

LEGEND

- FENCE / GATE
- POWER LINES
- TELEPHONE LINES
- DIRECTION OF TRAFFIC MOVEMENT
- BUILDINGS
- WATER PIPE LINES
- CUVERT NOTATION
- COASTAL INTERSECTION BOUNDARY
- EXISTING ROAD
- EXISTING RAILWAY
- FUTURE RAILWAY

CENTRE LINE CO-ORDINATES
Road D2769 (Lo 29°)

Chainage km	Y-Coord +0.000	X-Coord +0.000
0.000	-17696.752	2880942.857
486.486	-17996.072	2880559.351 BC 1
500.000	-18004.826	2880549.062
608.147	-18098.658	2880499.536 EC 1
1000.000	-18486.246	2880441.875

Contour interval = 1m

HORIZONTAL CURVE DATA Road D2769 (Lo 29°)

Curve	Description	Curve Length	Curve Radius	Point	Distance km	Y-Coord 0.000	X-Coord 0.000
No 1 Deflection < 43°34'00"	Right Hand Circular	121.661	160.000	BC 1	486.486	-17996.072	2880559.351
				PI 1		-18035.413	2880508.945
				EC 1	608.147	-18098.658	2880499.536

NOTE:
NEW BRIDGE CROSSING OVER HAUL ROAD

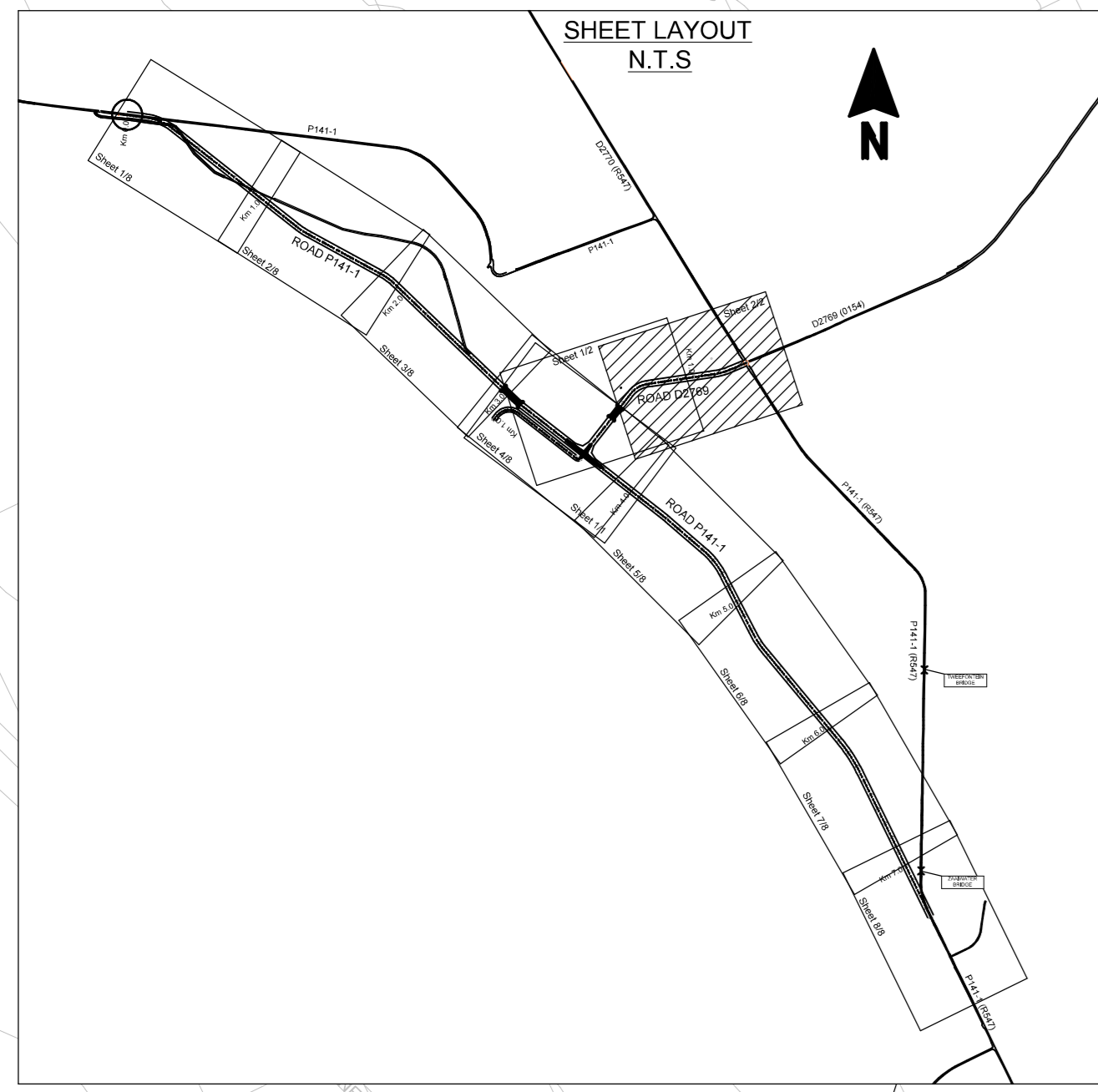
Road D2769
Curve 2 - Right, Radius 350m
Deflection 13°52'00"

