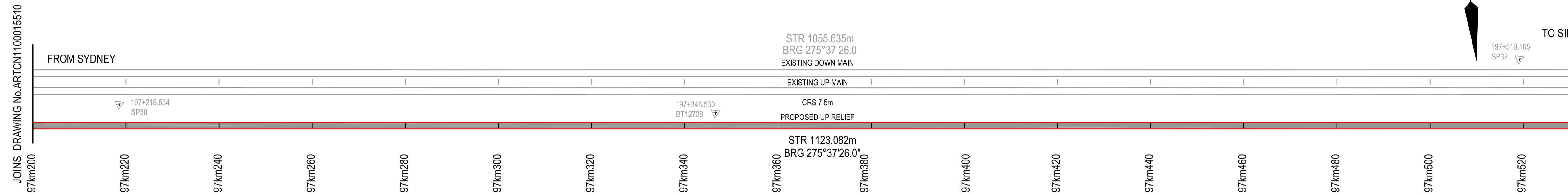


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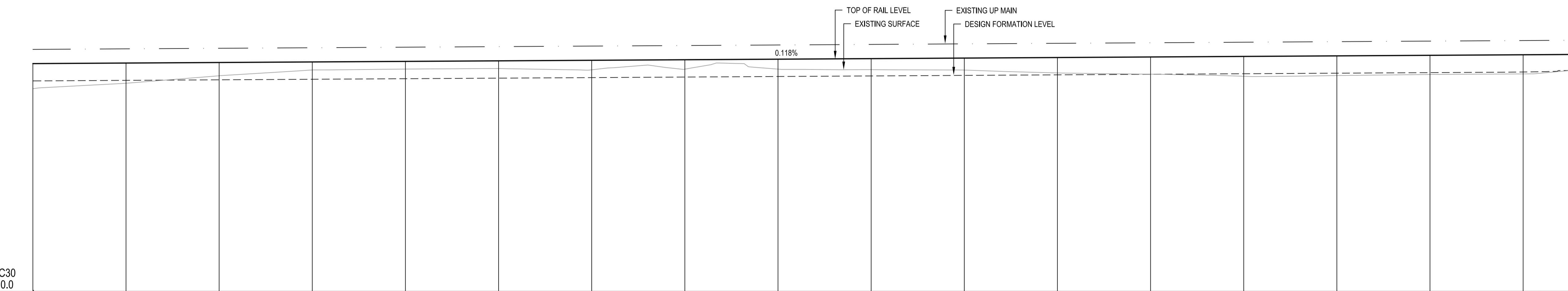
197km200 197km220 197km240 197km260 197km280 197km300 197km320 197km340 197km360 197km380 197km400 197km420 197km440 197km460 197km480 197km500 197km520 TP 197km531.221 197km540



SCHEDULE OF COORDINATED ALIGNMENT POINTS

RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
	TP	196km411.235	PROPOSED UP RELIEF	348056.742	1377621.025
	TP	197km532.256	PROPOSED UP RELIEF	346939.066	1377731.085
	TRS	197km577.256	PROPOSED UP RELIEF	346894.300	1377735.664

PLAN
SCALE 1:500



CONTROL MC30
DATUM R.L.10.0

	197km200	197km220	197km240	197km260	197km280	197km300	197km320	197km340	197km360	197km380	197km400	197km420	197km440	197km460	197km480	197km500	197km520	TP 197km532.256	197km540	
VERTICAL ALIGNMENT	L=393.253m G=0.118%																		V.C=80.000m R=15176.982m	
HORIZONTAL ALIGNMENT	STR=1123.082m																			L=45.000m
DESIGN RAIL LEVELS	19.775	19.799	19.822	19.846	19.870	19.893	19.917	19.941	19.965	19.988	20.012	20.036	20.059	20.083	20.107	20.130	20.154	20.177	20.197	
DESIGN FORMATION	19.032	19.056	19.079	19.103	19.127	19.151	19.174	19.198	19.222	19.245	19.269	19.293	19.316	19.340	19.364	19.388	19.415	19.438	19.468	
EXISTING SURFACE	18.689	18.833	19.052	19.303	19.541	19.563	19.569	19.537	19.538	19.516	19.498	19.474	19.420	19.320	19.231	19.262	19.308	19.333	19.358	
CANT SCHEMATIC	DOWN RAIL - 0 mm CANT UP RAIL - 0 mm CANT																		SUPER RAMP = 1 IN 2250	

