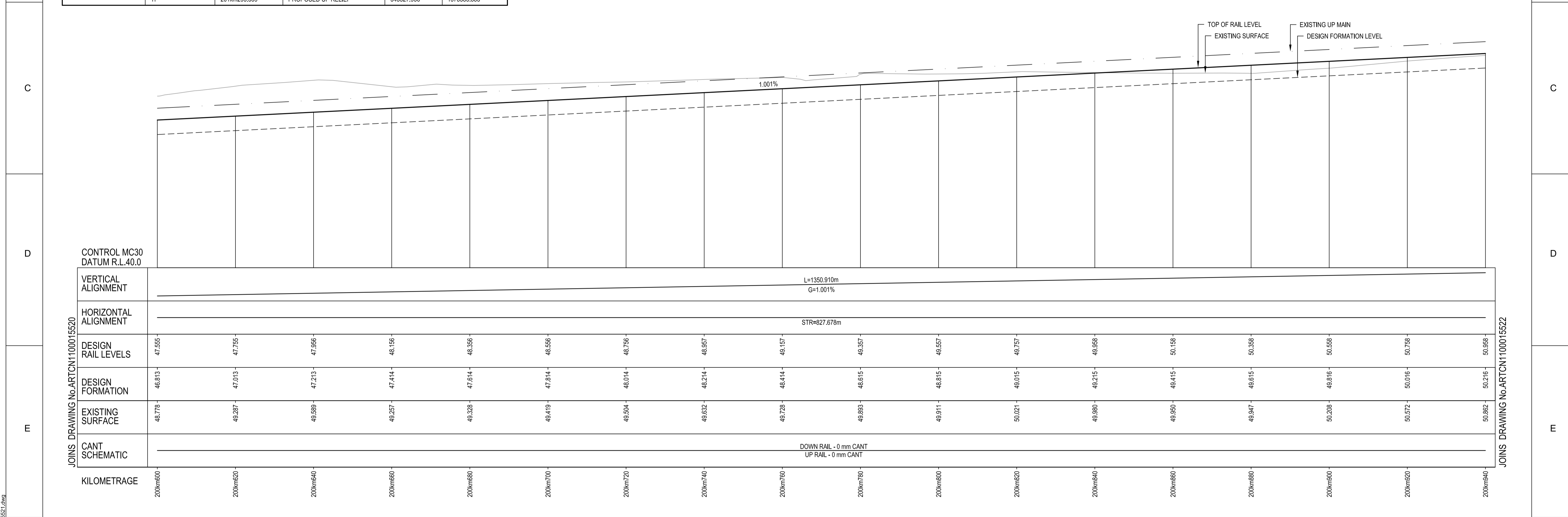


SCHEDULE OF COORDINATED ALIGNMENT POINTS					
RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
	TP	200km465.661	PROPOSED UP RELIEF	344151.899	1378464.218
	TP	201km293.339	PROPOSED UP RELIEF	343327.936	1378385.883

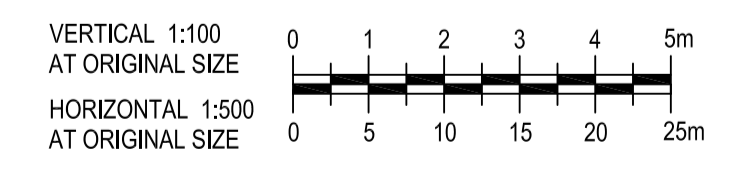
PLAN  
SCALE 1:500



CONTROL MC30  
DATUM R.L.40.0

ALIGNMENT	200km600	200km620	200km640	200km660	200km680	200km700	200km720	200km740	200km760	200km780	200km800	200km820	200km840	200km860	200km880	200km900	200km920	200km940	
VERTICAL ALIGNMENT	L=1350.910m G=1.001%																		
HORIZONTAL ALIGNMENT	STR=827.678m																		
DESIGN RAIL LEVELS	47.555	47.755	47.956	48.156	48.356	48.556	48.756	48.957	49.157	49.357	49.557	49.757	49.958	50.158	50.358	50.558	50.758	50.958	
DESIGN FORMATION	46.813	47.013	47.213	47.414	47.614	47.814	48.014	48.214	48.414	48.615	48.815	49.015	49.215	49.415	49.615	49.816	50.016	50.216	50.416
EXISTING SURFACE	48.778	49.287	49.589	49.257	49.328	49.419	49.504	49.632	49.728	49.893	49.911	50.021	49.980	49.950	49.947	50.208	50.572	50.862	50.962
CANT SCHEMATIC	DOWN RAIL - 0 mm CANT UP RAIL - 0 mm CANT																		