SURVEYED BY: LIDAR SURVEY NOVEMBER 2011 PROVIDED BY XSTRATA		DESIGNED FOR: TWEEFONTein PROJECT XSTRATA COAL SA		ENGINEERING AND ENVIRONMENTAL CONSULTING JEFFARES & GREEN PTY (Ltd) TEL: (012) 348-7000 FAX: (012) 348-7070 E-MAIL: jg@jgpi.co.za		ONTWERP GOEDGEKEUR DESIGN APPROVED		GOEDGEKEUR DEUR APPROVED BY		ONTWERP DEUR DESIGNED BY CCLR		MPUMALANGA REGERING OPENBARE WERKE PAWIE EN VervoER MPUMALANGA		MPUMALANGA GOVERNMENT PUBLIC WORKS, ROADS AND TRANSPORT		SKAAL / SCALE 1:1000		LÉER Nr / FILE No --		DISTRIK / DISTRICT NKANGALA		PROVINSIE PLAN Nr / PROVINCE PLAN No MRS 06/--/09Lyn	
WYSIGINGS / AMENDMENTS		xstrata		Jeffares & Green		rms Raadgeverde Ingenieur for Consulting Engineers		rms Hoof v. Dept. for Head of Department		DIETKEN DEUR DRAWN BY NAGESSEN DEUR CHECKED BY		REALIGNMENT OF PROVINCIAL ROADS		MPUMALANGA GOVERNMENT PUBLIC WORKS, ROADS AND TRANSPORT		Tipe ONTWERP / TYPE OF PLANNING PRELIMINARY DESIGN		PAD Nr / ROAD No P141/1 & D2769		XSTRATA COAL PLAN Nr / PLAN No TOP-J&G-5003-CV-01-1200			

PROVINCE PLAN No
XSTRATA COAL PLAN No
MRS 06/--/09Lyn
TOP-J&G-5003-CV-01-1200

FOR INFORMATION ONLY

V:002368 - Tweefontein Realignment (CC & Road) (2011) Working Drawings/Alternative 2012/Preliminary Design/rev AB



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- EXISTING ROAD
- EXISTING RAILWAY
- FUTURE RAILWAY

CENTRE LINE CO-ORDINATES

Road D2769 (Lo 29°)

Chainage km	Y-Coord +0.000	X-Coord +0.000
1000.000	-18486.246	2880441.875
1045.695	-18531.710	2880435.111 BC 2
1130.671	-18613.178	2880412.678 EC 2
1251.848	-18725.269	2880366.641

