

UP MAIN PULLS

CHAINAGE	PULL (m)
216km240.000	+0.006
216km260.000	+0.011
216km280.000	+0.040
216km300.000	+0.164
216km320.000	+0.439
TP 216km321.013	+0.453
216km360.000	+1.006
216km380.000	+1.156

UP MAIN PULLS

CHAINAGE	PULL (m)
TP 216km385.815	+1.210
216km400.000	+1.311
216km420.000	+1.700
TRS 216km436.971	+2.240

* DENOTES PULLING TO THE UP SIDE
 * DENOTES PULLING TO THE DN SIDE

CIRCULAR CURVE DETAILS

RADIUS:	1200.000m
ARC:	64.802m
V:	85km/h (Norm)
Ea:	0mm
D:	71mm
M:	331190.711
E	1383813.136
N	

TRANSITION DETAILS

RADIUS:	1000.000m
LENGTH:	40.000m
V:	85km/h (Norm)
Xc:	39.998m
Droc:	40mm/sec
M:	4.169 x 10 ⁶

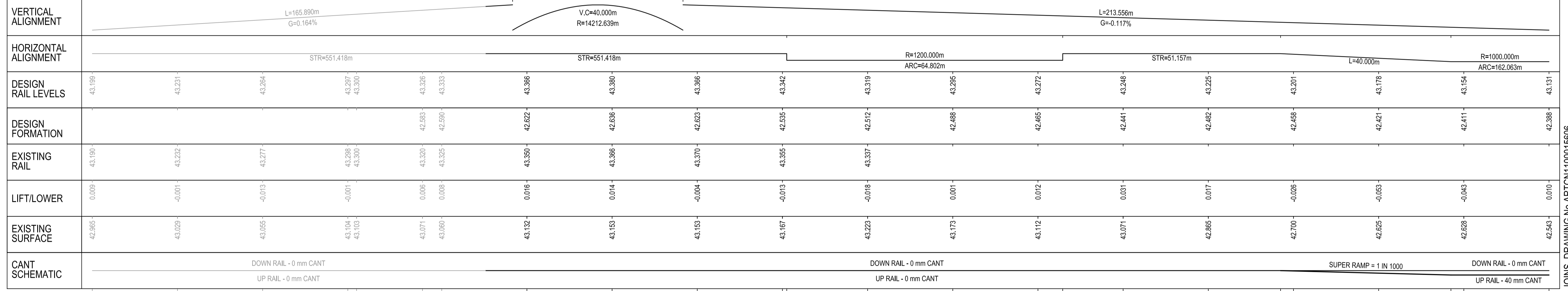
CIRCULAR CURVE DETAILS

RADIUS:	1000.000m
ARC:	162.063m
V:	85km/h (Norm)
Ea:	40mm
D:	36mm
M:	331179.303
E	1384025.044
N	

SCHEDULE OF COORDINATED ALIGNMENT POINTS

RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
	TP	215km771.648	RECONDITIONED UP MAIN	332112.739	1384758.612
	TOTP	216km321.013	REALIGNED UP MAIN	331593.275	1384943.597
			REALIGNED UP MAIN	331190.711	1383813.136
	TP	216km385.815	REALIGNED UP MAIN	331531.672	1384963.677
	TP	216km436.971	REALIGNED UP MAIN	331482.623	1384978.213
	TRS	216km476.971	REALIGNED UP MAIN	331444.198	1384989.322
			REALIGNED UP MAIN	331179.303	1384025.044
	TRS	216km639.035	REALIGNED UP MAIN	331285.136	1385019.428

CONTROL MC20 DATUM R.L.40.0

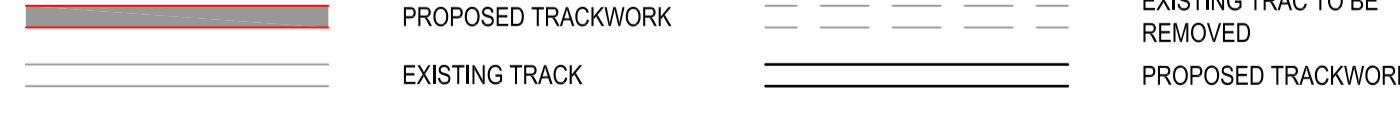


KILOMETRAGE

216km160	216km180	216km200	216km220	216km240	216km260	216km280	216km300	216km320	216km340	216km360	216km380	216km400	216km420	216km440	216km460	216km480	216km500
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PLOT DATE: 06 August 2010 4:13 PM PLOTTED BY: DCR42 GHD FILE PATH: G:\2010\14171\CAD\Drawings\3d\ARTCN100015605.dwg

LEGEND



LONGITUDINAL SECTION

SCALE 1:500(H) 1:100(V)

NOTES:

- FOR GENERAL NOTES REFER TO DRG No. ARTCN100015601.
- INDICATED TRAIN SPEEDS USED IN CALCULATIONS REFER TO MODELLED TRAIN SPEEDS. FREIGHT, PASSENGER AND XPT MAXIMUM SPEEDS COMPLY AT HIGHER RATES OF CHANGE.