KILOMETRAGE 200km600 200km620 200km640 200km660 200km680 200km700 200km720 200km740 200km760 200km780 200km800 200km820 200km840 200km860 200km880 200km900 200km920 200km940



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

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.

FOR CONSTRUCTION

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Used on / Next higher assembly:	H8R DWG NUMBER <b>H8R-DWG-S2G-TRA-2521</b>
Alternate DMS number:	

ARTC APPROVAL Approved By					
Signed:					
Approval Date	0	06.08.10	ISSUED FOR CONSTRUCTION	D.J.C	T.L*
Rev	Date	Revision Description	Drawn	Checked	Approved

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.hunteralliance.com.au
Drawn D.CRANE	Designed V.ALEX
Drafting Check P.TOBIN*	Design Check T.LYONS*
Approved G.WICKENS*	Date 06/08/2010

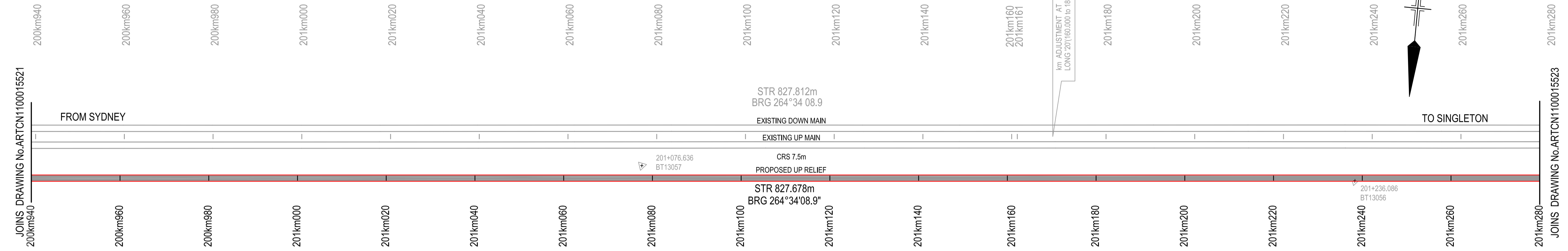
ARTC DWG NUMBER 0

**ARTCN1100015521**

MAITLAND TO MINIMBAH - THIRD TRACK  
TRACK ALIGNMENT - UP RELIEF (PROP)  
200km600 TO 200km940

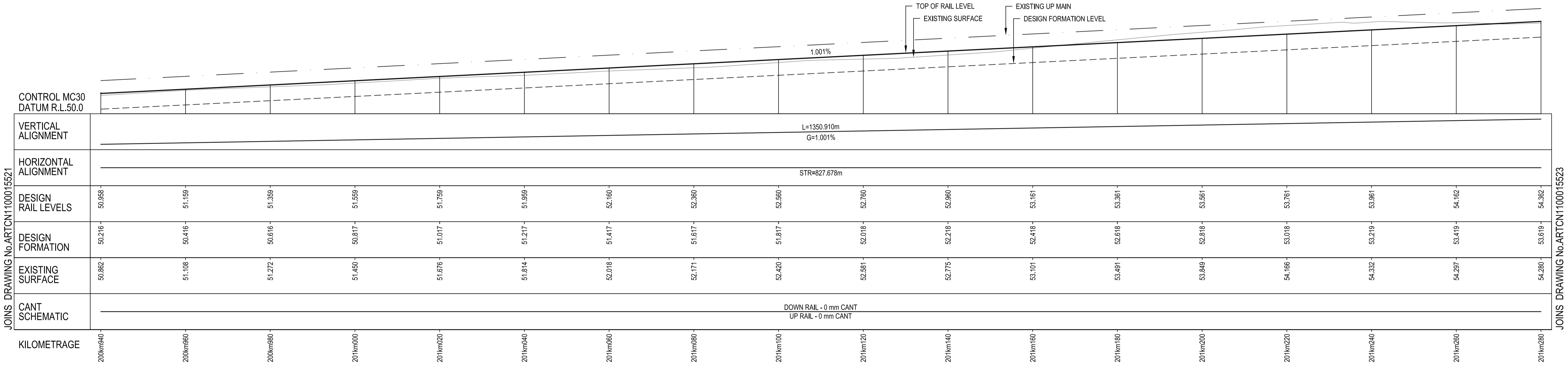
Sheet No.  
**15 of 67**  
Scale (A1):  
1:500(H) 1:100(V)

