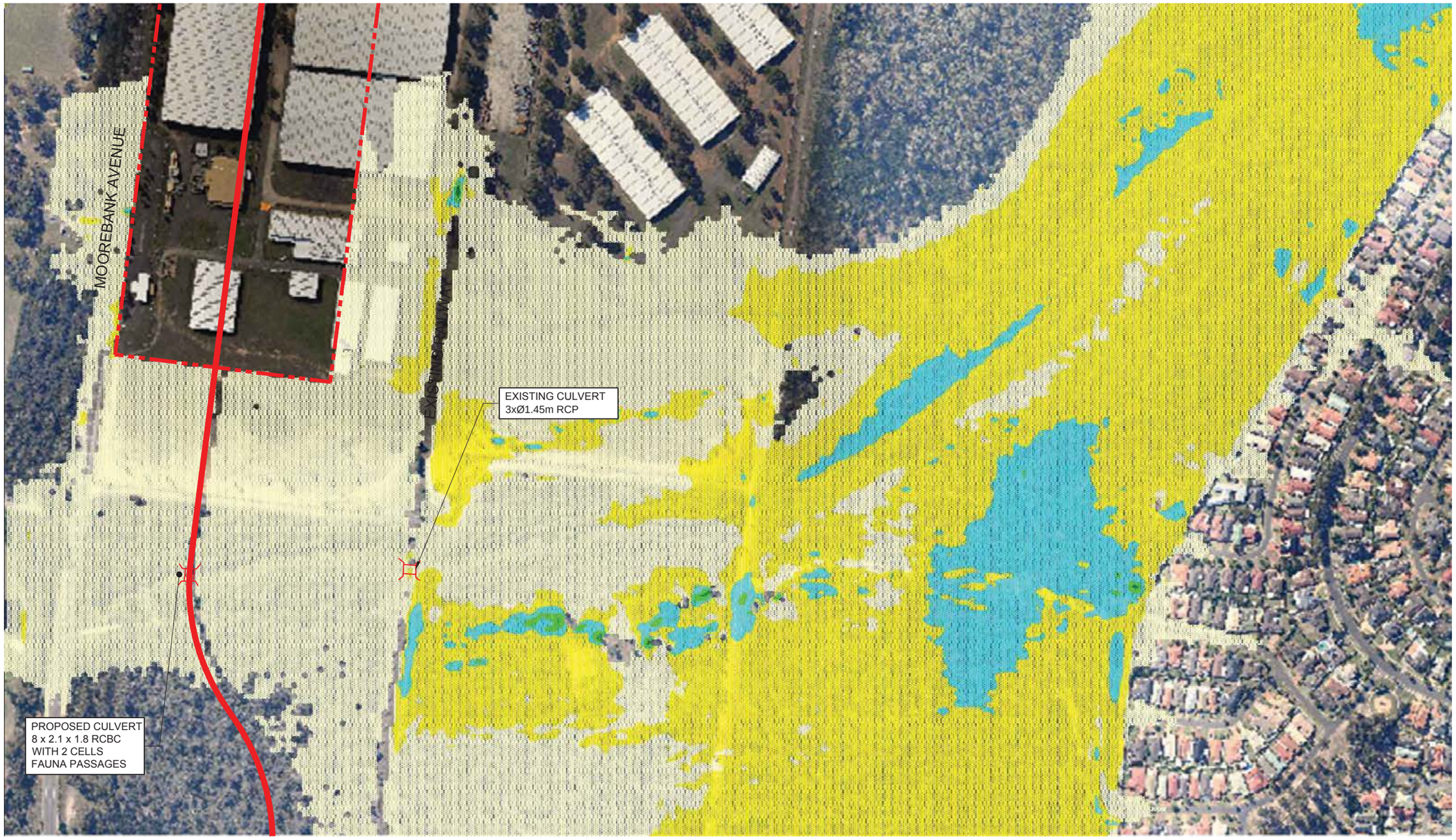
Drawing No.	Project No.	Issue
SKCS1037	AA003760	01

100mm on Original

Date Plotted: 14 Aug 2015 - 12:34PM File Name: F:\AA003760\E-CAD\C-Civil\B-Sketches\SKCS1037-AA003760-NSD-ExistingConditions100YearARIVelocityMap.dwg V1



LEGEND

VELOCITY m/s

- 0.0 TO 0.25
- 0.25 TO 0.50
- 0.5 TO 0.75
- 0.75 TO 1.0
- 1.0 TO 1.5
- 1.5 TO 2.0
- 2.0 TO 2.5
- 2.5 TO 3.0
- GREATER THAN 3.0
- SITE BOUNDARY

Issue	Description	Date
01	RESPONSE TO COMMENT	22/07/15

100mm on Original

0 50 100 150 200m

1 : 2000

Client: SIMTA Sydney Intermodal Terminal Alliance; TACTICAL GROUP

Status: **PRELIMINARY**
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Scales	AS SHOWN	Current Issue Signatures	
		Drawn	A.ZHAO
Original Size	A1	Designed	VINCENT NG
Height Datum	AHD	Checked	BRUCE CALDWELL
Grid	MGA	Approved	B.LUSTY

Filename:

Project: MOOREBANK INTERMODAL TERMINAL FACILITY STAGE 1 (CONCEPT DESIGN)

Title: PROBABLE MAXIMUM FLOOD FLOW VELOCITY ANZAC CREEK TO SOUTH SIMTA SITE POST DEVELOPMENT CONDITIONS

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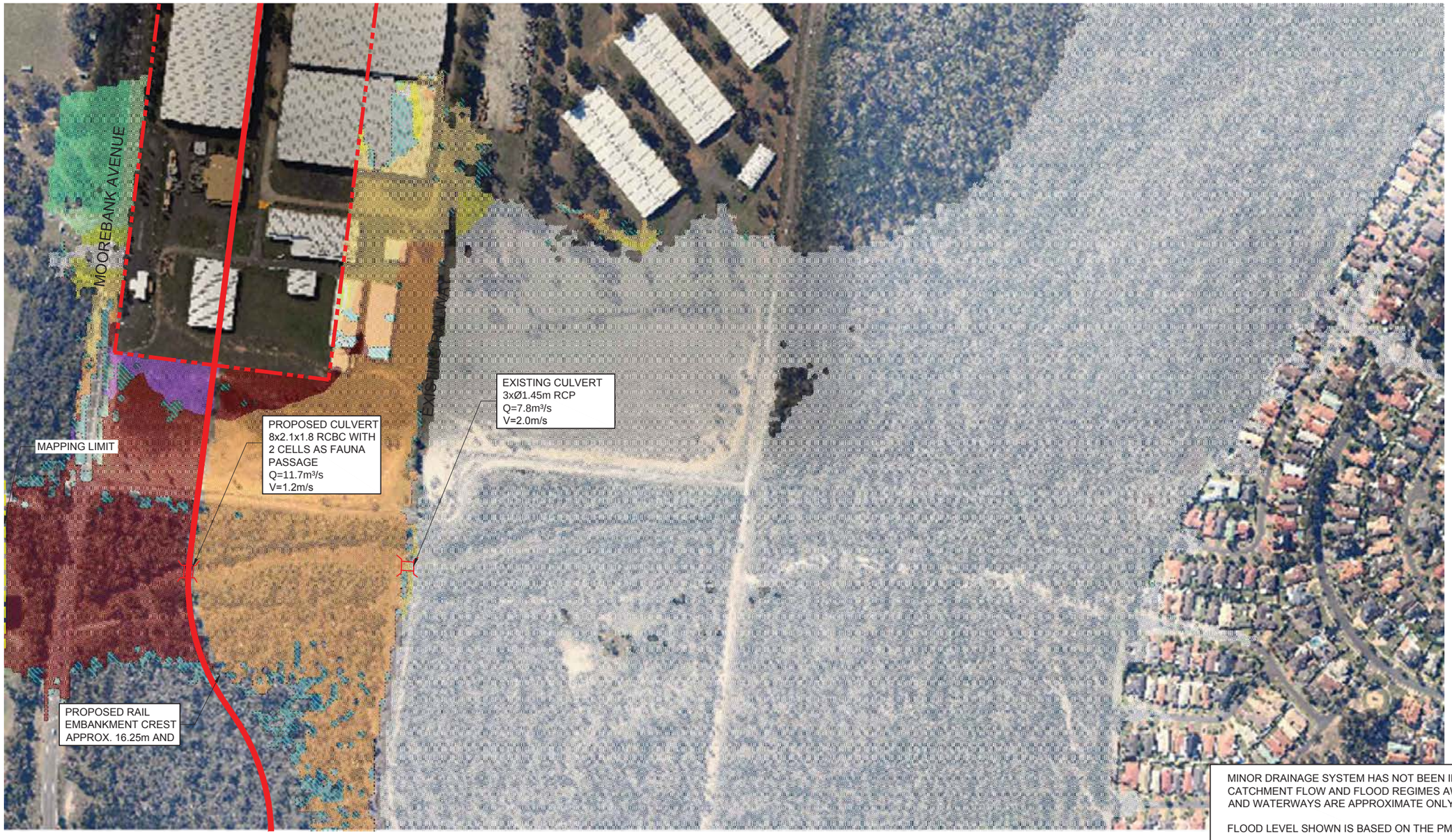
Drawing No.	Project No.	Issue
SKCS1036	AA003760	01