FOR CONSTRUCTION

ARTC DWG NUMBER **0**
ARTCN100015605

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Used on / Next higher assembly:	H8R DWG NUMBER H8R-DWG-S2G-TRA-2605
Alternate DMS number:	

ARTC APPROVAL	Approved By	
Signed:		
Approval Date	06.08.10	ISSUED FOR CONSTRUCTION
Rev	Date	Revision Description

Designing Company: GHD GHD Job Number: 22-14630	Address: Level 3 GHD Tower, 24 Honeysuckle Drive Newcastle NSW 2300 Australia F 61 2 4941 2796 W www.hunter8alliance.com.au
Drawn D.CRANE	Designed V.ALEX
Drafting Check P.TOBIN*	Design Check T.LYONS*
Approved G.WICKENS*	Date 06/08/2010

MAITLAND TO MINIMBAH - THIRD TRACK
TRACK ALIGNMENT - UP REALIGNMENT (PROP)
 216km160 TO 216km500

Sheet No.
5 of 9
 Scale (A1):
 1:500(H) 1:100(V)

JOINS DRAWING No. ARTCN100015606

1 2 3 4 5 6 7 8

A

B

C

D

E

F

A

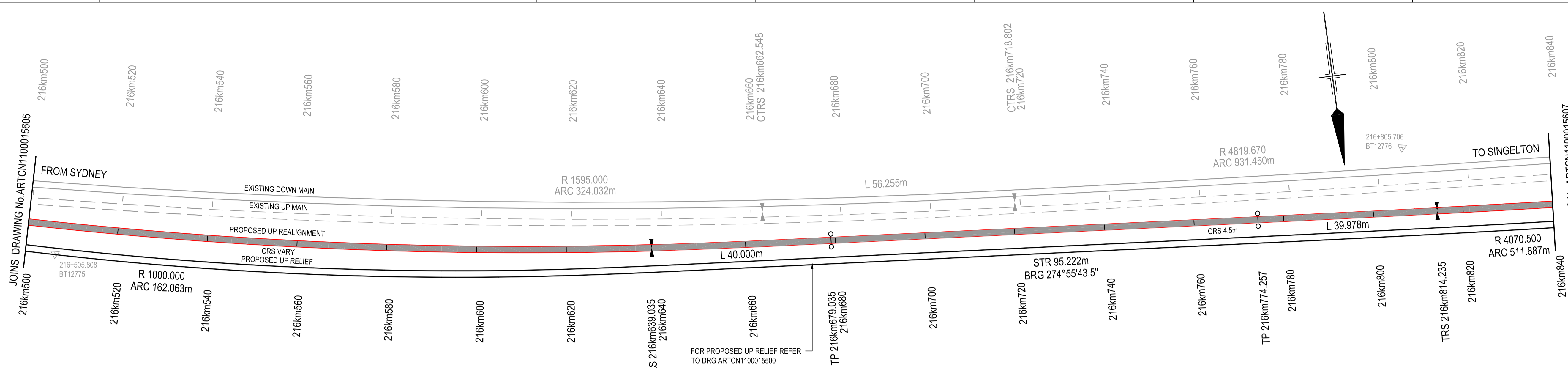
B

C

D

E

F



CIRCULAR CURVE DETAILS

RADIUS:	1000.000m
ARC:	162.063m
V:	85km/h (Norm)
Ea:	40mm
D:	45mm
Doc:	27mm/sec
M:	4.169 x 10 ⁻⁸
Centreline:	331179.303
Northing:	1384025.044

TRANSITION DETAILS

RADIUS:	1000.000m
LENGTH:	40.000m
V:	85km/h (Norm)
Xc:	39.998m
Doc:	27mm/sec
M:	4.169 x 10 ⁻⁸