PLOT DATE: 06 August 2010 3:43 PM PLOTTED BY: DCR24  
GHD FILE PATH: G:\2010\14630\Drawings\08\ARTCN1100015521.dwg



PLAN  
SCALE 1:500

SCHEDULE OF COORDINATED ALIGNMENT POINTS					
RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
	TP	200km465.661	PROPOSED UP RELIEF	344151.899	1378464.218
	TP	201km293.339	PROPOSED UP RELIEF	343327.936	1378385.883



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-2522**

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  
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

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ARTC DWG NUMBER 0

**ARTCN1100015522**

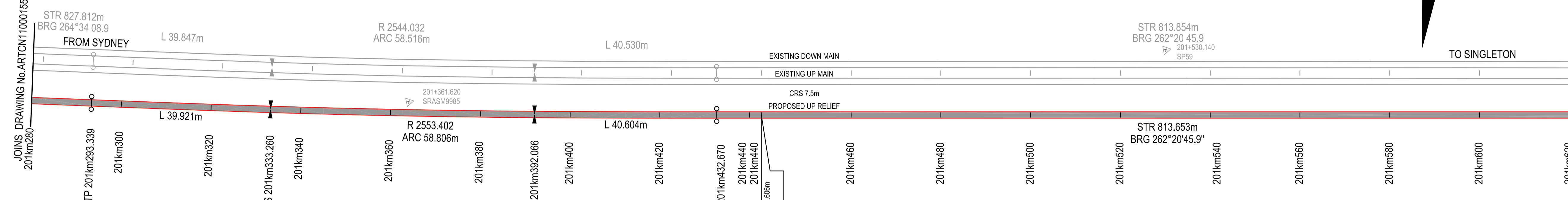
Maitland to Minimbah - Third Track  
TRACK ALIGNMENT - UP RELIEF (PROP)  
200km940 TO 201km280

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

PLOT DATE: 06 August 2010 3:44 PM PLOTTED BY: DCR42 GHD FILE PATH: G:\2010\14630\Drawings\08\ARTCN1100015522.dwg

JOINS DRAWING No.ARTCNT100015522  
201km280

JOINS DRAWING No.ARTCNT100015524  
201km620



**TRANSITION DETAILS**

RADIUS:	2553.402m
LENGTH:	39.921m
V:	60km/h (HH)
Xc:	39.920m
Droc:	7mm/sec
M:	1.635 x 10 <sup>-3</sup>

**CIRCULAR CURVE DETAILS**

RADIUS:	2553.402m
ARC:	58.806m
V:	60km/h (HH)
Ea:	0mm
D:	17mm
E	343549.735
N	1375842.028

