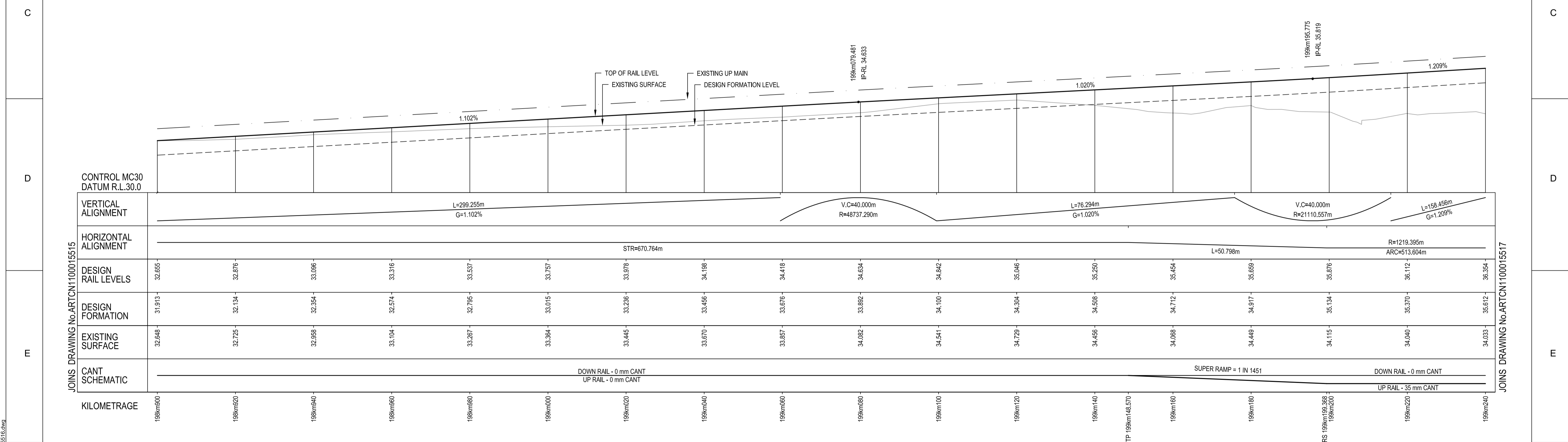


**PLAN**  
SCALE 1:500

SCHEDULE OF COORDINATED ALIGNMENT POINTS					
RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
	TP	198km474.157	PROPOSED UP RELIEF	346044.717	1378007.841
	TP	199km148.570	PROPOSED UP RELIEF	345449.679	1378317.444
	TRS	199km199.368	PROPOSED UP RELIEF	345404.455	1378340.577
1219.395 LEFT	CENTRE			344864.284	1377247.352
	TRS	199km712.972	PROPOSED UP RELIEF	344910.277	1378465.880

TRANSITION DETAILS	
RADIUS:	1219.395m
LENGTH:	50.798m
V:	60km/h (HH)
Xc:	50.796m
Doc:	1mm/sec
M:	2.693 x 10 <sup>-4</sup>

CIRCULAR CURVE DETAILS	
RADIUS:	1219.395m
ARC:	513.604m
V:	60km/h (HH)
Ea:	35mm
D:	0mm
	E 344864.284
	N 1377247.352



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

- NOTES:**
- FOR GENERAL NOTES REFER TO DRG No. ARTCN1100015507.
  - 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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Used on / Next higher assembly:	H8R-DWG-S2G-TRA-2516
Alternate DMS number:	

ARTC APPROVAL	Approved By				
Signed:					
Approval Date	06.08.10	ISSUED FOR CONSTRUCTION			
Rev	Date	Revision Description	Drawn	Checked	Approved
			D.J.C	T.L.*	G.W.*