PLAN
SCALE 1:500

TRANSITION DETAILS

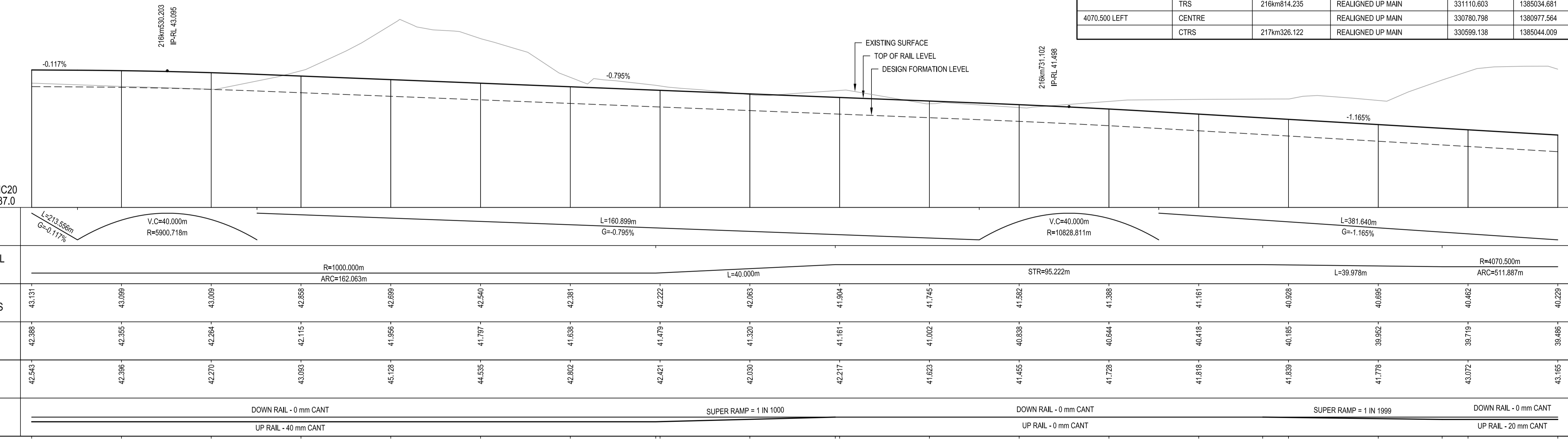
RADIUS:	4070.500m
LENGTH:	39.978m
V:	115km/h (Norm)
Xc:	39.978m
Doc:	15mm/sec
M:	1.024 x 10 ⁻⁸

CIRCULAR CURVE DETAILS

RADIUS:	4070.500m
ARC:	511.887m
V:	115km/h (Norm)
Ea:	20mm
D:	18mm
Doc:	27mm/sec
M:	1.380977.564
Centreline:	330780.798
Northing:	1380977.564

SCHEDULE OF COORDINATED ALIGNMENT POINTS

RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
TRC	TRC	216km476.971	REALIGNED UP MAIN	331444.198	1384989.322
1000.000 LEFT	CENTRE		REALIGNED UP MAIN	331179.303	1384025.044
	TRC	216km639.035	REALIGNED UP MAIN	331285.136	1385019.428
	TP	216km679.035	REALIGNED UP MAIN	331245.308	1385023.131
	TP	216km774.257	REALIGNED UP MAIN	331150.438	1385031.312
	TRC	216km814.235	REALIGNED UP MAIN	331110.603	1385034.681
4070.500 LEFT	CENTRE		REALIGNED UP MAIN	330780.798	1380977.564
CTR	CTR	217km326.122	REALIGNED UP MAIN	330599.138	1385044.009



KILOMETRAGE

216km500	216km520	216km540	216km560	216km580	216km600	216km620	216km640	216km660	216km680	216km700	216km720	216km740	216km760	216km780	216km800	216km820	216km840
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LONGITUDINAL SECTION
SCALE 1:500(H) 1:100(V)

- NOTES:**
- FOR GENERAL NOTES REFER TO DRG No. ARTCN1100015601.
 - INDICATED TRAIN SPEEDS USED IN CALCULATIONS REFER TO MODELLED TRAIN SPEEDS. FREIGHT, PASSENGER AND XPT MAXIMUM SPEEDS COMPLY AT HIGHER RATES OF CHANGE.

FOR CONSTRUCTION

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Used on / Next higher assembly:
H8R-DWG-S2G-TRA-2606

Alternate DMS number:

ARTC APPROVAL	Approved By				
ARTC DWG NUMBER	0				
ISSUED FOR CONSTRUCTION	06.08.10				
Rev	Date	Revision Description	Drawn	Checked	Approved
			D.J.C	T.L.*	G.W.*

Designing Company:
GHD
GHD Job Number:
22-14630

Address:
Level 3 GHD Tower, 24 Honesuckle Drive
Newcastle NSW 2300 Australia
F 612 4941 2796
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Drawn:
D.CRANE