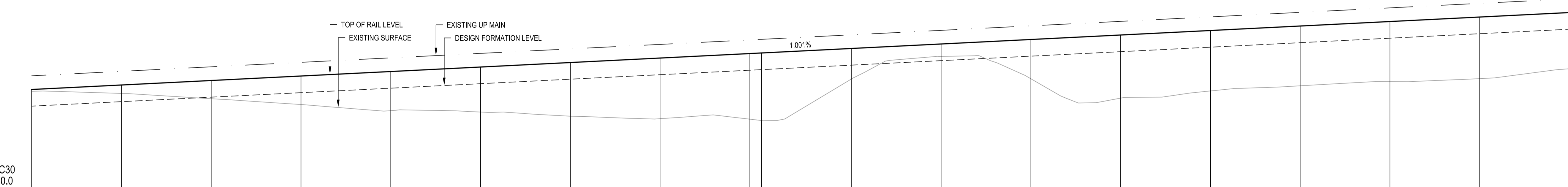
**TRANSITION DETAILS**

RADIUS:	2553.402m
LENGTH:	40.604m
V:	60km/h (HH)
Xc:	40.604m
Droc:	7mm/sec
M:	1.608 x 10 <sup>-3</sup>

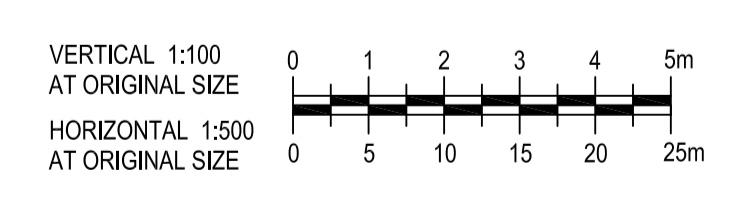
**SCHEDULE OF COORDINATED ALIGNMENT POINTS**

RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
	TP	200km465.661	PROPOSED UP RELIEF	344151.899	1378464.218
	TP	201km293.339	PROPOSED UP RELIEF	343327.936	1378385.883
	TRS	201km333.260	PROPOSED UP RELIEF	343288.205	1378382.001
2553.402 LEFT	CENTRE			343549.735	1375842.028
	TRS	201km392.066	PROPOSED UP RELIEF	343229.783	1378375.305
	TP	201km432.670	PROPOSED UP RELIEF	343189.526	1378370.003
	TP	202km243.717	PROPOSED UP RELIEF	342383.122	1378261.634

**PLAN**  
SCALE 1:500



VERTICAL ALIGNMENT	L=1350.910m G=1.001%																		
HORIZONTAL ALIGNMENT	STR=827.678m L=39.921m			R=2553.402m ARC=58.806m			L=40.604m			STR=813.653m									
DESIGN RAIL LEVELS	54.362	54.562	54.762	54.962	55.162	55.363	55.563	55.763	55.963	55.989	56.189	56.390	56.590	56.790	56.990	57.190	57.391	57.591	57.791
DESIGN FORMATION	53.619	53.819	54.019	54.219	54.420	54.620	54.820	55.020	55.220	55.246	55.447	55.647	55.847	56.047	56.247	56.447	56.648	56.848	57.048
EXISTING SURFACE	54.280	54.187	53.949	53.681	53.414	53.263	53.163	53.067	53.039	52.978	54.827	55.634	54.640	53.977	54.296	54.526	54.713	54.846	55.287
CANT SCHEMATIC	DOWN RAIL - 0 mm CANT UP RAIL - 0 mm CANT																		
KILOMETRAGE	201km280	201km293.339	201km300	201km320	201km340	201km360	201km380	201km400	201km420	201km440	201km460	201km480	201km500	201km520	201km540	201km560	201km580	201km600	201km620



**LEGEND**

	PROPOSED TRACKWORK		EXISTING TRACK
	EXISTING TRACK TO BE REMOVED		PROPOSED TRACKWORK

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

- NOTES:**
- FOR GENERAL NOTES REFER TO DRG No. ARTCNT100015507.
  - 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-2523
Alternate DMS number:	

ARTC APPROVAL	Approved By				
Approved	Signed:				
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