Designing Company:	GHD	Address:	Level 3 GHD Tower, 24 Honeysuckle Drive Newcastle NSW 2300 Australia F 612 4941 2796 W www.hunter8alliance.com.au
GHD Job Number:	22-14630	Drawn:	D.CRANE
		Designed:	V.ALEX
		Drafting Check:	P.TOBIN*
		Design Check:	T.LYONS*
Approved:	G.WICKENS*	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.	
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		ARTC DWG NUMBER	0
<b>ARTCN1100015516</b>			
MAITLAND TO MINIMBAH - THIRD TRACK <b>TRACK ALIGNMENT - UP RELIEF (PROP)</b> 198km900 TO 199km240			Sheet No. <b>10 of 67</b> Scale (A1): 1:500(H) 1:100(V)

PLOT DATE: 06 August 2010 3:41 PM  
 PLOTTED BY: DCR42  
 GHD FILE PATH: G:\22\14630\Drawings\03\ARTCN1100015516.dwg

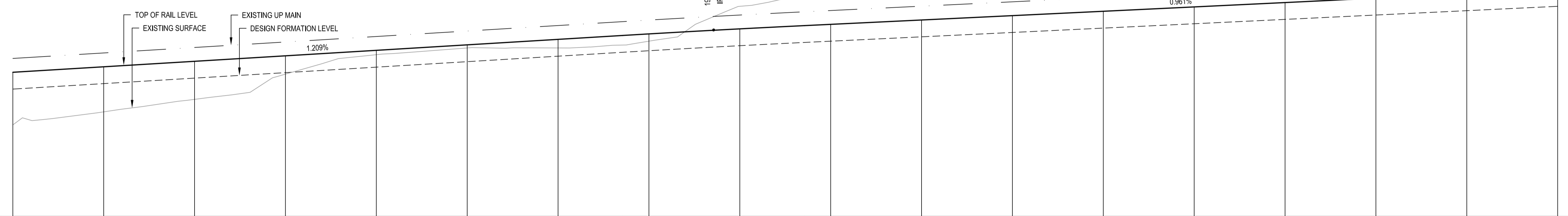
JOINS DRAWING No.ARTCNT100015516  
199km240

JOINS DRAWING No.ARTCNT100015518  
199km580

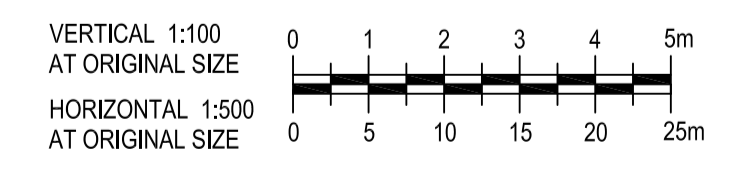
SCHEDULE OF COORDINATED ALIGNMENT POINTS					
RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
1219.395 LEFT	TRS	199km199.368	PROPOSED UP RELIEF	345404.455	1378340.577
	CENTRE			344864.284	1377247.352
	TRS	199km712.972	PROPOSED UP RELIEF	344910.277	1378465.880

CIRCULAR CURVE DETAILS	
RADIUS:	1219.395m
ARC:	513.604m
V:	60km/h (HH)
Ea:	35mm
D:	0mm
E	344864.284
N	1377247.352

PLAN  
SCALE 1:500



KILOMETRAGE	VERTICAL ALIGNMENT		HORIZONTAL ALIGNMENT		DESIGN RAIL LEVELS	DESIGN FORMATION	EXISTING SURFACE	CANT SCHEMATIC
	L=158.456m G=1.209%	V.C.=40.000m R=16110.073m	R=1219.395m ARC=513.604m	L=182.896m G=0.961%				
199km240					36.354	36.612	34.033	
199km260					36.596	36.854	34.606	
199km280					36.838	36.096	35.156	
199km300					37.080	36.338	36.268	
199km320					37.322	36.580	37.130	
199km340					37.563	36.822	37.426	
199km360					37.805	37.063	37.426	
199km380					38.046	37.304	37.727	
199km400					38.288	37.526	39.268	
199km420					38.467	37.725	40.035	
199km440					38.659	37.917	40.823	
199km460					38.851	38.109	40.562	
199km480					39.044	38.302	41.354	
199km500					39.236	38.494	41.580	
199km520					39.428	38.686	42.134	
199km540					39.620	38.878	42.472	
199km560					39.813	39.070	42.433	
199km580					40.005	39.263	42.463	