Designed:
V.ALEX

Drafting Check:
P.TOBIN*

Design Check:
T.LYONS*

Approved:
G.WICKENS*

Date:
06/08/2010

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Hunter ALLIANCE

ARTC DWG NUMBER: 0

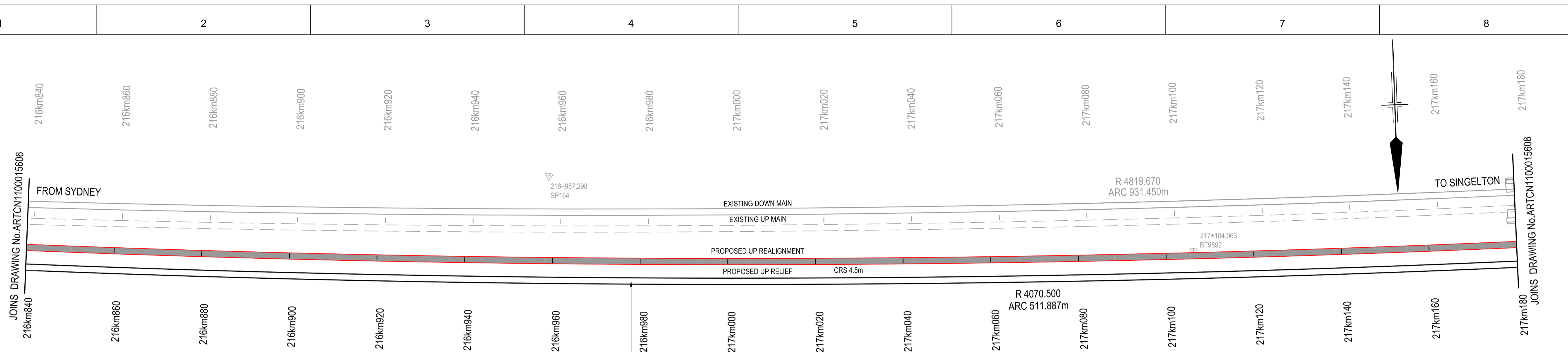
ARTCN1100015606

MAITLAND TO MINIMBAH - THIRD TRACK
TRACK ALIGNMENT - UP REALIGNMENT (PROP)
216km500 TO 216km840

Sheet No.
6 of 9
Scale (A1):
1:500(H) 1:100(V)

1 2 3 4 5 6 7 8

PLOT DATE: 06 August 2010 4:14 PM
PLOT FILE PATH: G:\2010\14630\Drawings\G8R\ARTCN1100015606.dwg

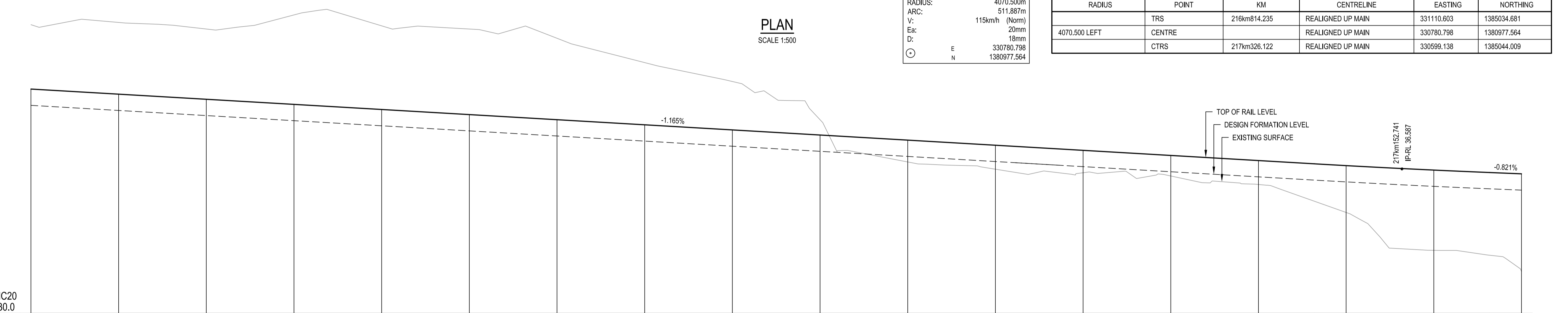


CIRCULAR CURVE DETAILS

RADIUS:	4070.500m
ARC:	511.887m
V:	115km/h (Norm)
E _p :	20mm
D:	18mm
E	330780.798
N	1380977.564

SCHEDULE OF COORDINATED ALIGNMENT POINTS

RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
	TRS	216km84.235	REALIGNED UP MAIN	331110.603	1385034.681
4070.500 LEFT	CENTRE		REALIGNED UP MAIN	330780.798	1380977.564
	CTRS	217km326.122	REALIGNED UP MAIN	330599.138	1385044.009