Date Plotted: 14 Aug 2015 - 12:32PM File Name: F:\AA003760\E-CAD\C-Civil\B-Sketches\SKCS1036-AA003760-NSD-PostDevelopmentProbableMaximumVelocityMap.dwg V1



LEGEND

- LESS THAN -0.50
- -0.50 to -0.40
- -0.40 to -0.30
- -0.30 to -0.20
- -0.20 to -0.10
- -0.10 to -0.05
- -0.05 to -0.02
- -0.02 to -0.01
- -0.01 to 0.01
- 0.01 to 0.02
- 0.02 to 0.05
- 0.05 to 0.10
- 0.10 to 0.20
- 0.20 to 0.30
- 0.30 to 0.40
- 0.40 to 0.50
- GREATER THAN 5.0
- SITE BOUNDARY
- WAS DRY NOW WET

MINOR DRAINAGE SYSTEM HAS NOT BEEN INCLUDED IN THE MODEL. LOCAL CATCHMENT FLOW AND FLOOD REGIMES AWAY FROM MAIN CHANNELS AND WATERWAYS ARE APPROXIMATE ONLY.

FLOOD LEVEL SHOWN IS BASED ON THE PMF 1 HOUR EVENT.

NO BLOCKAGE ASSUMED ON CULVERT BENEATH MOOREBANK AVENUE.

BLOCKAGE OF 25% HAS BEEN APPLIED TO THE EXISTING CULVERT BENEATH THE EXISTING RAIL EMBANKMENT AS PER COUNCIL MODEL.

BLOCKAGE ON PROPOSED CULVERT ASSUMED 50% BLOCKAGE ON 6 CELLS AND 100% BLOCKAGE ON FAUNA PASSAGE (2 CELLS)

Issue	Description	Date
02	RESPONSE TO COMMENT	22/07/15
01	ISSUE FOR INFORMATION	06/02/15

100mm on Original

0 50 100 150 200m

1 : 2000

ANZAC CREEK (CULVERT) - PROBABLE MAXIMUM FLOOD - CHANGE IN FLOODING DEPTH AND EXTENTS - POST DEVELOPMENT CONDITIONS.

TUFLOW (BUILD: 2006-06-DB) RUN FILES,
- Az_Hy_ProB1_PMF1h_10.wor
- TUFLOW WORKSPACE FILE PATH - F:\AA003760\D-Calculations\Civil\A-Stormwater\D-TUFLOW\Tuflow_Anzac_Ck_model_Sept2012\runs\
RAFTS MODEL FILE PATH: F:\AA003760\D-Calculations\Civil\A-Stormwater\F-RAFTS\Anzac_Hyder_Aug2012.

Client: SIMTA Sydney Intermodal Terminal Alliance; TACTICAL GROUP

Status: **PRELIMINARY** NOT TO BE USED FOR CONSTRUCTION

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Scales	AS SHOWN	Drawn	A.ZHAO
Original Size	A1	Designed	VINCENT NG
Height Datum	AHD	Checked	BRUCE CALDWELL
Grid	MGA	Approved	B.LUSTY
Filename:			

Project: MOOREBANK INTERMODAL TERMINAL FACILITY STAGE 1 (CONCEPT DESIGN)

Title: CHANGE IN PROBABLE MAXIMUM FLOOD LEVEL ANZAC CREEK TO SOUTH SIMTA SITE POST DEVELOPMENT CONDITIONS

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Drawing No.	Project No.	Issue
SKCS1032	AA003760	01

Date Plotted: 14 Aug 2015 - 12:20PM File Name: F:\AA003760\E-CAD\C-Civil\B-Sketches\SKCS1032-AA003760-NSD-PostDevelopmentProbableMaximumFloodImpactMap.dwg V1

EIS APPENDIX C ‘HEC-RAS TABLE CORRECTION

Table D1: Stormwater and Flooding EIS Appendix C ‘HEC-RAS Table Correction’

Profile Output Table - Standard Table 1

File Options Std. Tables User Tables Locations Help

HEC-RAS Plan: exist bridge River: Georges River Reach: Upper Georges Ri Profile: 100 yr. ARI Floo

Reload Data

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Upper Georges Ri	40	100 yr. ARI Floo	1877.000	-0.65	13.22	7.50	13.46	0.00	2.84	1588.96	236.60	0.26
Upper Georges Ri	39	100 yr. ARI Floo	1877.000	-0.25	12.94		13.40	0.00	3.21	853.73	116.17	0.29
Upper Georges Ri	38	100 yr. ARI Floo	1877.000	-0.25	12.95		13.27	0.00	2.71	1034.01	141.63	0.25
Upper Georges Ri	37	100 yr. ARI Floo	1877.000	0.05	12.79		13.21	0.00	3.15	862.46	108.17	0.29
Upper Georges Ri	36	100 yr. ARI Floo	1877.000	0.05	12.66		13.10	0.00	3.57	1076.76	225.16	0.33
Upper Georges Ri	35	100 yr. ARI Floo	1877.000	-0.85	12.66		12.92	0.00	3.12	1299.28	171.20	0.29
Upper Georges Ri	34	100 yr. ARI Floo	1877.000	0.00	12.25	6.94	12.89	0.00	3.68	633.79	135.40	0.35
Upper Georges Ri	33.5		Culvert									
Upper Georges Ri	33	100 yr. ARI Floo	1877.000	0.00	12.14	7.15	12.56	0.00	3.19	934.20	135.19	0.30
Upper Georges Ri	32	100 yr. ARI Floo	1877.000	0.62	12.04		12.52	0.00	3.49	1032.50	154.00	0.34
Upper Georges Ri	31	100 yr. ARI Floo	1877.000	0.65	11.97		12.39	0.00	3.18	1035.18	154.89	0.31
Upper Georges Ri	30	100 yr. ARI Floo	1877.000	1.35	11.85		12.28	0.00	3.32	1158.07	165.49	0.33
Upper Georges Ri	29.3	100 yr. ARI Floo	1877.000	0.25	11.79		12.19	0.00	3.05	1059.94	153.15	0.30
Upper Georges Ri	29.2	100 yr. ARI Floo	1877.000	1.00	11.73	6.89	12.18	0.00	3.25	1030.30	151.51	0.32
Upper Georges Ri	29.15		Bridge									
Upper Georges Ri	29.1	100 yr. ARI Floo	1877.000	1.00	11.71		12.16	0.00	3.26	1026.38	151.44	0.32
Upper Georges Ri	29	100 yr. ARI Floo	1877.000	0.25	11.67	6.52	12.14	0.00	3.25	942.21	166.72	0.32
Upper Georges Ri	28.9	100 yr. ARI Floo	1877.000	0.25	11.70		12.12	0.00	3.14	1025.04	154.85	0.31
Upper Georges Ri	28.8	100 yr. ARI Floo	1877.000	0.25	11.69		12.12	0.00	3.14	1023.87	154.80	0.31
Upper Georges Ri	28.7	100 yr. ARI Floo	1877.000	0.25	11.49		12.09	0.00	3.71	894.16	156.42	0.37
Upper Georges Ri	28	100 yr. ARI Floo	1877.000	0.35	11.35		12.01	0.00	3.89	800.09	150.66	0.38
Upper Georges Ri	27	100 yr. ARI Floo	1877.000	-1.45	11.35		11.83	0.00	3.23	885.05	181.01	0.30
Upper Georges Ri	26	100 yr. ARI Floo	1877.000	0.35	11.41		11.68	0.00	2.90	1298.90	194.23	0.29
Upper Georges Ri	25	100 yr. ARI Floo	1877.000	-0.05	11.20	5.75	11.58	0.00	2.86	1025.95	177.27	0.29