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

- NOTES:
- FOR GENERAL NOTES REFER TO DRG No. ARTCN100015507.
  - 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

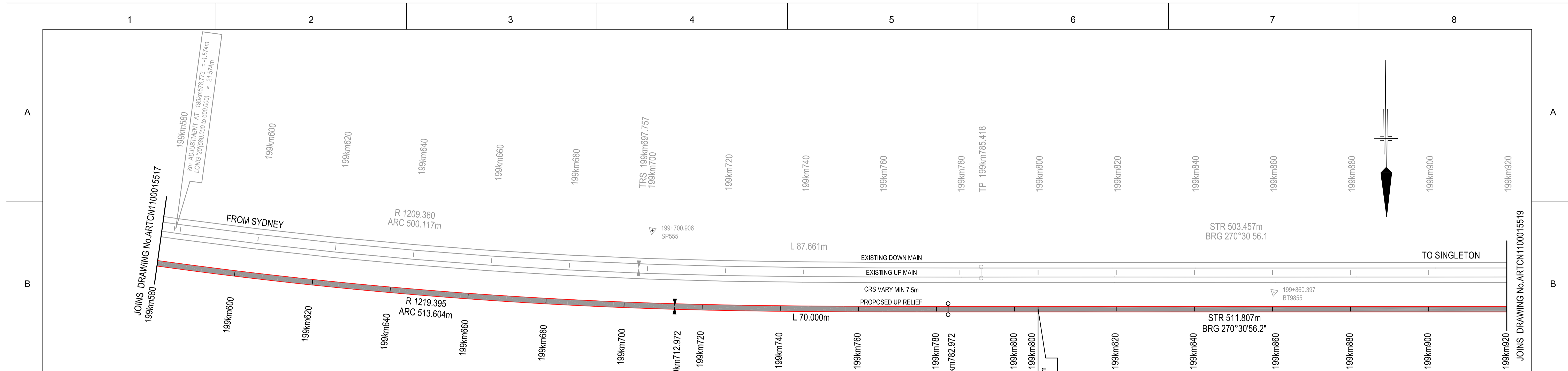
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Drawing standard in accordance with Hunter 8 Alliance standards		Approved By	
Used on / Next higher assembly:	H8R DWG NUMBER	Signed:	
	H8R-DWG-S2G-TRA-2517		
Alternate DMS number:		Approval Date	

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

Designing Company:	GHD	Address:	Level 3 GHD Tower, 24 Honeysuckle Drive Newcastle NSW 2300 Australia F 61 2 4941 2796 W www.hunter8alliance.com.au
GHD Job Number:	22-14630	Drawn:	D.CRANE
		Designed:	V.ALEX
		Drafting Check:	P.TOBIN*
		Design Check:	T.LYONS*
Approved:	G.WICKENS*	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.	
Date:	06/08/2010	This Drawing must not be used for Construction unless signed as Approved	

		ARTC DWG NUMBER	0
<b>ARTCN100015517</b>			
MAITLAND TO MINIMBAH - THIRD TRACK TRACK ALIGNMENT - UP RELIEF (PROP) 199km240 TO 199km580			Sheet No. <b>11 of 67</b> Scale (A1): 1:500(H) 1:100(V)

PLOT DATE: 06 August 2010 3:41 PM PLOTTED BY: DCR42 GHD FILE PATH: G:\2010\14630\Drawings\08\ARTCN100015517.dwg