KILOMETRAGE	216km840	216km860	216km880	216km900	216km920	216km940	216km960	216km980	217km000	217km020	217km040	217km060	217km080	217km100	217km120	217km140	217km160	217km180
VERTICAL ALIGNMENT	L=381.640m G=-1.165%																	
HORIZONTAL ALIGNMENT	R=4070.500m ARC=511.887m																	
DESIGN RAIL LEVELS	40.229	39.996	39.763	39.530	39.297	39.065	38.832	38.599	38.366	38.133	37.900	37.667	37.434	37.201	36.968	36.737	36.504	36.333
DESIGN FORMATION	39.486	39.253	39.020	38.787	38.554	38.322	38.089	37.856	37.623	37.390	37.157	36.924	36.691	36.458	36.225	35.995	35.762	35.534
EXISTING SURFACE	43.165	43.280	42.980	43.622	43.120	42.971	42.545	41.438	40.574	39.684	38.903	38.673	36.412	36.559	35.878	34.996	32.871	31.912
CANT SCHEMATIC	DOWN RAIL - 0 mm CANT UP RAIL - 20 mm CANT																	

PLOT DATE: 06 August 2010 4:14 PM PLOTTED BY: DCR42 GHD FILE PATH: G:\2010\1471\CA\000\Drawings\08\ARTCN1100015607.dwg

LEGEND

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VERTICAL 1:100 AT ORIGINAL SIZE
HORIZONTAL 1:500 AT ORIGINAL SIZE

0 1 2 3 4 5m
0 5 10 15 20 25m

PROPOSED TRACKWORK
EXISTING TRACK

EXISTING TRAC TO BE REMOVED
PROPOSED TRACKWORK

LONGITUDINAL SECTION
SCALE 1:500(H) 1:100(V)

NOTES:

- FOR GENERAL NOTES REFER TO DRG No. ARTCN1100015601.
- INDICATED TRAIN SPEEDS USED IN CALCULATIONS REFER TO MODELLED TRAIN SPEEDS. FREIGHT, PASSENGER AND XPT MAXIMUM SPEEDS COMPLY AT HIGHER RATES OF CHANGE.

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ARTC APPROVAL Approved By: _____

Used on / Next higher assembly: _____

H8R DWG NUMBER: **H8R-DWG-S2G-TRA-2607**

Alternate DMS number: _____

Approval Date: _____

Rev	Date	Revision Description	Drawn	Checked	Approved
0	06.08.10	ISSUED FOR CONSTRUCTION	D.J.C	T.L*	G.W*

Designing Company: GHD
GHD Job Number: 22-14630

Address: Level 3 GHD Tower, 24 Honeysuckle Drive
Newcastle NSW, 2300 Australia
F 612 4941 2796
W www.hunter8alliance.com.au

Drawn: D.CRANE
Designed: V.ALEX
Drafting Check: P.TOBIN*
Design Check: T.LYONS*

Approved: G.WICKENS*
Date: 06/08/2010

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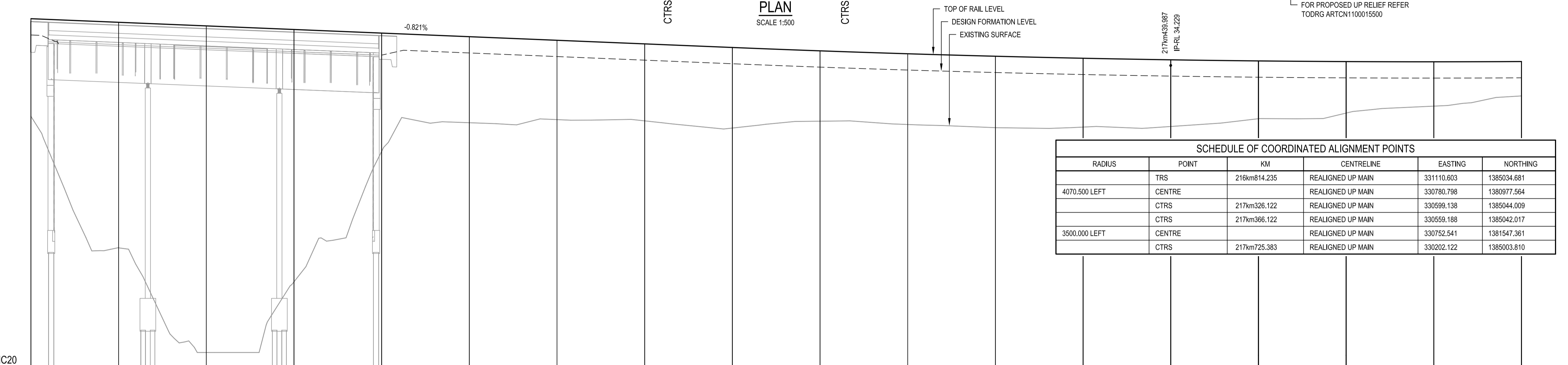
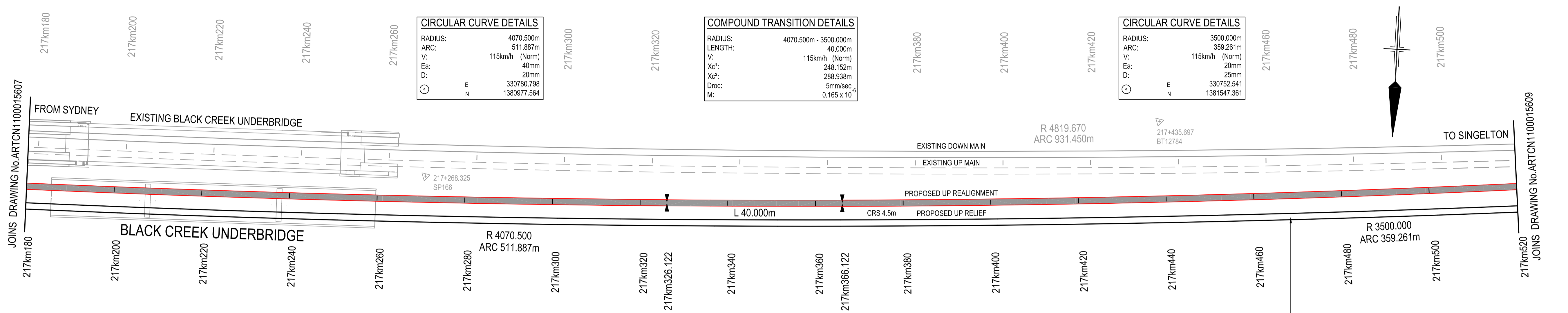
ARTC DWG NUMBER: 0