KILOMETRAGE 197km200 197km220 197km240 197km260 197km280 197km300 197km320 197km340 197km360 197km380 197km400 197km420 197km440 197km460 197km480 197km500 197km520 TP 197km532.256 197km540

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

NOTES:

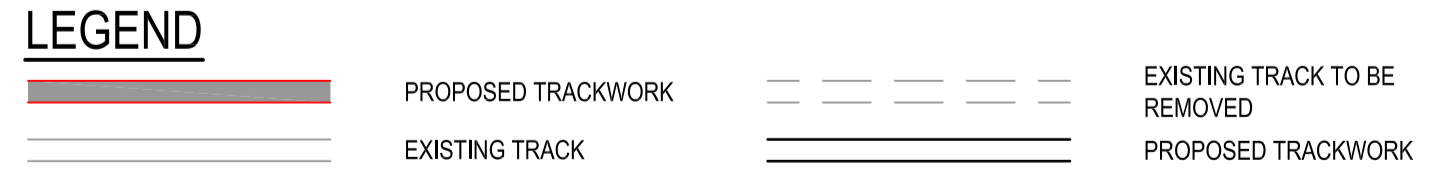
- FOR GENERAL NOTES REFER TO DRG No. ARTCN1100015507.
- INDICATED TRAIN SPEEDS USED IN CALCULATIONS REFER TO MODELLED TRAIN SPEEDS. FREIGHT, PASSENGER AND XPT MAXIMUM SPEEDS COMPLY AT HIGHER RATES OF CHANGE.

FOR CONSTRUCTION

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VERTICAL 1:100 AT ORIGINAL SIZE

HORIZONTAL 1:500 AT ORIGINAL SIZE



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Used on / Next higher assembly:

H8R DWG NUMBER
H8R-DWG-S2G-TRA-2511

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.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

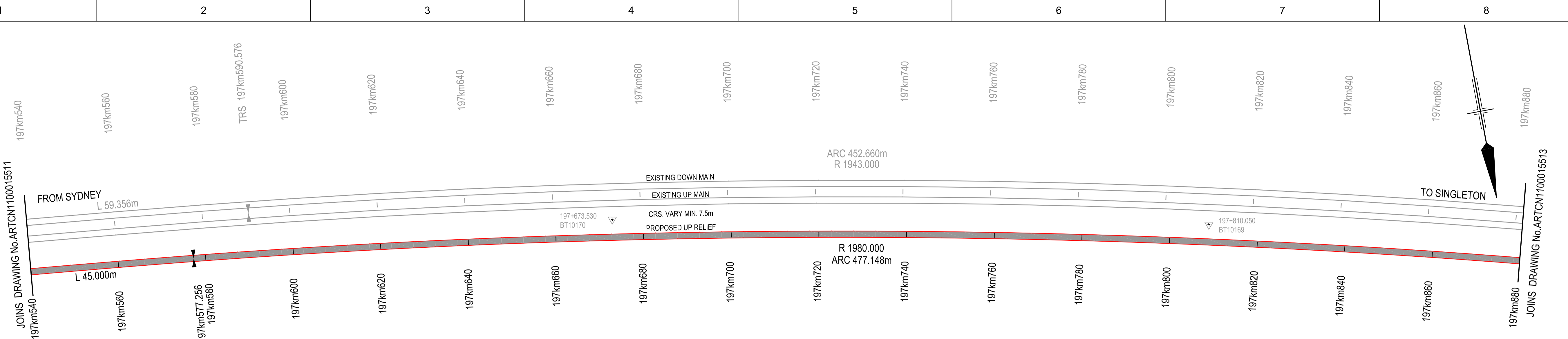
ARTCN1100015511

MAITLAND TO MINIMBAH - THIRD TRACK
TRACK ALIGNMENT - UP RELIEF (PROP)
197km200 TO 197km540

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

1 2 3 4 5 6 7 8

PLOT DATE: 06 August 2010 3:38 PM PLOTTED BY: DCR42 GHD FILE PATH: G:\2010\14630\Drawings\08\ARTCN1100015511.dwg