**ARTCN1100015523**

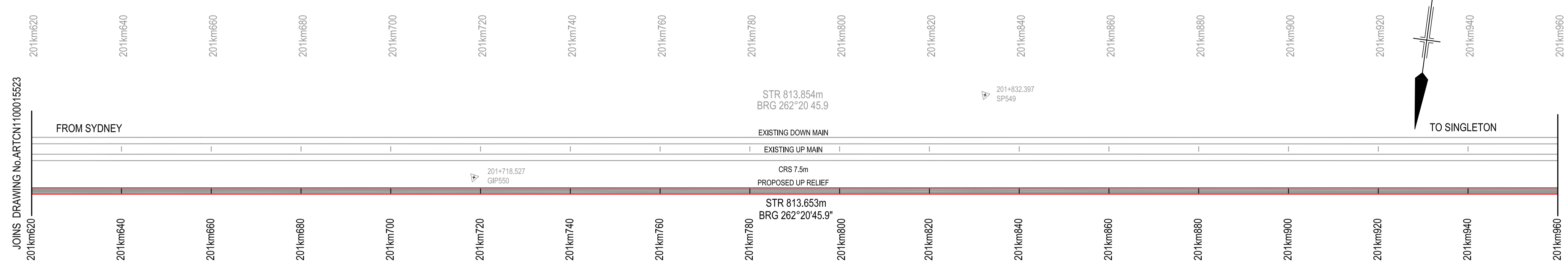
MAITLAND TO MINIMBAH - THIRD TRACK  
TRACK ALIGNMENT - UP RELIEF (PROP)  
201km280 TO 201km620

Sheet No. **17 of 67**  
Scale (A1): 1:500(H) 1:100(V)

PLOT DATE: 06 August 2010 3:44 PM  
GHD FILE PATH: G:\2010\14630\Drawings\08\ARTCNT100015523.dwg  
PLOTTED BY: DCRANE

JOINS DRAWING No.ARTCNT1100015523

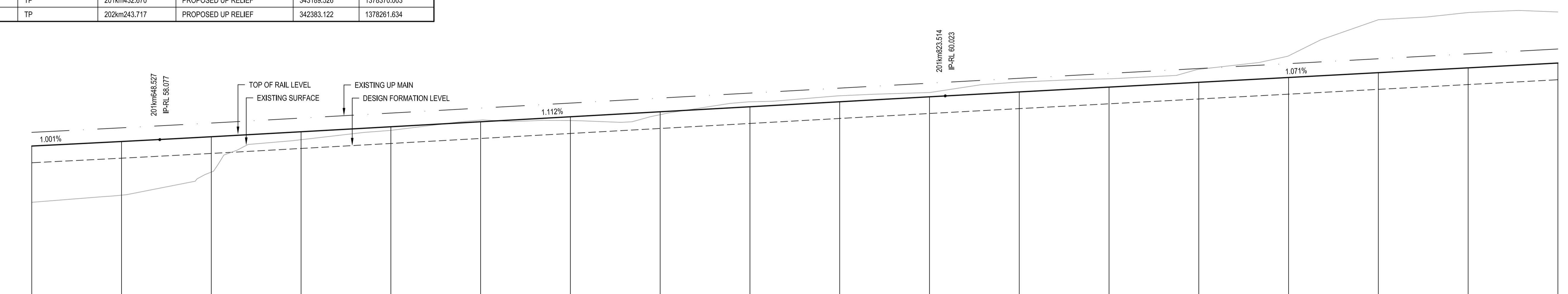
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PLAN  
SCALE 1:500

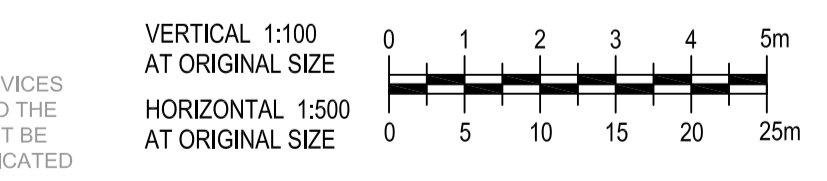
SCHEDULE OF COORDINATED ALIGNMENT POINTS

RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
	TP	201km432.670	PROPOSED UP RELIEF	343189.526	1378370.003
	TP	202km243.717	PROPOSED UP RELIEF	342383.122	1378261.634