Contour interval = 1m

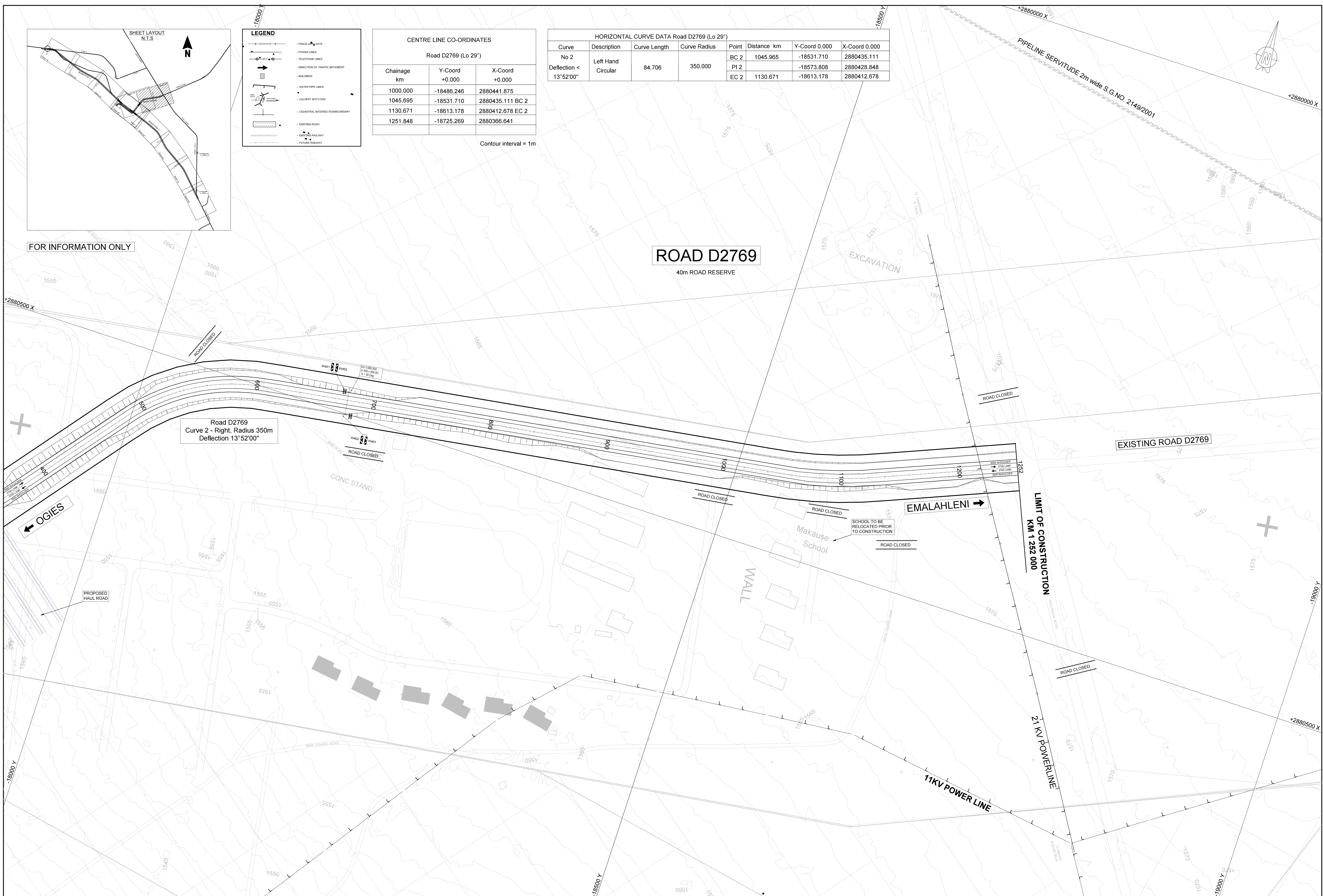
HORIZONTAL CURVE DATA Road D2769 (Lo 29°)

Curve	Description	Curve Length	Curve Radius	Point	Distance km	Y-Coord 0.000	X-Coord 0.000
No 2 Deflection < 13°52'00"	Left Hand Circular	84.706	350.000	BC 2	1045.965	-18531.710	2880435.111
				PI 2		-18573.808	2880428.848
				EC 2	1130.671	-18613.178	2880412.678

FOR INFORMATION ONLY

ROAD D2769
40m ROAD RESERVE

Road D2769
Curve 2 - Right, Radius 350m
Deflection 13°52'00"