ARTCN1100015607

MAITLAND TO MINIMBAH - THIRD TRACK
TRACK ALIGNMENT - UP REALIGNMENT (PROP)
216km840 TO 217km180

Sheet No. **7 of 9**
Scale (A1): 1:500(H) 1:100(V)

1 2 3 4 5 6 7 8



VERTICAL ALIGNMENT	HORIZONTAL ALIGNMENT	DESIGN RAIL LEVELS	DESIGN FORMATION	EXISTING SURFACE	CANT SCHEMATIC	KILOMETRAGE
L=167.245m G=-0.821%	R=4070.500m ARC=511.887m	36.363	36.620	31.912	DOWN RAIL - 0 mm CANT	217km180
		36.199	36.036	25.906	UP RAIL - 20 mm CANT	217km200
		35.871	34.710	21.131		217km220
		35.706	34.800	24.355		217km240
		35.542	34.636	30.307		217km260
		35.378	34.471	31.689		217km280
		35.214	34.307	31.751		217km300
		35.050	34.153	31.751		217km320
		34.886	34.000	31.367		217km340
		34.763	33.846	31.679		217km360
		34.650	33.693	31.531		217km380
		34.558	33.540	31.380		217km400
		34.487	33.387	31.414		217km420
		34.436	33.234	31.439		217km440
		34.406	33.081	31.793		217km460
		34.396	32.928	32.052		217km480
		34.406	32.775	32.370		217km500
		34.406	32.622	32.838		217km520

LEGEND

PROPOSED TRACKWORK (dashed line)

EXISTING TRACK (solid line)

EXISTING TRAC TO BE REMOVED (dotted line)

PROPOSED TRACKWORK (thick solid line)

NOTES:

- FOR GENERAL NOTES REFER TO DRG No. ARTCN1100015601.
- INDICATED TRAIN SPEEDS USED IN CALCULATIONS REFER TO MODELLED TRAIN SPEEDS. FREIGHT, PASSENGER AND XPT MAXIMUM SPEEDS COMPLY AT HIGHER RATES OF CHANGE.

FOR CONSTRUCTION

ARTCN1100015608

MAITLAND TO MINIMBAH - THIRD TRACK TRACK ALIGNMENT - UP REALIGNMENT (PROP) 217km180 TO 217km520

Sheet No. 8 of 9
Scale (A1): 1:500(H) 1:100(V)

Designing Company: GHD GHD Job Number: 22-14630	Address: Level 3 GHD Tower, 24 Honeysuckle Drive Newcastle NSW, 2300 Australia P 61 2 4941 2796 W www.hunteralliance.com.au	Drawn: D.CRANE Designed: V.ALEX Drafting Check: P.TOBIN* Design Check: T.LYONS*	Conditions of Use: This document may only be used by GHD's client (and any other person who GHD has agreed can use this document) for the purpose for which it was prepared and must not be used by any other person or for any other purpose.
Approved: G.WICKENS* Date: 06/08/2010	This Drawing must not be used for Construction unless signed as Approved.		