TRANSITION DETAILS

RADIUS:	1980.000m
LENGTH:	45.000m
V:	60km/h (HH)
Xc:	44.999m
Droc:	1mm/sec
M:	1.871 x 10 ⁻⁶

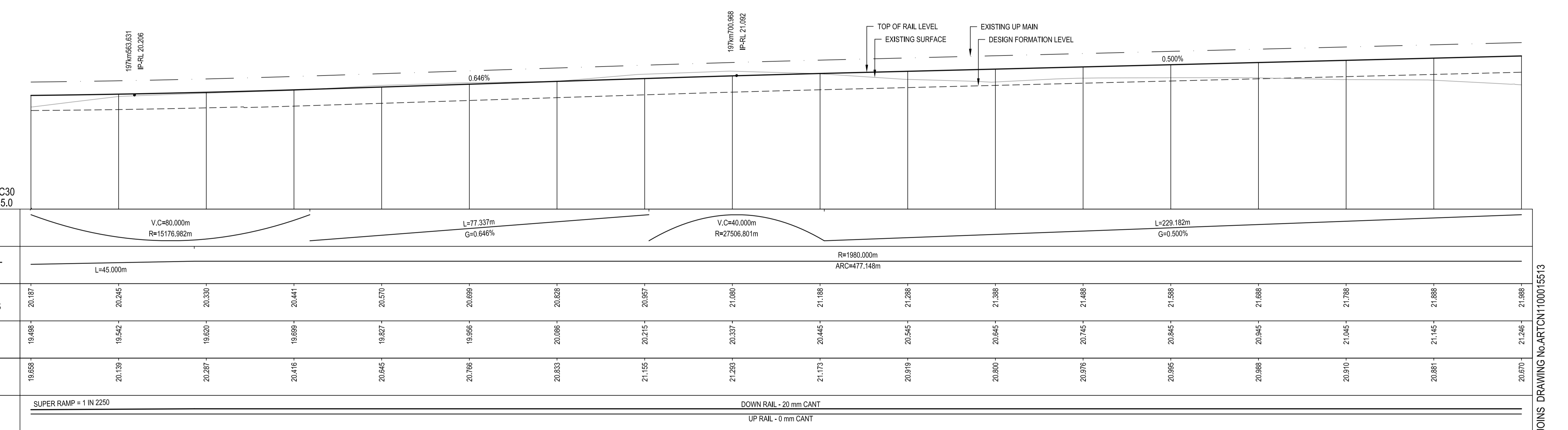
PLAN
SCALE 1:500

CIRCULAR CURVE DETAILS

RADIUS:	1980.000m
ARC:	477.148m
V:	60km/h (HH)
Ea:	20mm
D:	1mm
E	347110.718
N	1379703.801

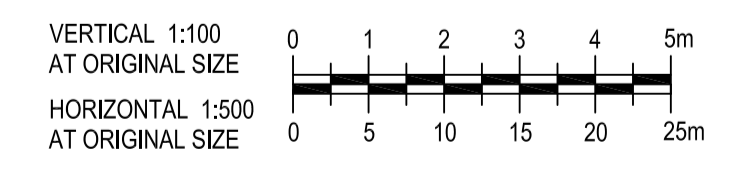
SCHEDULE OF COORDINATED ALIGNMENT POINTS

RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
	TP	197km532.256	PROPOSED UP RELIEF	346939.066	1377731.085
	TRS	197km577.256	PROPOSED UP RELIEF	346894.300	1377735.664
1980.000 RIGHT	CENTRE			347110.718	1379703.801
	TRS	198km054.403	PROPOSED UP RELIEF	346430.842	1377844.186



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.