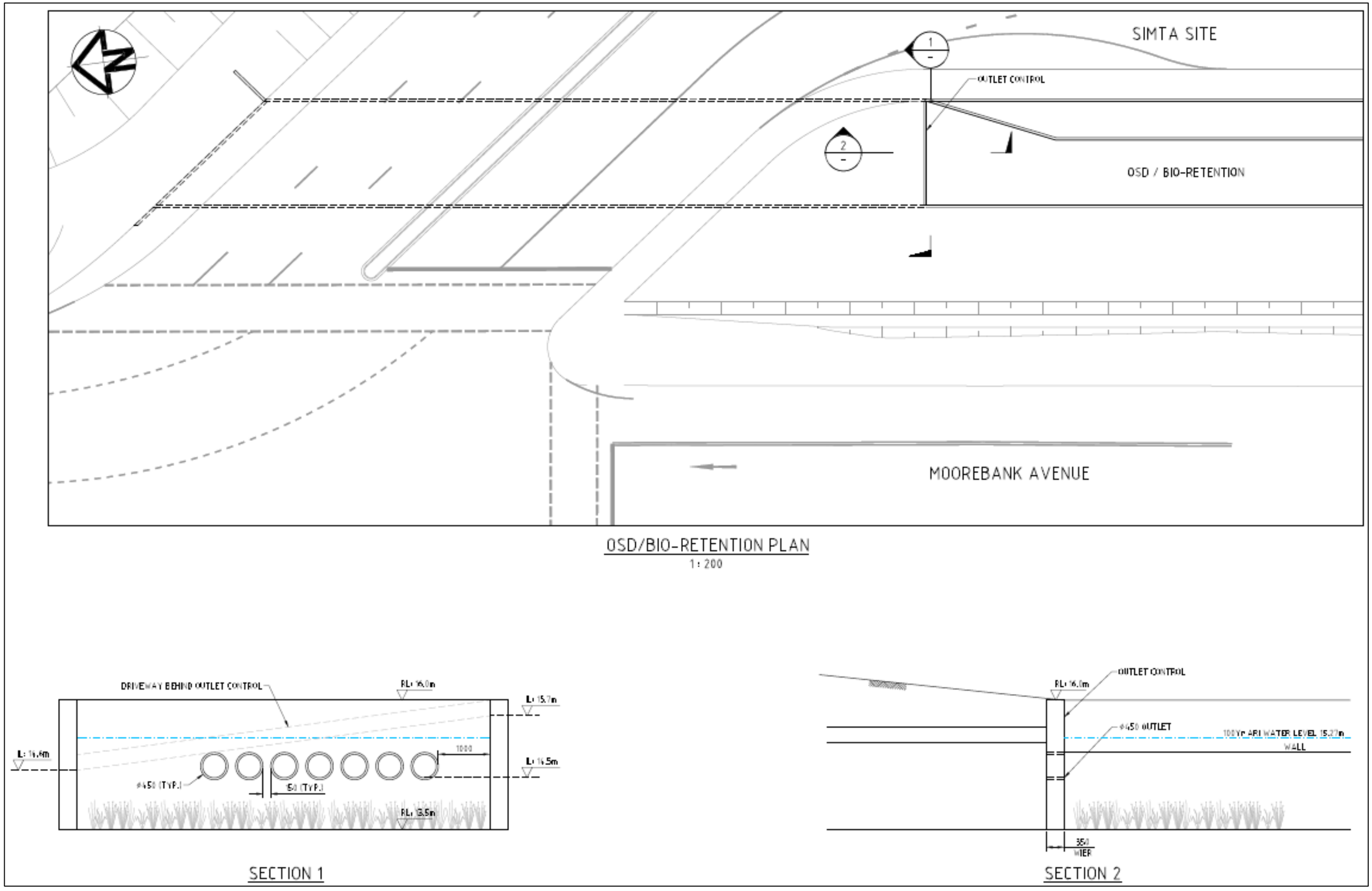
(Note: The EIS main report Tables 6 and 7 are correct.)

EIS APPENDIX P, APPENDIX C ‘HEC-RAS TABLE CORRECTION

Table E-1: Comparison of MIKE-11 and HEC-RAS – PMF Water Levels

MIKE 11			HEC-RAS		WL Difference (m)
Cross Section ID	Cross Reference ID	WL (mAHD)	River Station	WL (mAHD)	
100.000 (P1)	40	16.4	40.00	16.65	0.3
100.225 (P2)	39	15.9	39.00	16.05	0.2
100.450 (P3)	38	15.9	38.00	16.12	0.2
100.630 (P4)	37	15.5	37.00	15.73	0.2
100.835 (P5)	36	15.5	36.00	15.99	0.5
101.005 (P6)	35	15.2	35.00	15.67	0.5
101.057 (P6.4)	34	15.2	34.00	14.91	-0.3
Cambridge Ave culvert	33.5		33.50		
101.072 (P6.6)	33	14.7	33.00	14.88	0.2
101.120 (P7)	32	14.7	32.00	14.69	0.0
101.270 (P8)	31	14.7	31.00	14.56	-0.1
101.440 (P9)	30	14.2	30.00	14.41	0.2
Exs. Railway bridge	29.15		29.15		
101.650 (P10)	29	14.1	29.00	14.22	0.1
New Railway bridge	28.85				
101.795 (P11)	28	13.9	28.00	13.71	-0.1
101.990 (P12)	27	13.9	27.00	13.82	-0.1
102.185 (P13)	26	13.8	26.00	13.82	0.0
102.390 (P14)	25	13.5	25.00	13.50	0.0

OSD Outlet controls



Preliminary Sediment Basin Sizing

Total Basin Volume

Site	C_v	R x-day y-%ile	Total catchment area (ha)	Settling zone volume (m^3)	Sediment storage volume (m^3)	Total basin volume (m^3)
B20	0.50	24.4	20	2440	1220	3660
B10	0.50	24.4	10	1220	610	1830
B5	0.50	24.4	5	610	305	915
B2.5	0.50	24.4	2.5	305	153	457.5
B1	0.50	24.4	1	122	61	183

SIMTA Intermodal Terminal Facility- Stage 1

Response to Submissions - Stormwater and Flooding Addendum

SIMTA

SYDNEY INTERMODAL TERMINAL ALLIANCE

Part 4, Division 4.1, State Significant Development

September 2015

MEMORANDUM

Date	2 September 2015
To	Westley Owers (Hyder)
From	Bruce Caldwell (Hyder) / David Stone (Hyder)
Copies	Steve Ryan (Tactical Group) Greg Huzij (Hyder)
Subject	**SIMTA Stage 1 - Stormwater and Flooding Addendum**

1.0 Introduction

1.1 Report purpose

This addendum report has been prepared to provide further information on, and environmental assessment of, a proposed amendment to the Rail link as part of the SIMTA Stage 1 Proposal (the Proposal). This report has been prepared to support a Response to Submissions to be prepared as part of the approval process of the Proposal for State Significant Development (SSD) under Part 4, Division 4.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

This report provides an addendum to the 'SIMTA Moorebank Intermodal Terminal Facility – Stage 1 Stormwater and Flooding Environmental Assessment' (the Stormwater and Flooding Environmental Assessment) prepared by Hyder dated 10 April 2015 included within the Environmental Impact Statement (dated May 2015) prepared for the Proposal. Updated Drainage Design Drawings and Preliminary Bulk Earthworks Plans have also been prepared to support this report, and are included within Appendix A.

1.2 Proposal amendment overview

The Rail link is to be realigned within Commonwealth Land (including MIC Site, Moorebank Avenue and the Southern Boot Land) to respond to submissions (received during the exhibition of the EIS (28 May 2015 and 26 June 2015)) and also to reduce the overall environmental impacts of the Proposal (refer to Figure 1).