ARTC APPROVAL Approved By					
Used on / Next higher assembly:	H8R-DWG-S2G-TRA-2608				
Alternate DMS number:					
Approval Date	06.08.10				
Rev	Date	Revision Description	Drawn	Checked	Approved
0	06.08.10	ISSUED FOR CONSTRUCTION	D.J.C	T.L*	G.W*

1 2 3 4 5 6 7 8

PLOT DATE: 06 August 2010 4:15 PM
 PLOTTED BY: DCR42
 GHD FILE PATH: G:\2010\14630\Drawings\GHD\ARTCN1100015608.dwg

JOINS DRAWING No. ARTCN1100015608
217km520

km ADJUSTMENT AT 217km522.958 = -8.091m
LONG 201620.000 to 540.000 = 28.091m

km ADJUSTMENT AT 217km522.958 = -3.040m
LONG 201620.000 to 540.000 = 23.040m

km ADJUSTMENT AT 217km775.383 = -6.456m
LONG 201700.000 to 780.000 = 26.456m

CHAINAGE	PULL (m)
217km700.000	+0.576
217km720.000	+0.248
CTRS 217km725.383	+0.164
217km740.000	+0.081
217km760.000	+0.029

CHAINAGE	PULL (m)
CTRS 217km775.383	+0.027
217km780.000	+0.023

'+' DENOTES PULLING TO THE UP SIDE
 '-' DENOTES PULLING TO THE DN SIDE

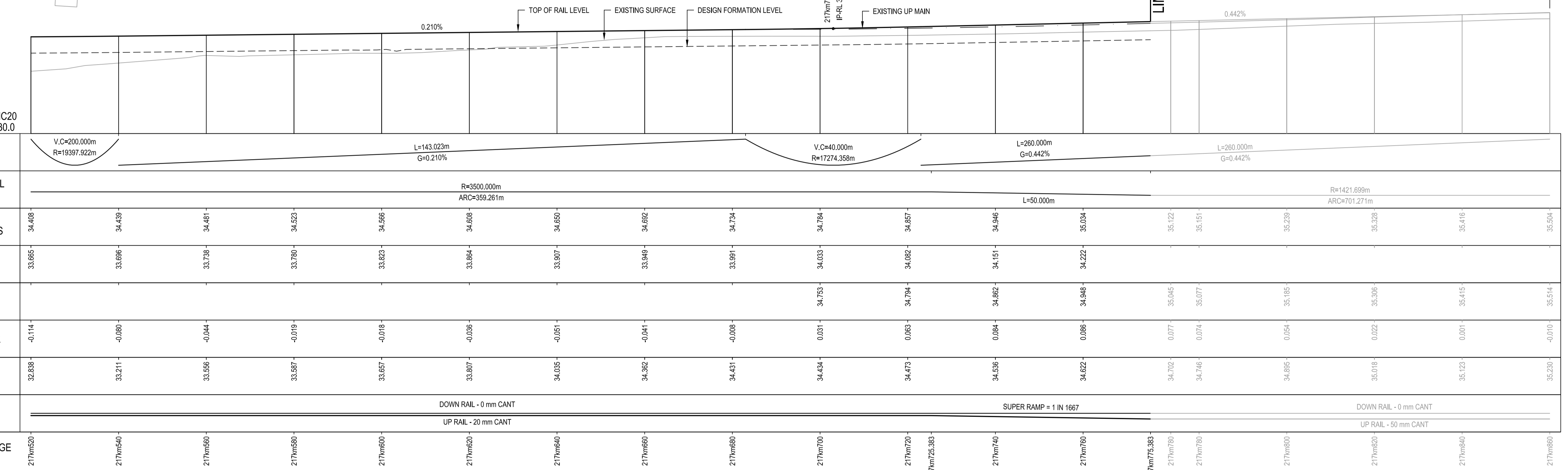
CIRCULAR CURVE DETAILS	
RADIUS:	1421.699m
ARC:	701.271m
V:	115km/h (Norm)
Ea:	50mm
D:	60mm
M:	330411.073
	1383597.375

COMPOUND TRANSITION DETAILS	
RADIUS:	3500.000m - 1421.699m
LENGTH:	50.000m
V:	115km/h (Norm)
Xc1:	33.795m
Xc2:	83.301m
Doc:	23mm/sec ²
M:	0.014 x 10 ⁶

SCHEDULE OF COORDINATED ALIGNMENT POINTS					
RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
	CTRS	217km366.122	REALIGNED UP MAIN	330559.188	1385042.017
3500.000 LEFT	CENTRE		REALIGNED UP MAIN	330752.541	1381547.361
	CTRS	217km725.383	REALIGNED UP MAIN	330202.122	1385003.810
	CTRS	217km775.383	EXISTING UP MAIN	330152.832	1384995.423