LEGEND

	PROPOSED TRACKWORK		EXISTING TRACK TO BE REMOVED
	EXISTING TRACK		PROPOSED TRACKWORK

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Used on / Next higher assembly:
H8R-DWG-S2G-TRA-2512

Alternate DMS number:

ARTC APPROVAL		Approved By			
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 GHD Job Number: 22-14630	Address: Level 3 GHD Tower, 24 Honeysuckle Drive Newcastle NSW 2300 Australia F 61 2 4941 2798 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

Hunter 8 ALLIANCE

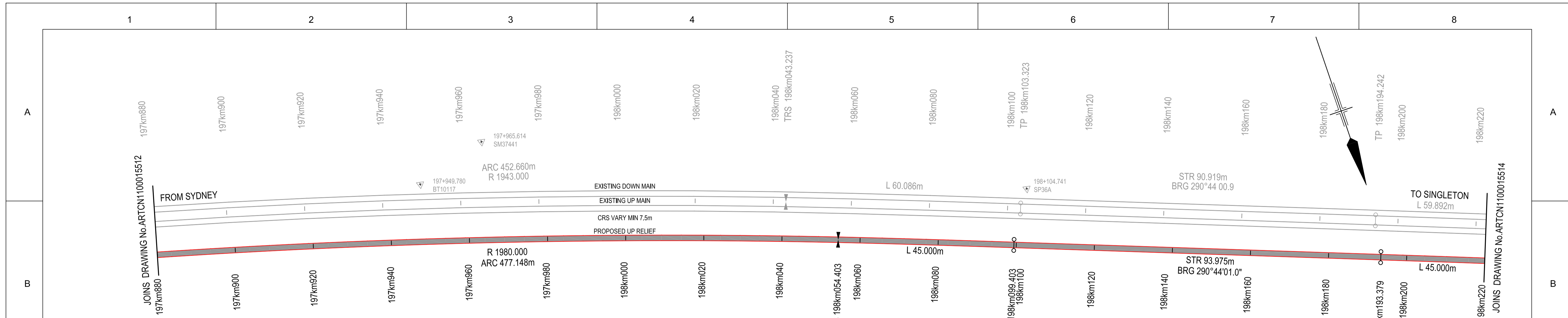
ARTC DWG NUMBER 0

ARTCN1100015512

MAITLAND TO MINIMBAH - THIRD TRACK
TRACK ALIGNMENT - UP RELIEF (PROP)
197km540 TO 197km880

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

PLOT DATE: 06 August 2010 3:39 PM PLOTTED BY: DCR42 GHD FILE PATH: G:\2010\14630\Drawings\08\ARTCN1100015512.dwg