This realignment would alter the Rail link alignment to the south of the Anzac Creek Crossing, at the intersection with Moorebank Avenue and also on the MIC site (to the immediate west of Moorebank Avenue). The rail alignment would retain the 20 metre width of the Rail Link Corridor within environmentally sensitive areas, as per the Concept Plan Approval (MP 10_0193) and the EIS.

There would be no alteration to the Rail link to north of this realignment including at the crossing of Anzac Creek, connection to, or within the Stage 1 site. There would also be no alteration to the Rail link to the west along the MIC site, the Georges River bridge crossing, within the Glenfield Waste Facility or at the southern and northern connections to the SSFL.

This alteration in the rail alignment would result in Moorebank Avenue being intersected by Rail link further north of that previously identified within the EIS. An alteration would be undertaken to the existing Moorebank Avenue road embankment to create an overbridge to accommodate the realigned Rail link.

The Rail link realignment would not generally alter the construction methodology (with the exception of the Moorebank Avenue overbridge) or the operation of the IMT as previously provided, with no change to the rail traffic, road access, operational hours, workforce or overall operational procedures.

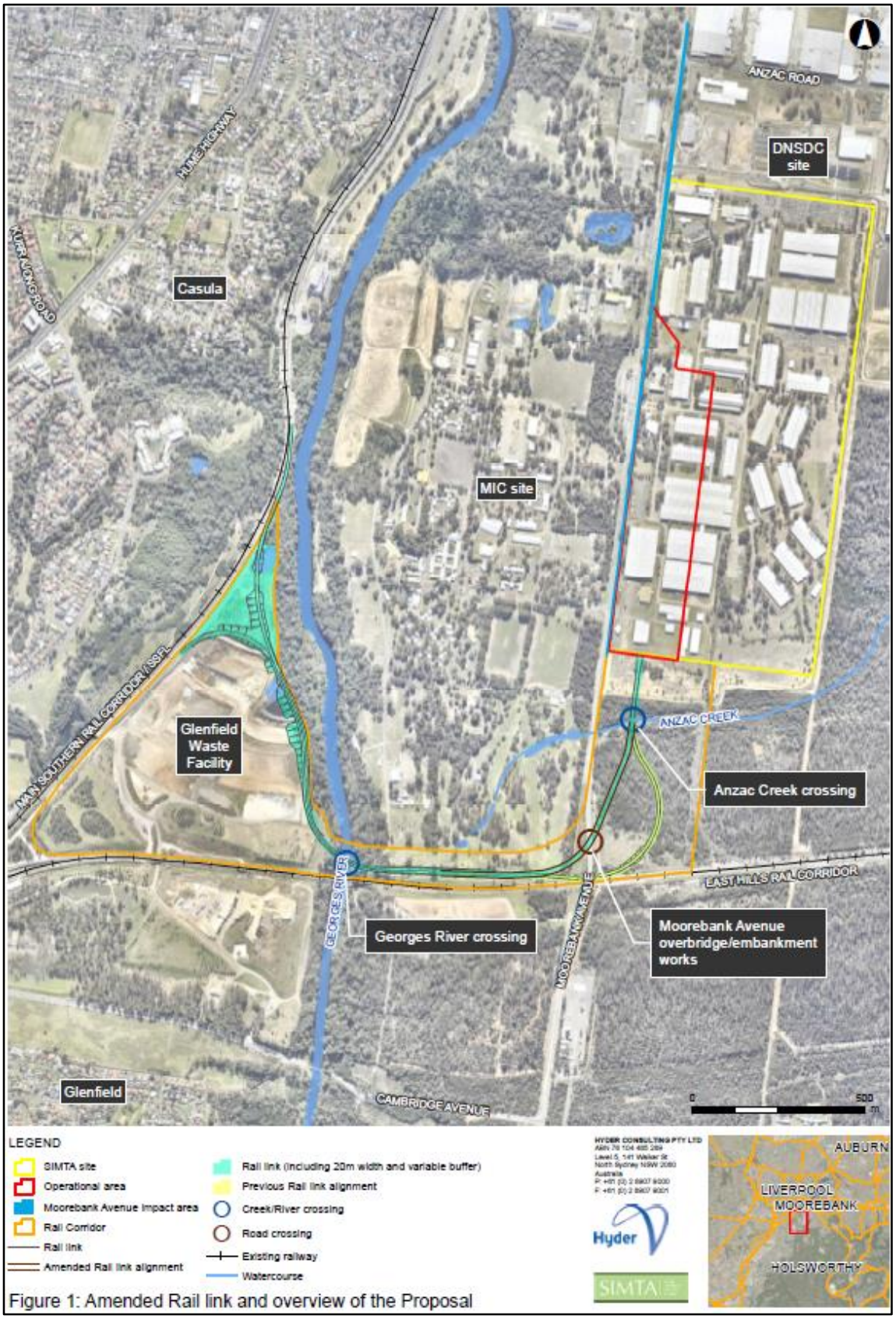


Figure 1: Amended Rail link and overview of the Proposal

2.0 Flooding

2.1 Anzac Creek

As indicated in Drawing EIS1106 (Appendix A of this memorandum), the amended Rail link does not alter the proposed Anzac Creek rail culvert design, nor the proposed (as originally contained within the Stormwater and Flooding Environmental Assessment) rail alignment to the north of the culvert. The realignment however does involve a relocation of the Rail link further west within the Southern Boot Land, to the south of Anzac Creek.

This proposed realignment will result in an insignificant change to the Anzac Creek flood impacts presented in Section 3 of the Stormwater and Flooding Environmental Assessment and the associated TUFLOW model results (presented in Appendix P of the EIS).

3.0 Water quantity

3.1 Rail Link

The design of the stormwater management of the amended Rail link cross drainage and longitudinal drainage is outlined in Drawing EIS1106 (Appendix A of this memorandum).

East of Moorebank Avenue, the amended Rail link will largely be in cut (under Moorebank Avenue) which is similar to the rail stormwater drainage management presented in Section 5.2 of the Stormwater and Flooding Environmental Assessment (Appendix P of the EIS). Within the area of cut in the amended Rail link to the east of Moorebank Avenue, the adjacent maintenance access area will facilitate drainage. To the immediate south of the existing fill, (between the fill area and Moorebank Avenue- on the RailCorp Land) the cross drainage system (presented in Section 5.2 of the Stormwater and Flooding Environmental Assessment) is no longer necessary.

Between Moorebank Avenue and the Georges River (i.e. the MIC site), the amended Rail link will be in cut (as a result of traversing under Moorebank Avenue). The amended Rail link will essentially retain flow distributions presented in Section 5.2 of the Stormwater and Flooding Environmental Assessment at this location, with the exception of the proposed culvert which would no longer be required for drainage to the EHRC. However, some localised fill and regrading would be undertaken to facilitate drainage away from the amended Rail link.

For the Georges River Bridge and west of the Georges River, the stormwater management of Rail link (presented in Section 5.2 of the Stormwater and Flooding Environmental Assessment) remains unchanged.

In summary, the amended realignment will result in a change to the stormwater drainage impacts identified within Section 5.2 of the Stormwater and Flooding Environmental Assessment.

4.0 Water quality

4.1 Rail link

The amended Rail link would not result in an increase in the potential water quality impacts identified for both construction and operation of the Proposal, within the Stormwater and Flooding Environmental Assessment. As stated within the Stormwater and Flooding Environmental Assessment, pollutant generation is likely to be limited to small sediment loads and therefore treatment measures which target sediment removal, such as sediment basins and sediment fences (during construction) and vegetated swales (operation), are proposed to be implemented where feasible.

5.0 Summary

The amended Rail link would not result in any alteration to the proposed Anzac Creek crossing and therefore would result in an insignificant change to the flooding impacts presented within the Stormwater and Flooding Environmental Assessment. Drainage and stormwater impacts would be generally similar to that proposed within the Stormwater and Flooding Environmental Assessment. Further, the amended Rail link would not result in further water quality impacts identified within the Stormwater and Flooding Environmental Assessment.

In summary, the amended rail alignment will result in no significant change to the flooding impacts, stormwater drainage or water quality and therefore no further mitigation measures, above that provided within the Stormwater and Flooding Environmental Assessment (Appendix P of the EIS), are considered necessary.