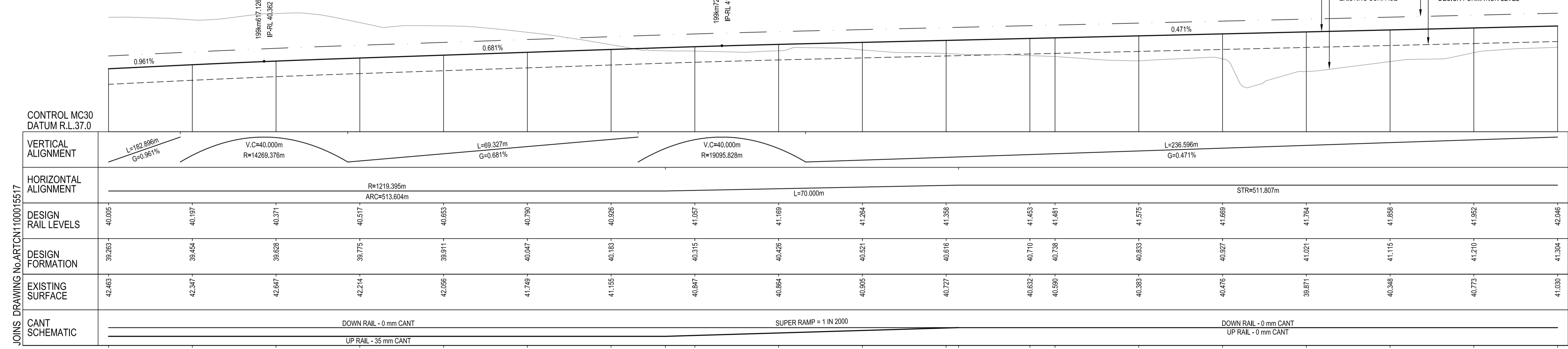
PLAN  
SCALE 1:500

SCHEDULE OF COORDINATED ALIGNMENT POINTS					
RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
	TRS	199km199.368	PROPOSED UP RELIEF	345404.455	1378340.577
1219.395 LEFT	CENTRE			344864.284	1377247.352
	TRS	199km712.972	PROPOSED UP RELIEF	344910.277	1378465.880
	TP	199km782.972	PROPOSED UP RELIEF	344840.292	1378467.180
	TP	200km288.777	PROPOSED UP RELIEF	344328.505	1378471.786

CIRCULAR CURVE DETAILS	
RADIUS:	1219.395m
ARC:	513.604m
V:	60km/h (HH)
Ea:	35mm
D:	0mm
E	344864.284
N	1377247.352

TRANSITION DETAILS	
RADIUS:	1219.395m
LENGTH:	70.000m
V:	60km/h (HH)
Xc:	69.994m
Droc:	1mm/sec
M:	1.995 x 10 <sup>-6</sup>

km ADJUSTMENT AT 199km800.000 = -6.003m  
LONG 20(800.000 @ 800.000) = 26.003m



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

NOTES:

- FOR GENERAL NOTES REFER TO DRG No. ARTCN1100015507.
- 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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H8R-DWG-S2G-TRA-2518

Alternate DMS number:

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

ARTC APPROVAL Approved By	
Signed:	
Approval Date	

ARTC DWG NUMBER 0

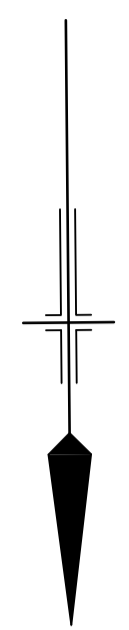
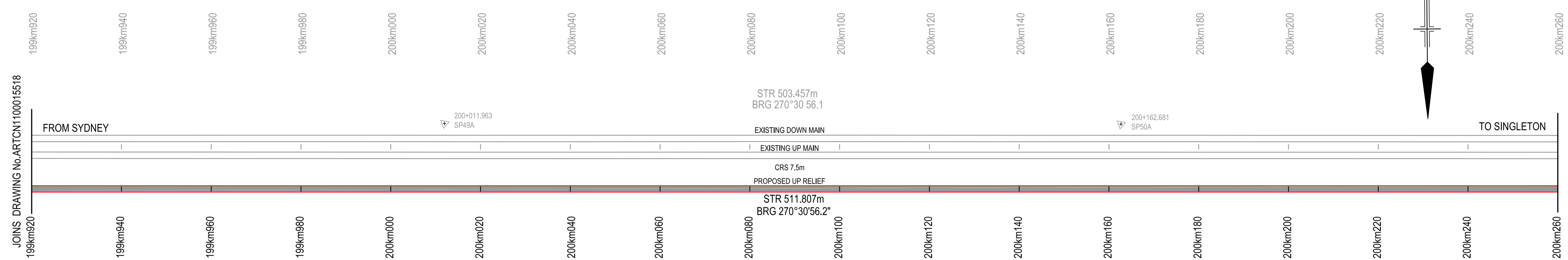
**ARTCN1100015518**