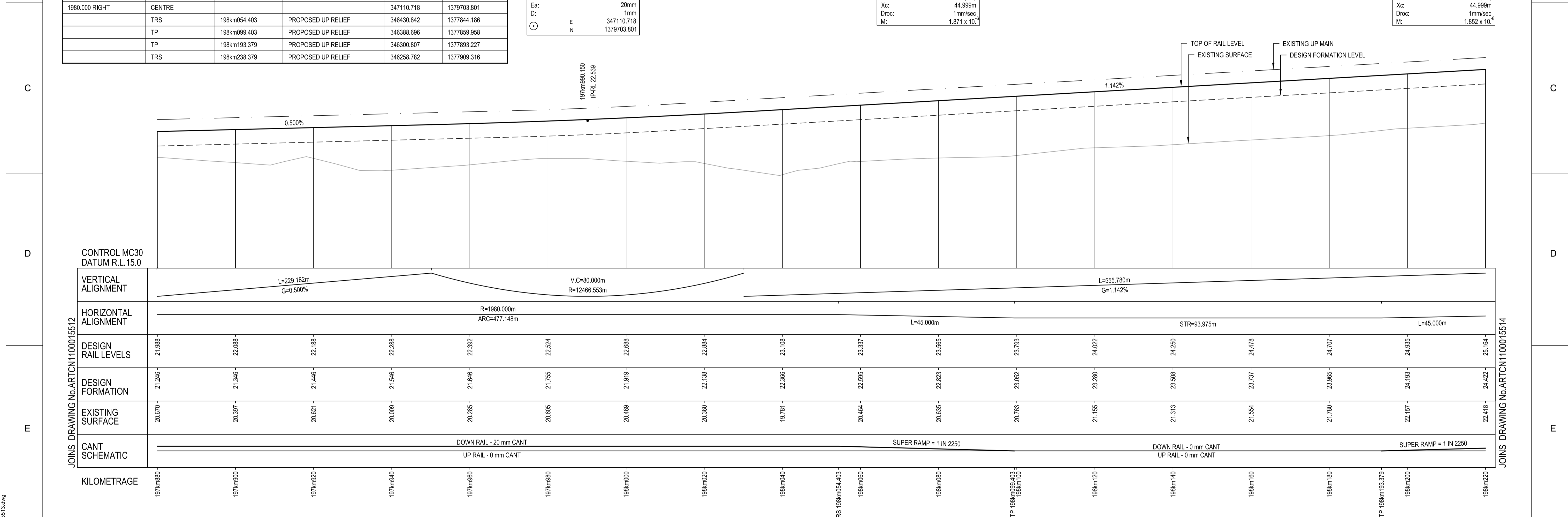
SCHEDULE OF COORDINATED ALIGNMENT POINTS					
RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
1980.000 RIGHT	TRS	197km577.256	PROPOSED UP RELIEF	346894.300	1377735.664
	CENTRE			347110.718	1379703.801
	TRS	198km054.403	PROPOSED UP RELIEF	346430.842	1377844.186
	TP	198km099.403	PROPOSED UP RELIEF	346388.696	1377859.958
	TP	198km193.379	PROPOSED UP RELIEF	346300.807	1377893.227
	TRS	198km238.379	PROPOSED UP RELIEF	346258.782	1377909.316

CIRCULAR CURVE DETAILS	
RADIUS:	1980.000m
ARC:	477.148m
V:	60km/h (HH)
Ea:	20mm
D:	1mm
E	347110.718
N	1379703.801

PLAN
SCALE 1:500

TRANSITION DETAILS	
RADIUS:	1980.000m
LENGTH:	45.000m
V:	60km/h (HH)
Xc:	44.999m
Droc:	1mm/sec
M:	1.871 x 10 ⁻⁶

TRANSITION DETAILS	
RADIUS:	2000.000m
LENGTH:	45.000m
V:	60km/h (HH)
Xc:	44.999m
Droc:	1mm/sec
M:	1.852 x 10 ⁻⁶



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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Used on / Next higher assembly:	H8R DWG NUMBER H8R-DWG-S2G-TRA-2513
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
Drawn:	D.CRANE
Drafting Check:	P.TOBIN*
Designed:	V.ALEX
Design Check:	T.LYONS*
Approved:	G.WICKENS*
Date:	06/08/2010