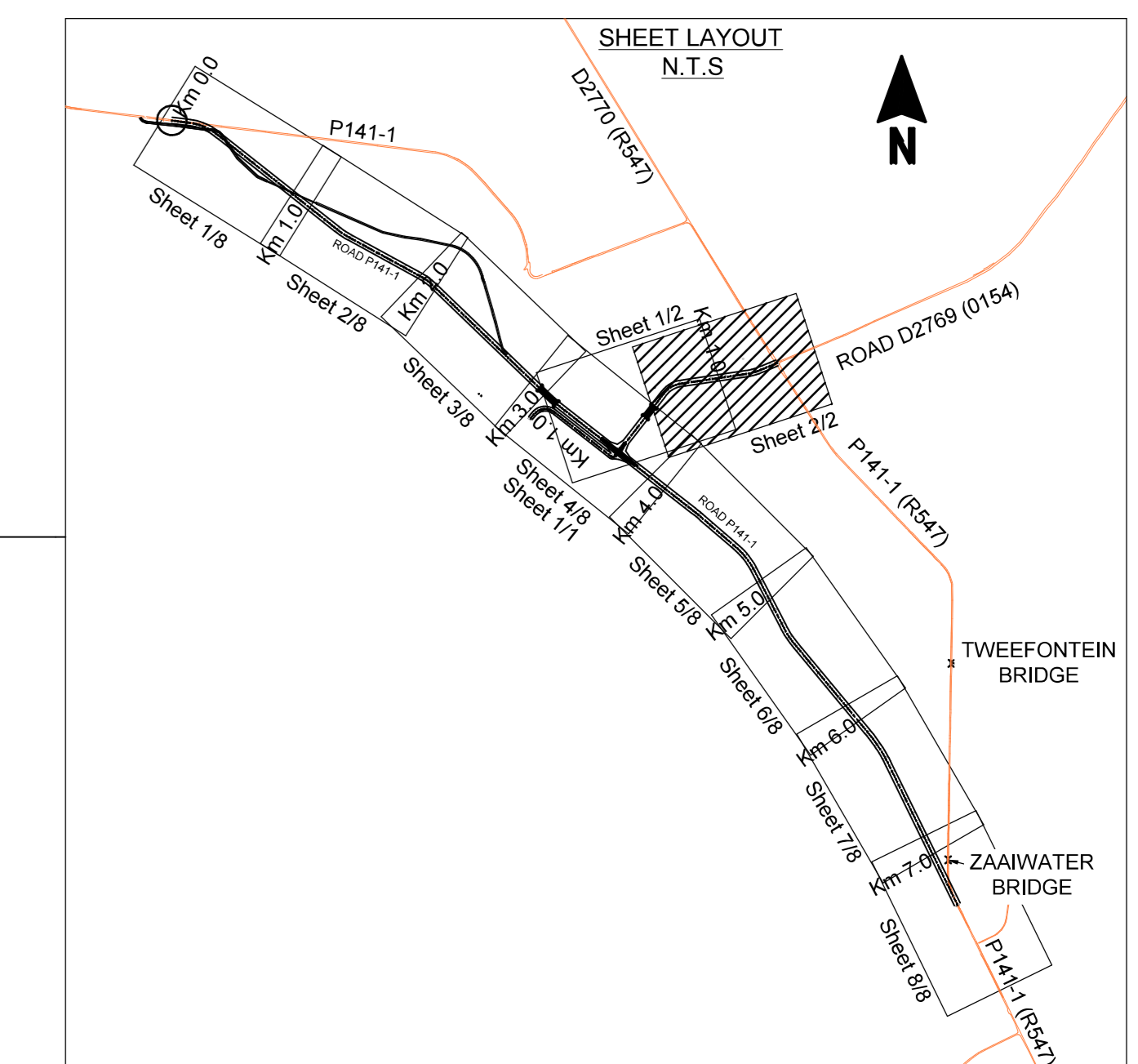


SURVEYED BY: LIDAR SURVEY NOVEMBER 2011 PROVIDED BY XSTRATA		DESIGNED FOR: TWEEFONTEIN PROJECT XSTRATA COAL SA		DESIGNED BY: JEFFARES & GREEN PTY (Ltd) ENGINEERING AND ENVIRONMENTAL CONSULTING		ONTWERP GOEDGEKEUR DESIGN APPROVED		GOEDGEKEUR DEUR APPROVED BY		ONTWERP DEUR DESIGNED BY NAGESSEN DEUR CHECKED BY		IN CCLR TB CCLR		MPUMALANGA REGERING OPENBARE WERKE PAAIE EN VERVOER MPUMALANGA MPUMALANGA GOVERNMENT PUBLIC WORKS, ROADS AND TRANSPORT		SKAAL / SCALE 1:1000		LEER Nr / FILE No ---		DISTRIK / DISTRICT NKANGALA		PROVINSIE PLAN Nr / PROVINCE PLAN No MRS 06/--/10Lyn	
WYSIGINGS / AMENDMENTS		xstrata		JEFFARES & GREEN		rms Raadgeverde Ingenieur for Consulting Engineers		rms Hoof van Departement for Head of Department		GIEKTEKEN DEUR DRAWN BY NAGESSEN DEUR CHECKED BY		REALIGNMENT OF PROVINCIAL ROADS		ROAD D2769 LAYOUT KM 1.000 TO 1.251		TIPPE ONTWERP / TYPE OF PLANNING PRELIMINARY DESIGN		PAD Nr / ROAD No P141/1 & D2769		XSTRATA COAL PLAN Nr / PLAN No TOP-J&G-5003-CV-01-1201			