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

VERTICAL ALIGNMENT	HORIZONTAL ALIGNMENT	DESIGN RAIL LEVELS	DESIGN FORMATION	EXISTING SURFACE	CANT SCHEMATIC	KILOMETRAGE
L=139.910m G=1.001% V.C=40.000m R=35942.967m	STR=813.653m	57.791	57.048	55.287	DOWN RAIL - 0 mm CANT UP RAIL - 0 mm CANT	201km620
L=134.987m G=1.112% V.C=40.000m R=97845.915m		57.993	57.250	55.605		201km640
		58.205	57.462	56.632		201km660
		58.427	57.684	58.073		201km680
		58.649	57.906	58.469		201km700
		58.871	58.128	58.846		201km720
		59.094	58.351	59.225		201km740
		59.316	58.573	59.186		201km760
		59.539	58.796	59.780		201km780
		59.761	59.018	60.029		201km800
		59.982	59.239	60.174		201km820
		60.199	59.456	60.641		201km840
		60.414	59.671	60.785		201km860
		60.628	59.885	61.206		201km880
		60.842	60.099	61.895		201km900
		61.056	60.313	63.412		201km920
		61.271	60.528	63.733		201km940
		61.485	60.742	63.758		201km960



**LEGEND**

	PROPOSED TRACKWORK		EXISTING TRACK
	EXISTING TRACK TO BE REMOVED		PROPOSED TRACKWORK

- NOTES:**
- FOR GENERAL NOTES REFER TO DRG No. ARTCNT1100015507.
  - 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 NUMBER  
**H8R-DWG-S2G-TRA-2524**

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 61 2 4941 2796 W www.hunteralliance.com.au
Drawn D.CRANE	Designed V.ALEX
Drafting Check P.TOBIN*	Design Check T.LYONS*
Approved G.WICKENS*	Date 06/08/2010