Address:	Level 3 GHD Tower, 24 Honeysuckle Drive Newcastle NSW, 2300 Australia F 612 4941 2796 W www.hunter8alliance.com.au
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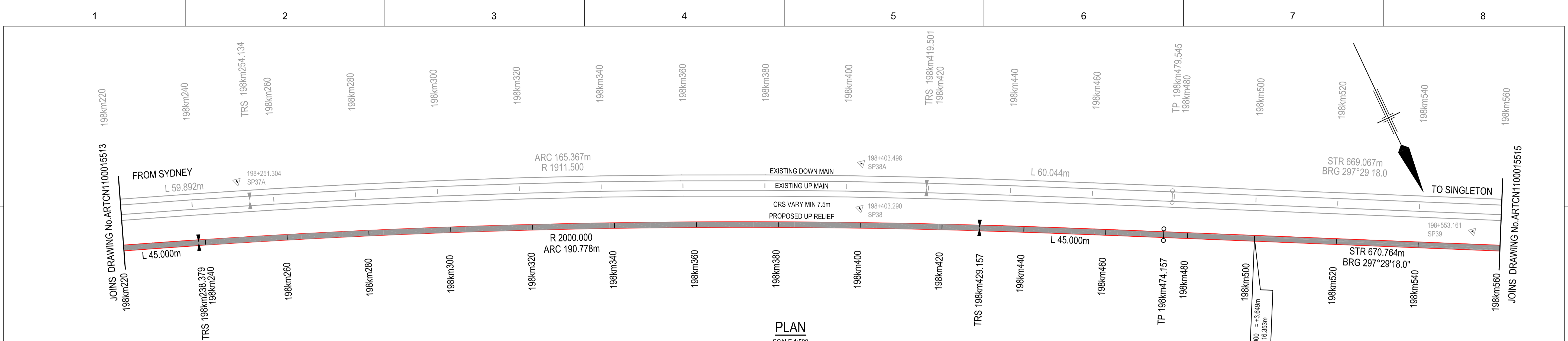
ARTC DWG NUMBER 0

ARTCN100015513

MAITLAND TO MINIMBAH - THIRD TRACK
TRACK ALIGNMENT - UP RELIEF (PROP)
197km880 TO 198km220

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

PLOT DATE: 06 August 2010 3:39 PM PLOTTED BY: DCR42
GHD FILE PATH: G:\2010\1471\CA\000\Drawings\08\ARTCN100015513.dwg



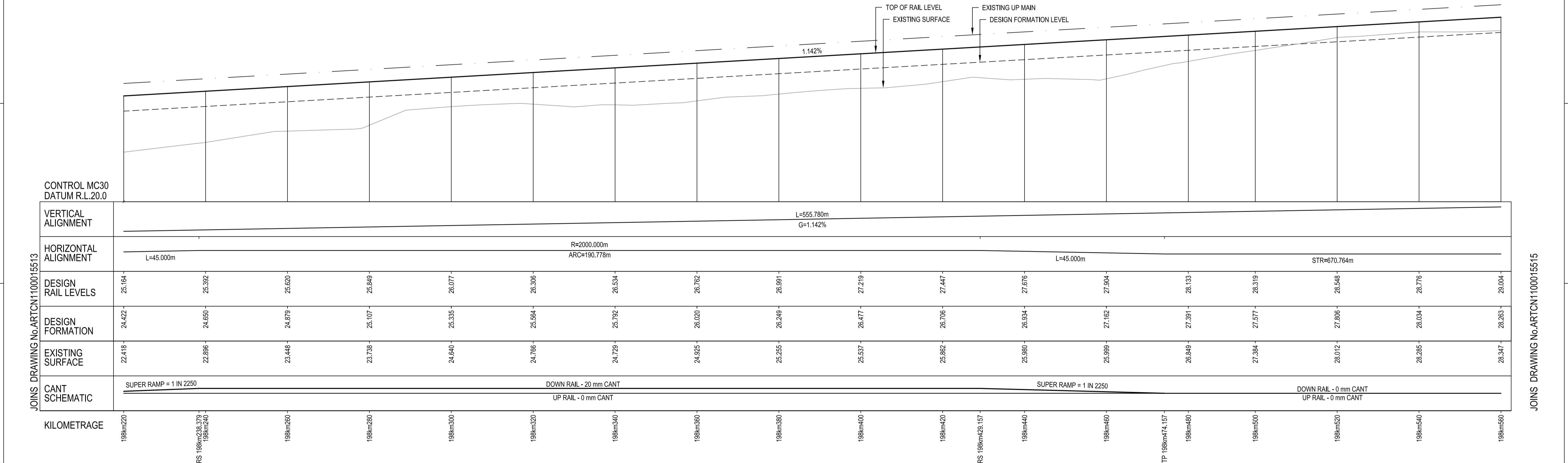
SCHEDULE OF COORDINATED ALIGNMENT POINTS					
RADIUS	POINT	KM	CENTRELINE	EASTING	NORTHING
	TP	198km193.379	PROPOSED UP RELIEF	346300.807	1377893.227
	TRS	198km238.379	PROPOSED UP RELIEF	346258.782	1377909.316
2000.000 RIGHT	CENTRE				
	TRS	198km429.157	PROPOSED UP RELIEF	346987.829	1379771.704
	TP	198km474.157	PROPOSED UP RELIEF	346044.717	1378007.841
	TP	198km480.570	PROPOSED UP RELIEF	345449.679	1378317.444