W-002268 - Tweefontein Re-alignment (CC & Road) 03 Drawings/Working Drawings/Alternative 2012/Preliminary Design/Rev AB

PROVINCE PLAN No
XSTRATA COAL PLAN No
MRS 06/--/10Lyn
TOP-J&G-5003-CV-01-1201

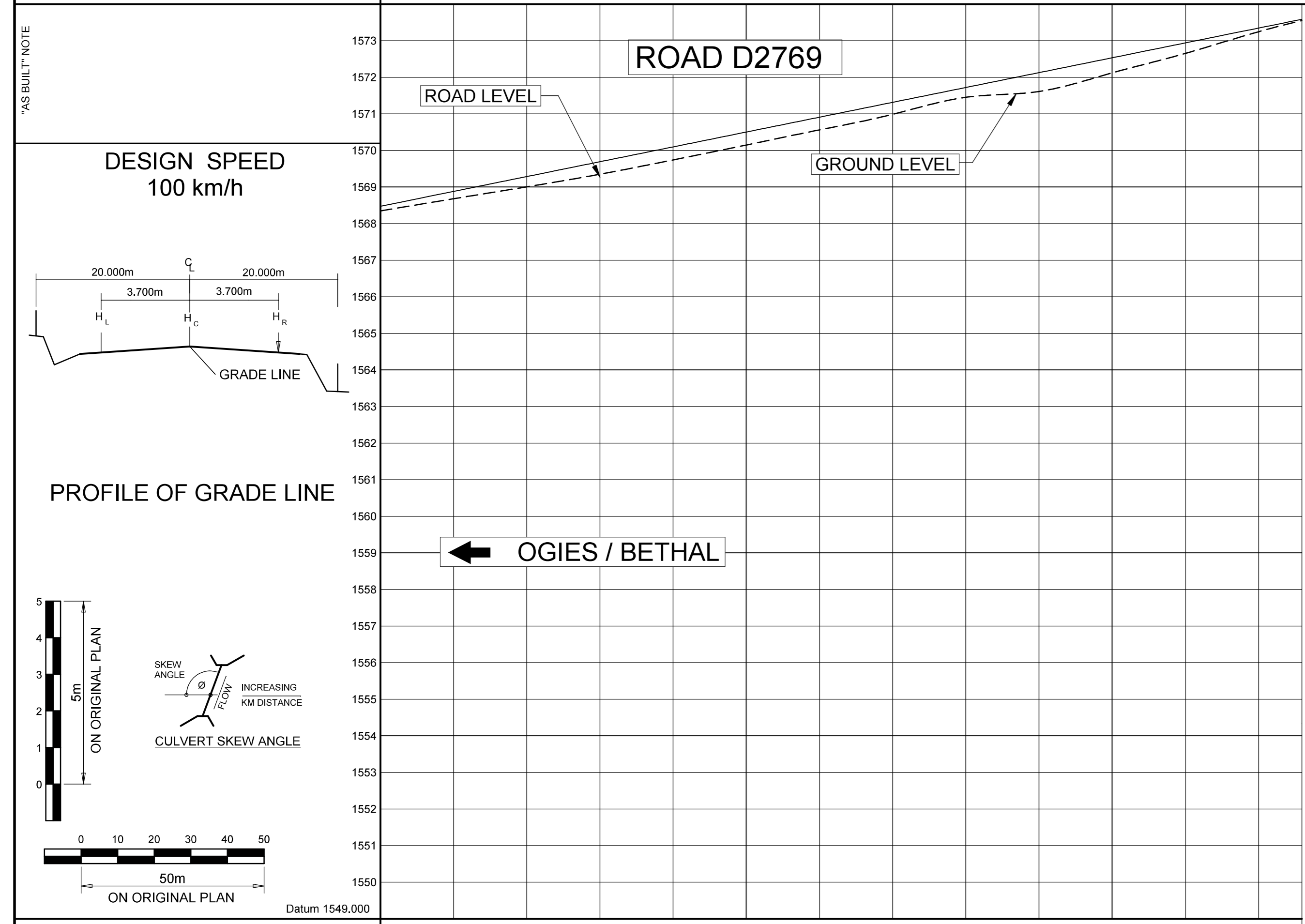
REFERENCE DRAWINGS		TITLE	SIGNATURE	TITLE	SIGNATURE
DRG No.	DESCRIPTION	MECHANICAL		DRAWN BY	
		PROCESS		CHECK BY	
		PIPING		MANAGER ENGINEERING	
		CIVIL		TECHNICAL PROJECT MANAGER	
		STRUCTURAL		AREA MANAGER	
		ELECTRICAL/INSTRUMENTATION		CLIENT	