MAITLAND TO MINIMBAH - THIRD TRACK  
TRACK ALIGNMENT - UP RELIEF (PROP)  
199km580 TO 199km920

Sheet No.  
**12 of 67**  
Scale (A1):  
1:500(H) 1:100(V)

PLOT DATE: 06 August 2010 3:42 PM  
GHD FILE PATH: G:\2010\14630\Drawings\GHD\ARTCN1100015518.dwg

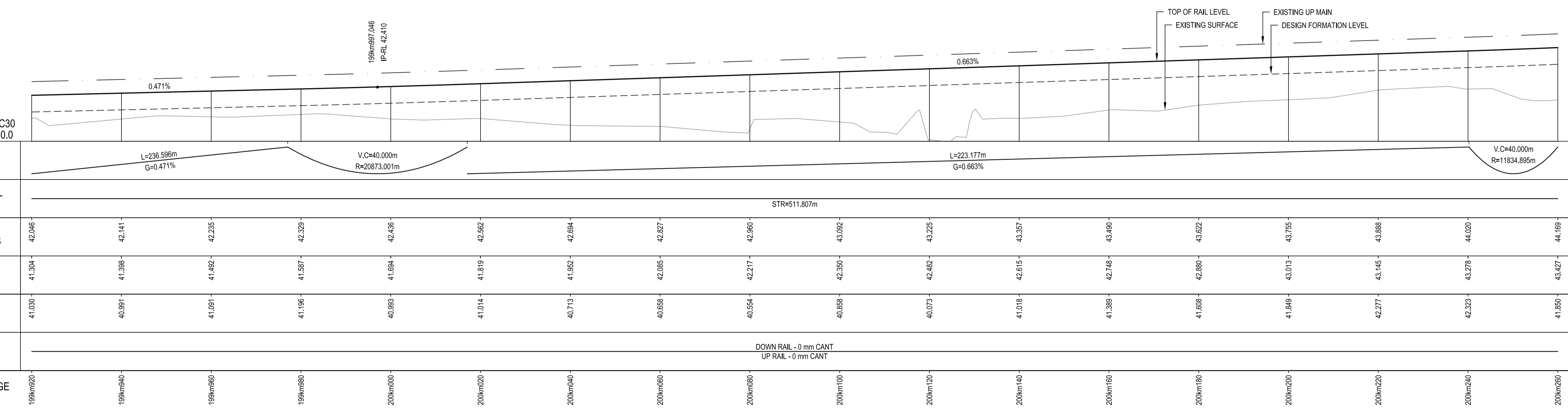
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**SCHEDULE OF COORDINATED ALIGNMENT POINTS**

RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
	TP	199km782.972	PROPOSED UP RELIEF	344840.292	1378467.180
	TP	200km288.777	PROPOSED UP RELIEF	344328.505	1378471.786

**PLAN**  
SCALE 1:500



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

- NOTES:**
- FOR GENERAL NOTES REFER TO DRG No. ARTCN1100015507.
  - 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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Alternate DMS number: \_\_\_\_\_

ARTC APPROVAL		Approved By			
Signed:					
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 Honesuckle Drive  
Newcastle NSW 2300 Australia  
F 61 2 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: **ARTCN1100015519**