TRANSITION DETAILS	
RADIUS:	2000.000m
LENGTH:	45.000m
V:	60km/h (HH)
Xc:	44.999m
D:	1mm/sec
M:	1.852 x 10 ⁻⁶

CIRCULAR CURVE DETAILS	
RADIUS:	2000.000m
ARC:	190.778m
V:	60km/h (HH)
Ea:	20mm
D:	1mm
N:	346987.829
E:	1379771.704

TRANSITION DETAILS	
RADIUS:	2000.000m
LENGTH:	45.000m
V:	60km/h (HH)
Xc:	44.999m
D:	1mm/sec
M:	1.852 x 10 ⁻⁶

km ADJUSTMENT AT 198km500.000 = +3.649m
SHORT 207(480.000 to 500.000) = 16.353m



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

NOTES:
1. FOR GENERAL NOTES REFER TO DRG No. ARTCN1100015507.
2. 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

ARTCN1100015514

MAITLAND TO MINIMBAH - THIRD TRACK
TRACK ALIGNMENT - UP RELIEF (PROP)
198km220 TO 198km560

Sheet No. **8 of 67**
Scale (A1): 1:500(H) 1:100(V)

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Used on / Next higher assembly: H8R-DWG-S2G-TRA-2514

Alternate DMS number:

ARTC APPROVAL Approved By: _____

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*

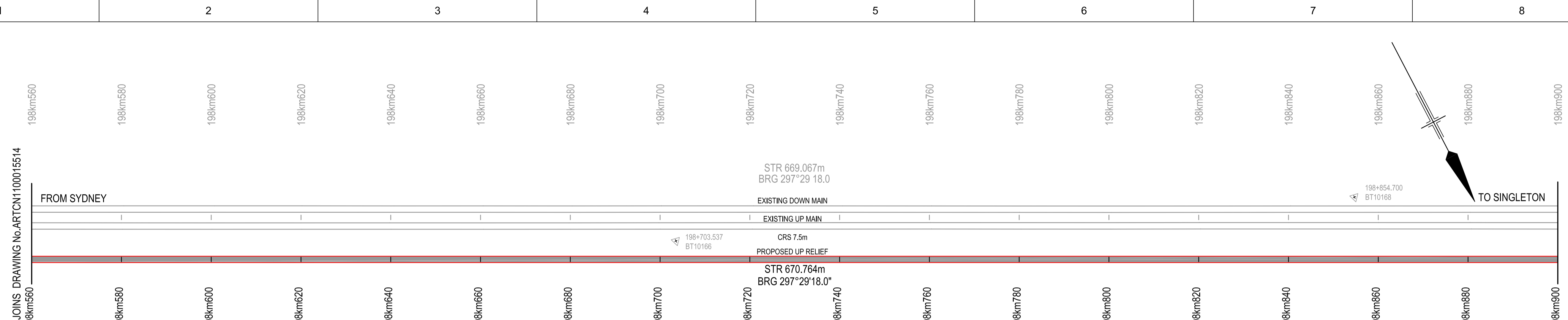
Designing Company: GHD
GHD Job Number: 22-14630
Address: Level 3 GHD Tower, 24 Honeysuckle Drive Newcastle NSW 2300 Australia
F 61 2 4941 2796 W www.hunter8alliance.com.au