APPENDIX A

DRAINAGE DESIGN DRAWINGS AND PRELIMINARY BULK EARTHWORKS PLANS

SIMTA INTERMODAL TERMINAL FACILITY - STAGE 1

STATE SIGNIFICANT DEVELOPMENT APPLICATION

CIVIL DRAWING LIST

EISC1001	TITLE SHEET, DRAWING LIST AND LOCALITY PLAN
EISC1002	GENERAL ARRANGEMENT PLAN
EISC1011	SEDIMENTATION AND EROSION CONTROL PLAN
EISC1021	STAGE 1 SITE CUT AND FILL PLAN
EISC1031	SITEWORKS AND STORMWATER PLAN - SHEET 1
EISC1032	SITEWORKS AND STORMWATER PLAN - SHEET 2
EISC1041	TYPICAL STORMWATER DRAINAGE SECTIONS
EISC1051	EXISTING CATCHMENT PLAN
EISC1056	PROPOSED CATCHMENT PLAN - SHEET 1
EISC1057	PROPOSED CATCHMENT PLAN - SHEET 2
EISC1101	RAIL EMBANKMENT SEDIMENTATION AND EROSION CONTROL PLAN - SHEET 1
EISC1102	RAIL EMBANKMENT SEDIMENTATION AND EROSION CONTROL PLAN - SHEET 2
EISC1103	RAIL EMBANKMENT SEDIMENTATION AND EROSION CONTROL PLAN - SHEET 3
EISC1106	RAIL EMBANKMENT CUT AND FILL PLAN - SHEET 1
EISC1107	RAIL EMBANKMENT CUT AND FILL PLAN - SHEET 2
EISC1108	RAIL EMBANKMENT CUT AND FILL PLAN - SHEET 3
EISC1111	RAIL EMBANKMENT DRAINAGE PLAN - SHEET 1
EISC1112	RAIL EMBANKMENT DRAINAGE PLAN - SHEET 2
EISC1113	RAIL EMBANKMENT DRAINAGE PLAN - SHEET 3

LOCALITY PLAN
NTS

Issue	Description	Date
02	ISSUE FOR SSD APPLICATION (RESPONSE TO SUBMISSIONS)	20.08.15
01	ISSUE FOR SSD APPLICATION	10.04.15

100mm on Original

Client: SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE; TACTICAL GROUP

Status: **PRELIMINARY** NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	NTS	Drawn	A.ZHAO
Original Size	A1	Designed	K.MCAREAVEY
Height Datum	AHD	Checked	G.HUZIJ
Grid	MGA	Approved	G.HUZIJ
Filename:			

Project: MOOREBANK INTERMODAL TERMINAL FACILITY STAGE 1 (CONCEPT DESIGN)

Title: TITLE SHEET, DRAWING LIST AND LOCALITY PLAN

HYDER CONSULTING PTY LTD
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Level 5, 141 Walker St
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Australia
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Fax: +61 (0)2 8907 9001
www.hyderconsulting.com

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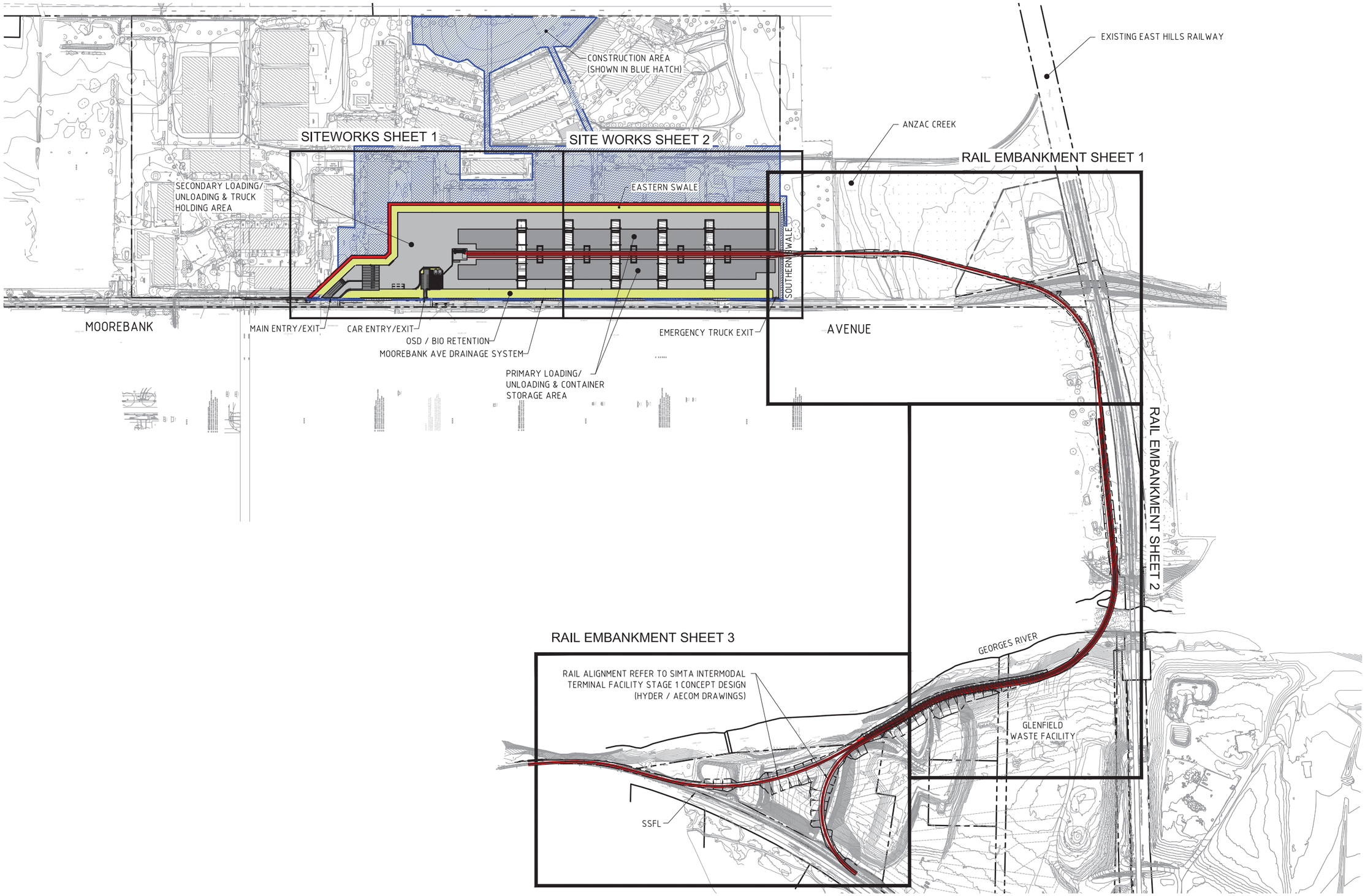
Drawing No. EISC1001 | Project No. AA003760 | Issue 02

Date Plotted: 20 Aug 2015 - 12:32PM File Name: F:\AA003760\E-CAD\C-Civil\D-Final\B-Stage 1_EIS\EISC1001-AA003760-NSD-TitleSheetDrawingListAndLocalityPlan.dwg V1



Issue	Description	Date
02	ISSUE FOR SSD APPLICATION (RESPONSE TO SUBMISSIONS)	20.08.15
01	ISSUE FOR SSD APPLICATION	10.04.15

100mm on Original

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1 : 4000

Client: SIMTA Sydney Intermodal Terminal Alliance; TACTICAL GROUP

Status: **PRELIMINARY**
NOT TO BE USED FOR CONSTRUCTION

Scales	1:4000	Current Issue Signatures	
		Drawn	A.ZHAO
Original Size	A1	Designed	K.MCAREAVEY
Height Datum	AHD	Checked	G.HUZIJ
Grid	MGA	Approved	G.HUZIJ

Filename:

Project: MOOREBANK INTERMODAL TERMINAL FACILITY STAGE 1 (CONCEPT DESIGN)

Title: GENERAL ARRANGEMENT PLAN

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Drawing No.	Project No.	Issue
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Date Plotted: 20 Aug 2015 - 12:35PM File Name: F:\AA003760\E-CAD\C-Civil\D-Final\B-Stage 1_EIS\EISC1002-AA003760-NSD-GeneralArrangementPlan.dwg V1