**Hunter ALLIANCE**

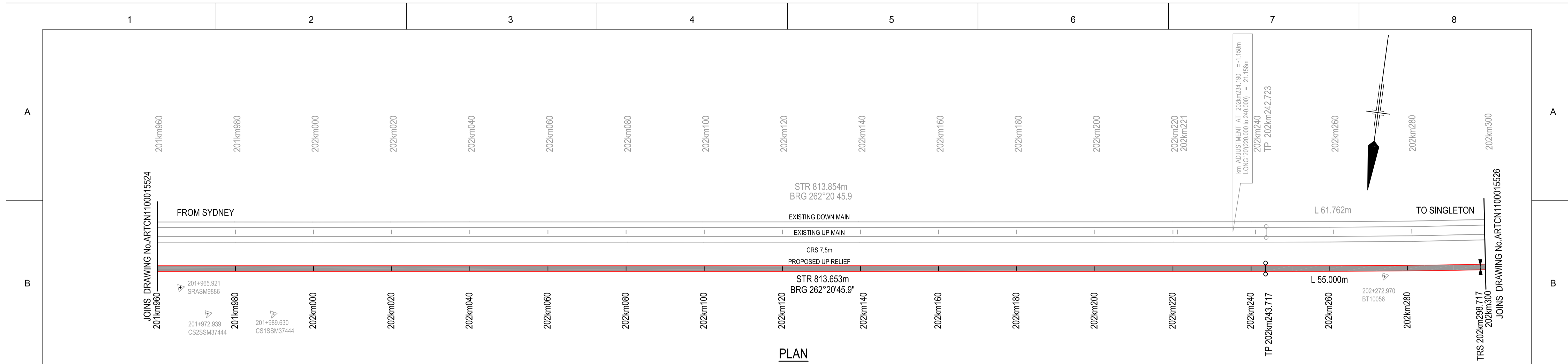
ARTC DWG NUMBER 0

**ARTCNT1100015524**

MAITLAND TO MINIMBAH - THIRD TRACK  
TRACK ALIGNMENT - UP RELIEF (PROP)  
201km620 TO 201km960

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

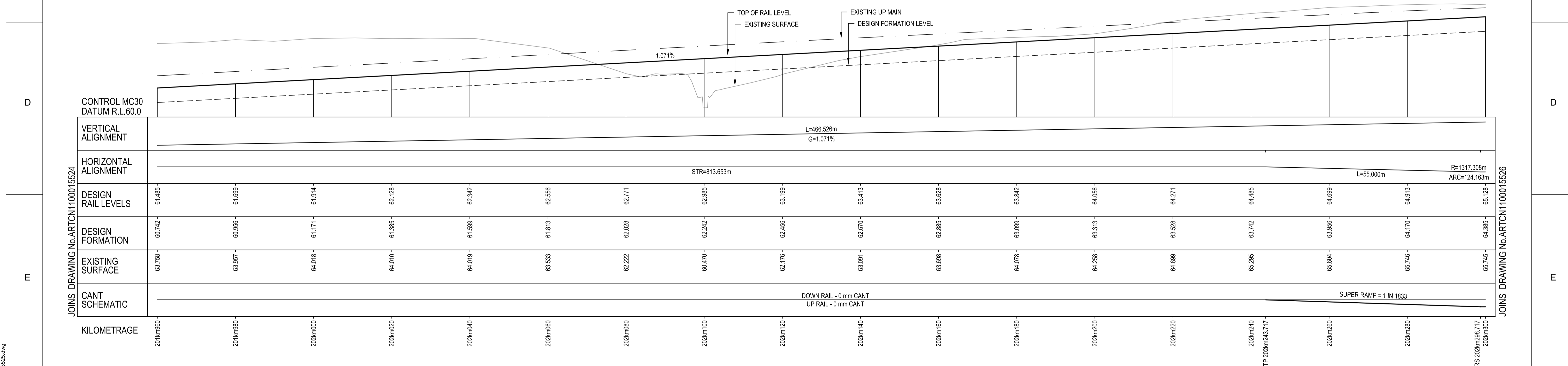
PLOT DATE: 06 August 2010 3:45 PM PLOTTED BY: DCR42 GHD FILE PATH: G:\22\14630\Drawings\GHD\ARTCNT1100015524.dwg



PLAN  
SCALE 1:500

TRANSITION DETAILS	
RADIUS:	1317.308m
LENGTH:	55.000m
V:	60km/h (HH)
Xc:	54.998m
Drc:	1mm/sec
M:	2.302 x 10 <sup>-3</sup>

SCHEDULE OF COORDINATED ALIGNMENT POINTS					
RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
	TP	201km432.670	PROPOSED UP RELIEF	343189.526	1378370.003
	TP	202km243.717	PROPOSED UP RELIEF	342383.122	1378261.634
	TRS	202km298.717	PROPOSED UP RELIEF	342328.665	1378253.929
1317.308 LEFT	CENTRE			342531.344	1378253.306
	TRS	202km422.881	PROPOSED UP RELIEF	342207.061	1378229.076



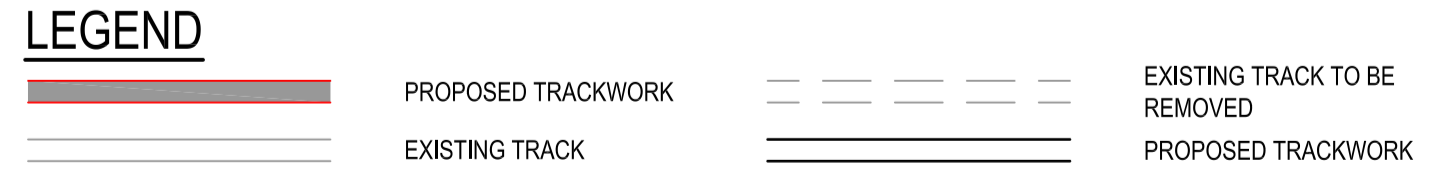
LONGITUDINAL SECTION  
SCALE 1:500(H) 1:100(V)

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



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Used on / Next higher assembly:	H8R DWG NUMBER <b>H8R-DWG-S2G-TRA-2525</b>	Signed:	
	Alternate DMS number:	Approval Date	

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

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

ARTC DWG NUMBER **0**

**ARTCN1100015525**

**Hunter ALLIANCE**

MAITLAND TO MINIMBAH - THIRD TRACK  
TRACK ALIGNMENT - UP RELIEF (PROP)  
201km960 TO 202km300

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

PLOT DATE: 06 August 2010 3:45 PM  
GHD FILE PATH: G:\2010\14630\Drawings\08\ARTCN1100015525.dwg