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

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

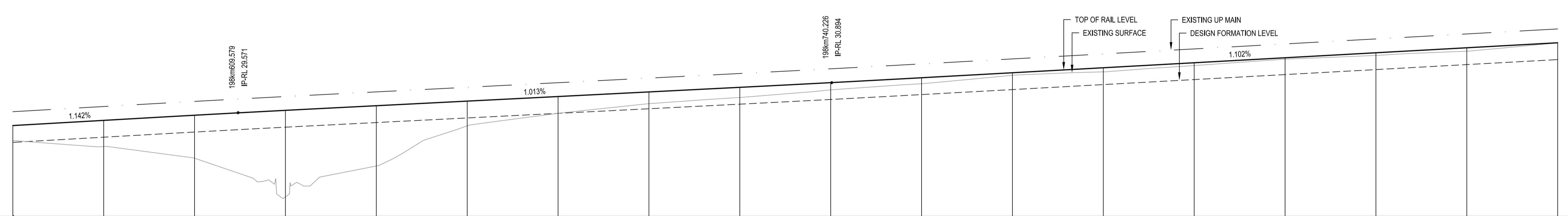
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GHD FILE PATH: G:\2010\14630\Drawings\08\ARTCN1100015514.dwg

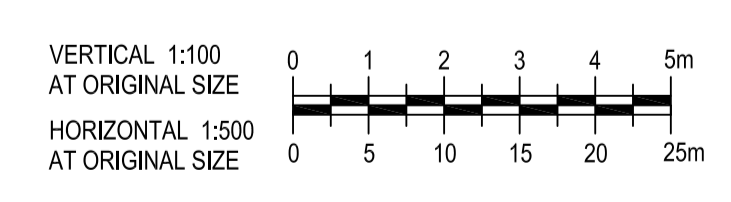


PLAN
SCALE 1:500

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



	198km560	198km580	198km600	198km620	198km640	198km660	198km680	198km700	198km720	198km740	198km760	198km780	198km800	198km820	198km840	198km860	198km880	198km900
VERTICAL ALIGNMENT	L=555.780m G=1.142% V.C=40.000m R=31110.838m L=90.647m G=1.013% V.C=40.000m R=45112.727m L=299.255m G=1.102%																	
HORIZONTAL ALIGNMENT	STR=670.764m																	
DESIGN RAIL LEVELS	29.004	29.233	29.459	29.675	29.879	30.082	30.284	30.487	30.690	30.887	31.112	31.333	31.553	31.774	31.994	32.214	32.435	32.655
DESIGN FORMATION	28.263	28.491	28.717	28.933	29.137	29.339	29.542	29.745	29.948	30.155	30.370	30.591	30.811	31.032	31.252	31.472	31.693	31.913
EXISTING SURFACE	28.347	28.077	27.565	25.980	27.220	28.594	29.544	29.989	30.243	30.577	30.847	31.222	31.372	31.651	31.932	32.098	32.283	32.548
CANT SCHEMATIC	DOWN RAIL - 0 mm CANT UP RAIL - 0 mm CANT																	
KILOMETRAGE	198km560	198km580	198km600	198km620	198km640	198km660	198km680	198km700	198km720	198km740	198km760	198km780	198km800	198km820	198km840	198km860	198km880	198km900



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. ARTCN100015507.
 - 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-2515
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

	ARTC DWG NUMBER	0
	ARTCN100015515	
MAITLAND TO MINIMBAH - THIRD TRACK TRACK ALIGNMENT - UP RELIEF (PROP) 198km560 TO 198km900		Sheet No. 9 of 67 Scale (A1): 1:500(H) 1:100(V)

PLOT DATE: 06 August 2010 3:40 PM PLOTTED BY: DCR42
 GHD FILE PATH: G:\2010\14630\Drawings\GHD\ARTCN100015515.dwg