DEPTH RANGE LEGEND

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DEPTH OF CUT: 0.50, 1.00, 1.50, 2.00, 2.50, 3.00, 3.50, 4.00, 4.50, 5.00, 5.50, 6.00, 6.50, 7.00, 999

EARTHWORK VOLUMES

(INCLUDING RAIL LINK)

VOLUME OF TOPSOIL STRIP (200mm)	29,440m³
CUT TO FILL TERMINAL	106,640m³
CUT TO FILL RAIL LINK	79,890m³
CUT TO SPOIL	4,345m³
VOLUME OF ENGINEERED FILL (600mm DEPTH UNDER PAVEMENTS)	82,000m³

ASSUMPTIONS

1. CUT FILL VOLUMES INCLUDE AN INDICATIVE PAVEMENT DESIGN AND REQUIREMENT FOR ENGINEERED FILL.
2. 200mm STRIPPING HAS BEEN APPLIED TO THE EXISTING SURFACE.
3. NO ALLOWANCE FOR COMPACTION / BUCKING FACTORS.
4. NO ALLOWANCE FOR TRENCH OR ANY SERVICES OR DETAILED EXCAVATIONS.

FIRE ACCESS ROAD
EASTERN SWALE
SECONDARY LOADING/UNLOADING & TRUCK HOLDING AREA
SECONDARY LOADING/UNLOADING
PRIMARY LOADING/UNLOADING & CONTAINER STORAGE AREA
LOCO SHIFTER
PARKING
OFFICE 500SQM
OSD / BIO RETENTION LANDSCAPE AREA
EXISTING CHANNEL
MAIN ENTRY/EXIT
MOOREBANK
CAR ENTRY/EXIT
AVENUE
EMERGENCY ENTRY / EXIT
TO SSFL
SOUTHERN SWALE

REFER DRAWING EISC1101 FOR RAIL EMBANKMENT CUT AND FILL PLAN

Issue	Description	Date
02	ISSUE FOR SSD APPLICATION (RESPONSE TO SUBMISSIONS)	20.08.15
01	ISSUE FOR SSD APPLICATION	10.04.15

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1 : 1500

100mm on Original

Client: SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE; TACTICAL GROUP

Status: **PRELIMINARY**
NOT TO BE USED FOR CONSTRUCTION

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Original Size	A1	Designed	K.MCAREAVEY
Height Datum	AHD	Checked	G.HUZIJ
Grid	MGA	Approved	G.HUZIJ
Filename:			

Project: MOOREBANK INTERMODAL TERMINAL FACILITY STAGE 1 (CONCEPT DESIGN)

Title: STAGE 1 SITE CUT AND FILL PLAN

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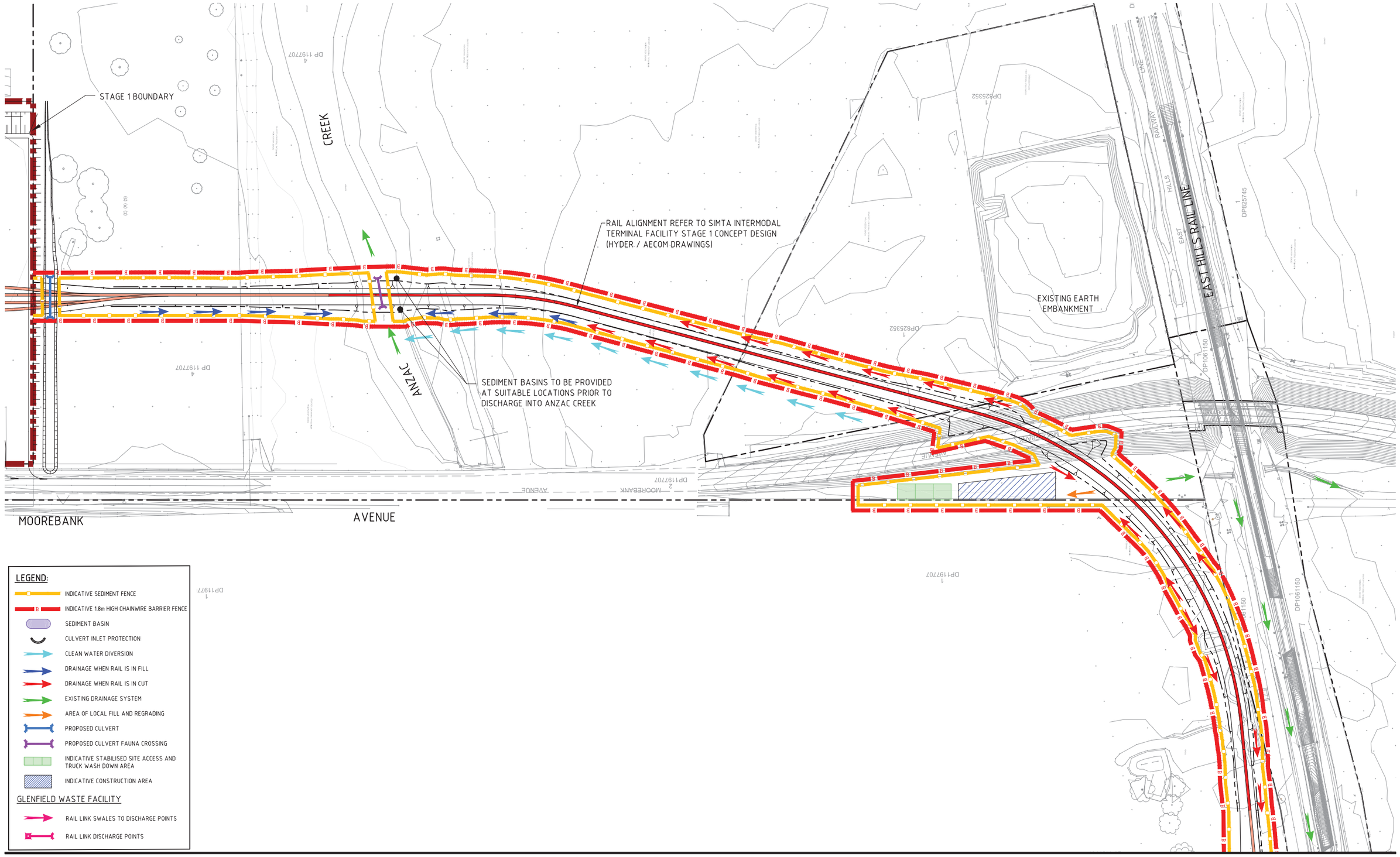
Drawing No.	Project No.	Issue
EISC1021	AA003760	02

Date Plotted: 20 Aug 2015 - 03:12PM File Name: \\HC-AUS-NS-FS-01\jobs\AA003760\E-CAD\C-Civil\D-Final\B-Stage 1_EIS\EISC1021-AA003760-NSD-CutAndFillPlan.dwg V1



REFER DRAWING EISC1102 FOR CONTINUATION

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02	RE-ISSUE FOR SSD APPLICATION	20.04.15
01	ISSUE FOR SSD APPLICATION	10.04.15

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1 : 1000

100mm on Original

Client: SIMTA Sydney Intermodal Terminal Alliance; TACTICAL GROUP

Status: **PRELIMINARY** NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1:1000	Drawn	A.ZHAO
Original Size	A1	Designed	K.MCAREAVEY
Height Datum	AHD	Checked	G.HUZIJ
Grid	MGA	Approved	G.HUZIJ
Filename:			

Project: MOOREBANK INTERMODAL TERMINAL FACILITY STAGE 1 (CONCEPT DESIGN)

Title: RAIL EMBANKMENT SEDIMENTATION AND EROSION CONTROL PLAN SHEET 1

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Drawing No.	Project No.	Issue
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Date Plotted: 20 Aug 2015 - 12:38PM File Name: F:\AA003760\E-CAD\C-Civil\D-Final\B-Stage 1_EIS\EISC1101-AA003760-NSD-RailEmbankmentSedimentationAndErosionControlPlanSheet1.dwg V1