SETTING OUT DATA AND REFERENCE PEGS

← DESIGN SPEED = 100 Km/h →

CENTRE LINE



VERTICAL CURVES		GRADE											
		2.029 %											
FINAL ROAD LEVELS	H _L 3.7 m LEFT	1568.399	1568.473	1568.547	1568.621	1568.695	1568.769	1568.843	1568.917	1568.991	1569.065	1569.139	1569.213
	H _C ON C	1568.860	1568.934	1569.008	1569.082	1569.156	1569.230	1569.304	1569.378	1569.452	1569.526	1569.600	1569.674
	H _R 3.7 m RIGHT	1570.309	1570.383	1570.457	1570.531	1570.605	1570.679	1570.753	1570.827	1570.901	1570.975	1571.049	1571.123
SUPERELEVATION													
GROUND LEVELS ON CENTRE LINE		1568.345	1568.419	1568.493	1568.567	1568.641	1568.715	1568.789	1568.863	1568.937	1569.011	1569.085	1569.159
CHAINAGE m		1000	1020	1040	1060	1080	1100	1120	1140	1160	1180	1200	1220

GUARD RAIL LEFT													
KERB OR PAVING LEFT													
SURFACED SHOULDER LEFT													
SURFACED SHOULDER RIGHT													
KERB OR PAVING RIGHT													
GUARD RAIL RIGHT													
HORIZONTAL ALIGNMENT		Direction 262°	T045 365 BCC	Curve 2 Left Radius=350.000 Angle=14°	ECC 11.93071	Direction 248°							
DRAINAGE		KILOMETRE DISTANCE SIZE AND ANGLE Ø											

SURVEYED BY: Lidar Survey Received 26/10/2011 From Xstrata		DESIGNED BY: TWEEFONTEIN PROJECT XSTRATA COAL SA		ONTWERP DEUR / DESIGNED BY: JEFFARES & GREEN PTY (LTD) ENGINEERING AND ENVIRONMENTAL CONSULTING		ONTWERP GOEDGEKEUR / DESIGN APPROVED: [Signature]		GOEDGEKEUR DEUR / APPROVED BY: [Signature]		ONTWERP DEUR / DESIGNED BY: [Signature]		MPUMALANGA REGERING / OPENBARE WERKE, FASE BY VERVOER: MPUMALANGA		MPUMALANGA GOVERNMENT / PUBLIC WORKS, ROADS AND TRANSPORT: [Signature]	
DATE: 18/12/2012		DATE: 18/12/2012		DATE: 18/12/2012		DATE: 18/12/2012		DATE: 18/12/2012		DATE: 18/12/2012		DATE: 18/12/2012		DATE: 18/12/2012	
FOR APPROVAL		FOR APPROVAL		FOR APPROVAL		FOR APPROVAL		FOR APPROVAL		FOR APPROVAL		FOR APPROVAL		FOR APPROVAL	

FOR INFORMATION ONLY

PROVINCE PLAN No MRS 06/-/1015
 XSTRATA COAL PLAN No TOP-J&G-5003-CV-01-1203

W:\002958 - Tweefontein Realignment (CC) in Road\03 Drawings\Working Drawings\Alternative 2012\Preliminary Design\Rev AR292958_N_TOP-J&G-5003-CV-01-1203.dwg