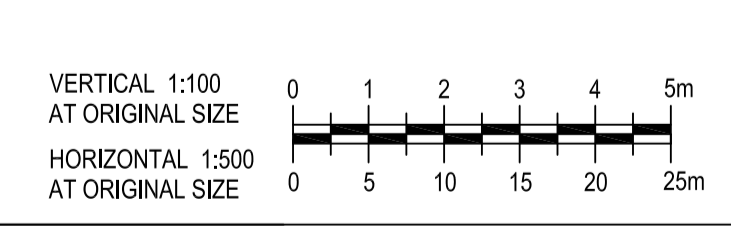
CIRCULAR CURVE DETAILS	
RADIUS:	3500.000m
ARC:	359.261m
V:	115km/h (Norm)
D:	20mm
M:	330752.541
	1381547.361

PLAN
SCALE 1:500



CONTROL MC20
DATUM R.L.30.0

	217km520	217km540	217km560	217km580	217km600	217km620	217km640	217km660	217km680	217km700	217km720	217km740	217km760	217km780	217km800	217km820	217km840	217km860
VERTICAL ALIGNMENT	V.C.=200.000m R=19397.922m		L=143.023m G=0.210%				V.C.=40.000m R=17274.358m				L=260.000m G=0.442%		L=260.000m G=0.442%					
HORIZONTAL ALIGNMENT	R=3500.000m ARC=359.261m																	
DESIGN RAIL LEVELS	34.408	34.438	34.481	34.523	34.566	34.608	34.650	34.692	34.734	34.776	34.817	34.858	34.899	34.940	34.981	35.022	35.063	35.104
DESIGN FORMATION	33.665	33.696	33.738	33.780	33.823	33.864	33.907	33.949	33.991	34.033	34.075	34.117	34.159	34.201	34.243	34.285	34.327	34.369
EXISTING RAIL										34.753	34.794	34.835	34.876	34.917	34.958	35.000	35.041	35.082
LIFT/LOWER	-0.114	-0.080	-0.044	-0.019	-0.018	-0.036	-0.051	-0.041	-0.008	0.031	0.063	0.084	0.066	0.077	0.074	0.054	0.022	0.001
EXISTING SURFACE	32.838	33.211	33.556	33.887	33.857	33.807	34.035	34.362	34.431	34.434	34.473	34.536	34.622	34.702	34.746	34.895	35.018	35.123
CANT SCHEMATIC	DOWN RAIL - 0 mm CANT																	
	UP RAIL - 20 mm CANT										SUPER RAMP = 1 IN 1667				DOWN RAIL - 0 mm CANT			
KILOMETRAGE	217km520	217km540	217km560	217km580	217km600	217km620	217km640	217km660	217km680	217km700	217km720	217km740	217km760	217km780	217km800	217km820	217km840	217km860



LEGEND	
	PROPOSED TRACKWORK
	EXISTING TRACK
	EXISTING TRAC TO BE REMOVED
	PROPOSED TRACKWORK

LONGITUDINAL SECTION
SCALE 1:500(H) 1:100(V)

- NOTES:
- FOR GENERAL NOTES REFER TO DRG No. ARTCN1100015601.
 - INDICATED TRAIN SPEEDS USED IN CALCULATIONS REFER TO MODELLED TRAIN SPEEDS. FREIGHT, PASSENGER AND XPT MAXIMUM SPEEDS COMPLY AT HIGHER RATES OF CHANGE.

FOR CONSTRUCTION

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Used on / Next higher assembly:	H8R-DWG-S2G-TRA-2609
Alternate DMS number:	
ARTC APPROVAL Approved By:	
Signed:	
Approval Date:	06.08.10

Rev	Date	Revision Description	Drawn	Checked	Approved
0	06.08.10	ISSUED FOR CONSTRUCTION	D.J.C	T.L*	G.W*

Designing Company:	GHD	Address:	Level 3 GHD Tower, 24 Honeysuckle Drive Newcastle NSW 2300 Australia F 61 2 4941 2796 W www.hunter8alliance.com.au
Job Number:	22-14630	Drawn:	D.CRANE
		Designed:	V.ALEX
		Drafting Check:	P.TOBIN*
		Design Check:	T.LYONS*
Approved:	G.WICKENS*	Date:	06/08/2010

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ARTC DWG NUMBER	0
ARTCN1100015609	
MAITLAND TO MINIMBAH - THIRD TRACK TRACK ALIGNMENT - UP REALIGNMENT (PROP) 217km520 TO 217km860	
Sheet No.	9 of 9
Scale (A1): 1:500(H) 1:100(V)	

PLOT DATE: 06 August 2010 4:16 PM
PLOTTED BY: DCR42
GHD FILE PATH: G:\2010\14630\Drawings\GHD\ARTCN1100015609.dwg