REFER DRAWING EISC1021 FOR TERMINAL CUT AND FILL PLAN

STAGE 1 BOUNDARY

CREEK

ANZAC

RAIL ALIGNMENT REFER TO SIMTA INTERMODAL TERMINAL FACILITY STAGE 1 CONCEPT DESIGN (HYDER / AECOM DRAWINGS)

MOOREBANK AVENUE

EAST HILLS RAIL LINE

DEPTH RANGE LEGEND

DEPTH OF FILL: 999, 7.00, 6.50, 6.00, 5.50, 5.00, 4.50, 4.00, 3.50, 3.00, 2.50, 2.00, 1.50, 1.00, 0.50, 0.00

DEPTH OF CUT: 0.00, 0.50, 1.00, 1.50, 2.00, 2.50, 3.00, 3.50, 4.00, 4.50, 5.00, 5.50, 6.00, 6.50, 7.00, 999

EARTHWORK VOLUMES

(RAIL LINK ONLY)

VOLUME OF TOPSOIL STRIP (200mm)	10,940m³
CUT TO FILL	79,890m³
CUT TO SPOIL	2,575m³

NOTES AND ASSUMPTIONS

1. FOR OVERALL EARTHWORK VOLUMES REFER TO DRAWING EISC1021.
2. THE CUT/FILL VOLUMES ALLOW FOR THE EXCAVATION AND FORMATION OF THE DESIGN RAIL EMBANKMENT.
2. 200mm STRIPPING HAS BEEN APPLIED TO THE EXISTING SURFACE.
3. NO ALLOWANCE FOR COMPACTION / BUCKING FACTORS.
4. NO ALLOWANCE FOR TRENCH OR ANY SERVICES OR DETAILED EXCAVATIONS.

REFER DRAWING EISC1107 FOR CONTINUATION

Issue	Description	Date
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01	ISSUE FOR SSD APPLICATION	10.04.15

0 20 40 60 80 100m

1 : 1000

100mm on Original

Client: SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE; TACTICAL GROUP

Status: **PRELIMINARY** NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1:1000	Drawn	A.ZHAO
Original Size	A1	Designed	K.MCAREAVEY
Height Datum	AHD	Checked	G.HUZIJ
Grid	MGA	Approved	G.HUZIJ
Filename:			

Project: MOOREBANK INTERMODAL TERMINAL FACILITY STAGE 1 (CONCEPT DESIGN)

Title: RAIL EMBANKMENT CUT AND FILL PLAN SHEET 1

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Drawing No.	Project No.	Issue
EISC1106	AA003760	02

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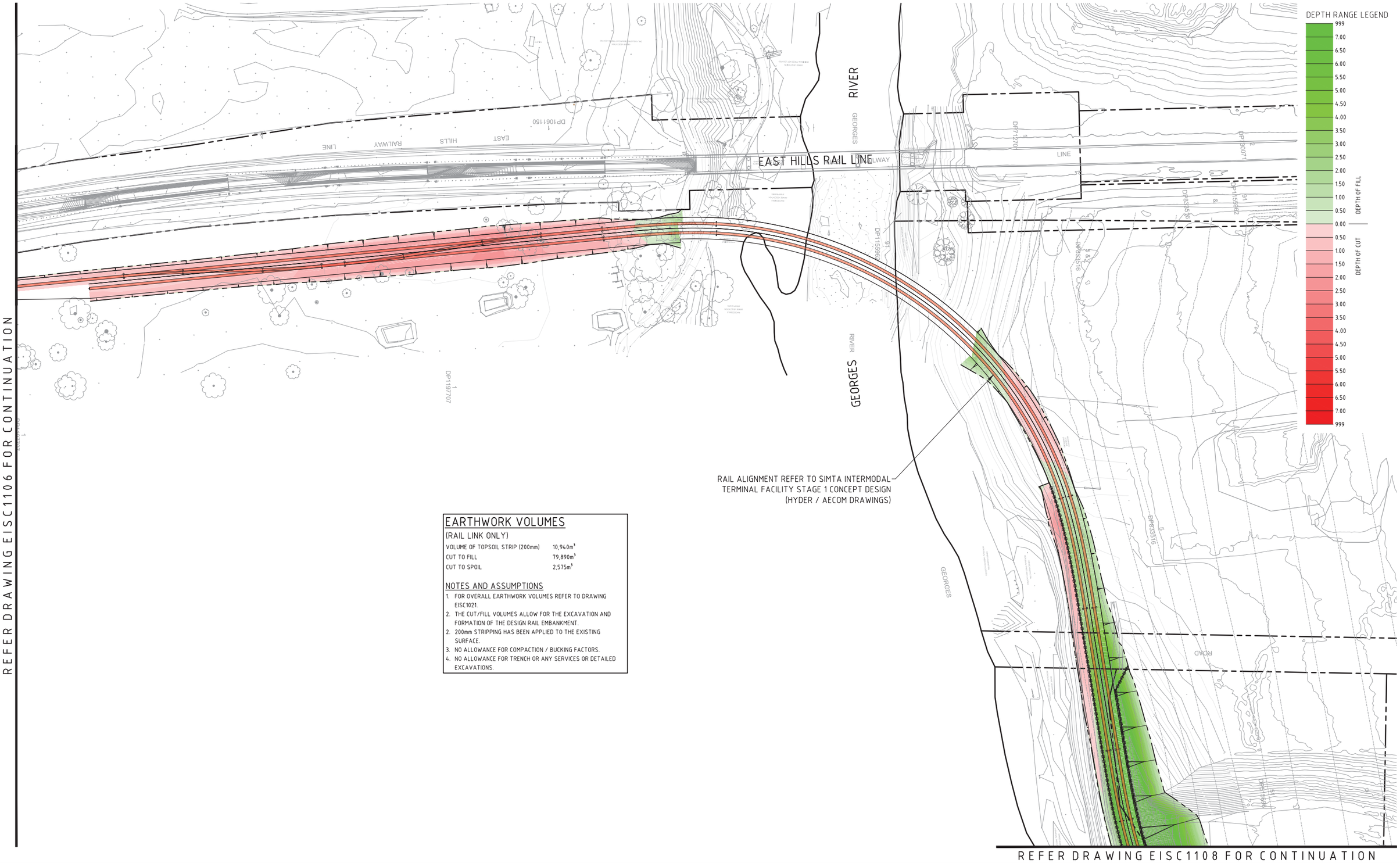

EARTHWORK VOLUMES

(RAIL LINK ONLY)

VOLUME OF TOPSOIL STRIP (200mm)	10,940m³
CUT TO FILL	79,890m³
CUT TO SPOIL	2,575m³

NOTES AND ASSUMPTIONS

1. FOR OVERALL EARTHWORK VOLUMES REFER TO DRAWING EISC1021.
2. THE CUT/FILL VOLUMES ALLOW FOR THE EXCAVATION AND FORMATION OF THE DESIGN RAIL EMBANKMENT.
2. 200mm STRIPPING HAS BEEN APPLIED TO THE EXISTING SURFACE.
3. NO ALLOWANCE FOR COMPACTION / BUCKING FACTORS.
4. NO ALLOWANCE FOR TRENCH OR ANY SERVICES OR DETAILED EXCAVATIONS.