**MAITLAND TO MINIMBAH - THIRD TRACK TRACK ALIGNMENT - UP RELIEF (PROP)**  
**199km920 TO 200km260**

Sheet No. **13 of 67**  
Scale (A1): **1:500(H) 1:100(V)**

1 2 3 4 5 6 7 8



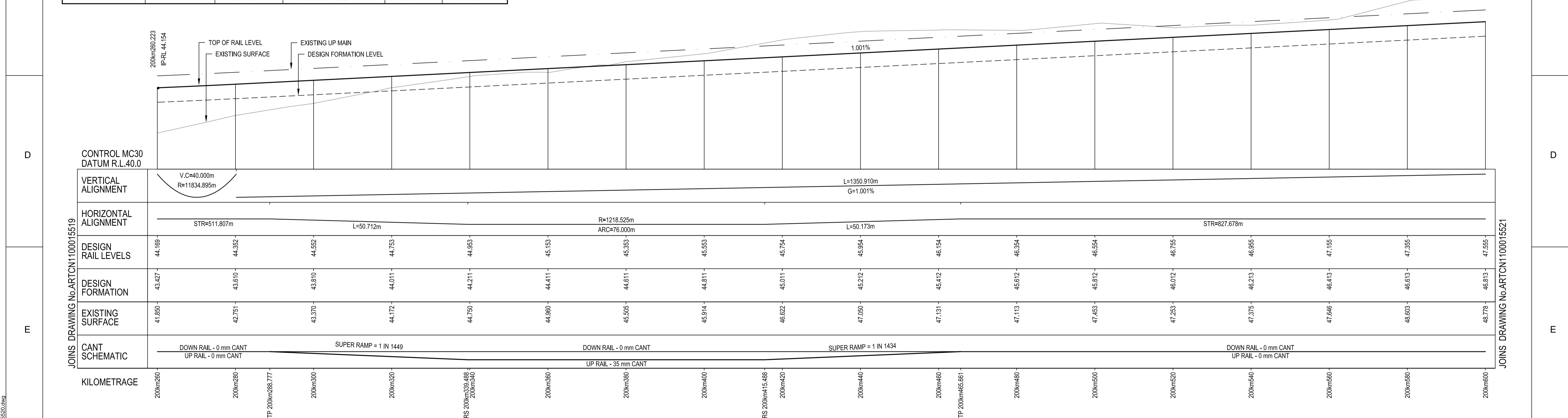
**PLAN**  
SCALE 1:500

SCHEDULE OF COORDINATED ALIGNMENT POINTS					
RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
	TP	199km782.972	PROPOSED UP RELIEF	344840.292	1378467.180
	TP	200km288.777	PROPOSED UP RELIEF	344328.505	1378471.786
	TRS	200km339.488	PROPOSED UP RELIEF	344277.794	1378471.890
1218.525 LEFT	CENTRE			344292.196	1377253.450
	TRS	200km415.488	PROPOSED UP RELIEF	344201.877	1378468.623
	TP	200km465.661	PROPOSED UP RELIEF	344151.899	1378464.218
	TP	201km293.339	PROPOSED UP RELIEF	343327.936	1378385.883

TRANSITION DETAILS	
RADIUS:	1218.525m
LENGTH:	50.712m
V:	60km/h (HH)
Xc:	50.709m
Doc:	1mm/sec
M:	2.699 x 10 <sup>-3</sup>

CIRCULAR CURVE DETAILS	
RADIUS:	1218.525m
ARC:	76.000m
V:	60km/h (HH)
Ea:	35mm
D:	0mm
E	344292.196
N	1377253.450

TRANSITION DETAILS	
RADIUS:	1218.525m
LENGTH:	50.173m
V:	60km/h (HH)
Xc:	50.171m
Doc:	1mm/sec
M:	2.728 x 10 <sup>-3</sup>



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

**NOTES:**

- FOR GENERAL NOTES REFER TO DRG No. ARTCN1100015507.
- 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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**ARTCN1100015520**

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Alternate DMS number:	

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Signed:		
Approval Date	06.08.10	ISSUED FOR CONSTRUCTION

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 612 4941 2796 W www.hunter8alliance.com.au
GHD 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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MAITLAND TO MINIMBAH - THIRD TRACK  
TRACK ALIGNMENT - UP RELIEF (PROP)  
200km260 TO 200km600

Sheet No.  
**14 of 67**  
Scale (A1):  
1:500(H) 1:100(V)

PLOT DATE: 06 August 2010 3:43 PM PLOTTED BY: DCR42 GHD FILE PATH: G:\2010\14630\Drawings\ARTCN1100015520.dwg