REFER DRAWING EISC1108 FOR CONTINUATION

Issue	Description	Date
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01	ISSUE FOR SSD APPLICATION	10.04.15

100mm on Original

0 20 40 60 80 100m

1 : 1000

Client: SIMTA Sydney Intermodal Terminal Alliance; TACTICAL GROUP

Status: **PRELIMINARY**
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1:1000	Drawn	A.ZHAO
Original Size	A1	Designed	K.MCAREAVEY
Height Datum	AHD	Checked	G.HUZIJ
Grid	MGA	Approved	G.HUZIJ
Filename:			

Project: MOOREBANK INTERMODAL TERMINAL FACILITY STAGE 1 (CONCEPT DESIGN)

Title: RAIL EMBANKMENT CUT AND FILL PLAN SHEET 2

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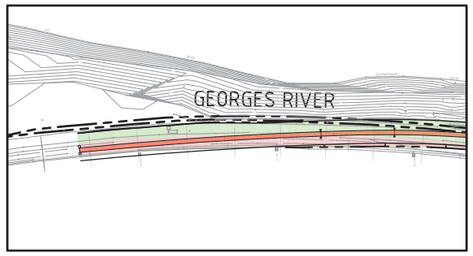
Drawing No. EISC1107 — Project No. AA003760 — Issue 02

Date Plotted: 20 Aug 2015 - 12:40PM File Name: F:\AA003760\E-CAD\C-Civil\D-Final\B-Stage 1_EIS\EISC1107-AA003760-NSD-RailEmbankmentCutAndFillPlanSheet2.dwg V1



INSET A
1 : 1000

EARTHWORK VOLUMES
(RAIL LINK ONLY)

VOLUME OF TOPSOIL STRIP (200mm)	10,940m³
CUT TO FILL	79,890m³
CUT TO SPOIL	2,575m³

NOTES AND ASSUMPTIONS

1. FOR OVERALL EARTHWORK VOLUMES REFER TO DRAWING EISC1021.
2. THE CUT/FILL VOLUMES ALLOW FOR THE EXCAVATION AND FORMATION OF THE DESIGN RAIL EMBANKMENT.
2. 200mm STRIPPING HAS BEEN APPLIED TO THE EXISTING SURFACE.
3. NO ALLOWANCE FOR COMPACTION / BUCKING FACTORS.
4. NO ALLOWANCE FOR TRENCH OR ANY SERVICES OR DETAILED EXCAVATIONS.

RIVER

GEORGES RIVER

RAIL ALIGNMENT REFER TO SIMTA INTERMODAL TERMINAL FACILITY STAGE 1 CONCEPT DESIGN (HYDER / AECOM DRAWINGS)

SOUTHERN RAIL LINE

REFER INSET A

REFER DRAWING EISC1107 FOR CONTINUATION

DEPTH RANGE LEGEND

DEPTH OF FILL: 999, 7.00, 6.50, 6.00, 5.50, 5.00, 4.50, 4.00, 3.50, 3.00, 2.50, 2.00, 1.50, 1.00, 0.50, 0.00

DEPTH OF CUT: 0.50, 1.00, 1.50, 2.00, 2.50, 3.00, 3.50, 4.00, 4.50, 5.00, 5.50, 6.00, 6.50, 7.00, 999

Issue	Description	Date
02	ISSUE FOR SSD APPLICATION (RESPONSE TO SUBMISSIONS)	20.08.15
01	ISSUE FOR SSD APPLICATION	10.04.15

0 20 40 60 80 100m
1 : 1000

100mm on Original

Client: SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE; TACTICAL GROUP

Status: **PRELIMINARY**
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1:1000	Drawn	A.ZHAO
Original Size	A1	Designed	K.MCAREAVEY
Height Datum	AHD	Checked	G.HUZIJ
Grid	MGA	Approved	G.HUZIJ
Filename:			

Project: MOOREBANK INTERMODAL TERMINAL FACILITY STAGE 1 (CONCEPT DESIGN)

Title: RAIL EMBANKMENT CUT AND FILL PLAN SHEET 3

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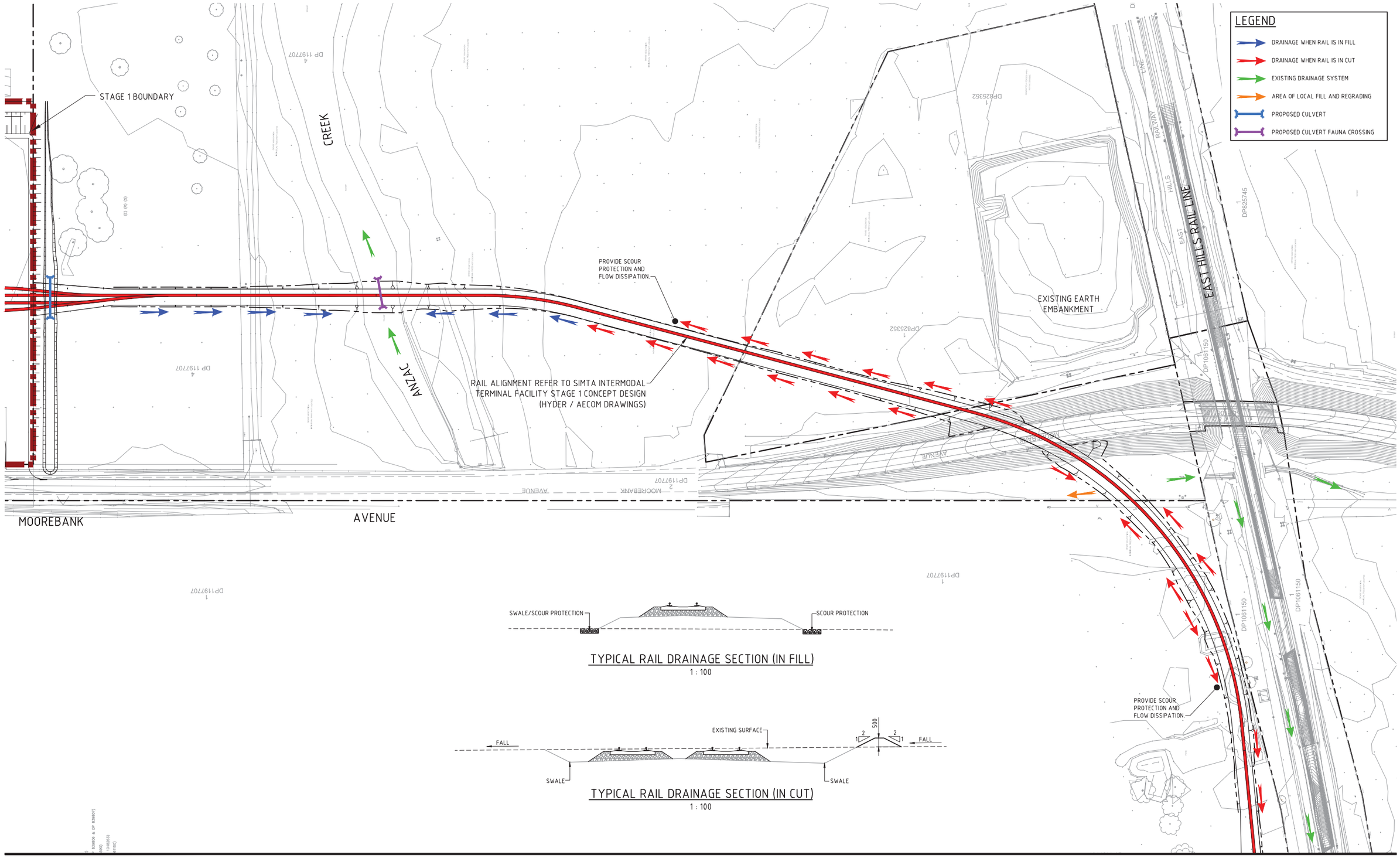
Drawing No.	Project No.	Issue
EISC1108	AA003760	02

Date Plotted: 20 Aug 2015 - 12:42PM File Name: F:\AA003760\E-CAD\C-Civil\D-Final\B-Stage 1_EIS\EISC1108-AA003760-NSD-RailEmbankmentCutAndFillPlanSheet3.dwg V1



REFER DRAWING EISC1112 FOR CONTINUATION

Issue	Description	Date
02	ISSUE FOR SSD APPLICATION (RESPONSE TO SUBMISSIONS)	20.08.15
01	ISSUE FOR SSD APPLICATION	10.04.15

0 20 40 60 80 100m
1 : 1000

0 2 4 6 8 10m
1 : 100

Client: SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE; TACTICAL GROUP

Status: **PRELIMINARY** NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	AS SHOWN	Drawn	A.ZHAO
Original Size	A1	Designed	K.MCAREAVEY
Height Datum	AHD	Checked	G.HUZIJ
Grid	MGA	Approved	G.HUZIJ
Filename:			

Project: MOOREBANK INTERMODAL TERMINAL FACILITY STAGE 1 (CONCEPT DESIGN)

Title: RAIL EMBANKMENT DRAINAGE PLAN SHEET 1

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Drawing No.	Project No.	Issue
EISC1111	AA003760	02

100mm on Original

Date Plotted: 20 Aug 2015 - 12:43PM File Name: F:\AA003760\E-CAD\C-Civil\D-Final\B-Stage 1_EIS\EISC1111-AA003760-NSD-RailEmbankmentDrainagePlanSheet1.dwg V1