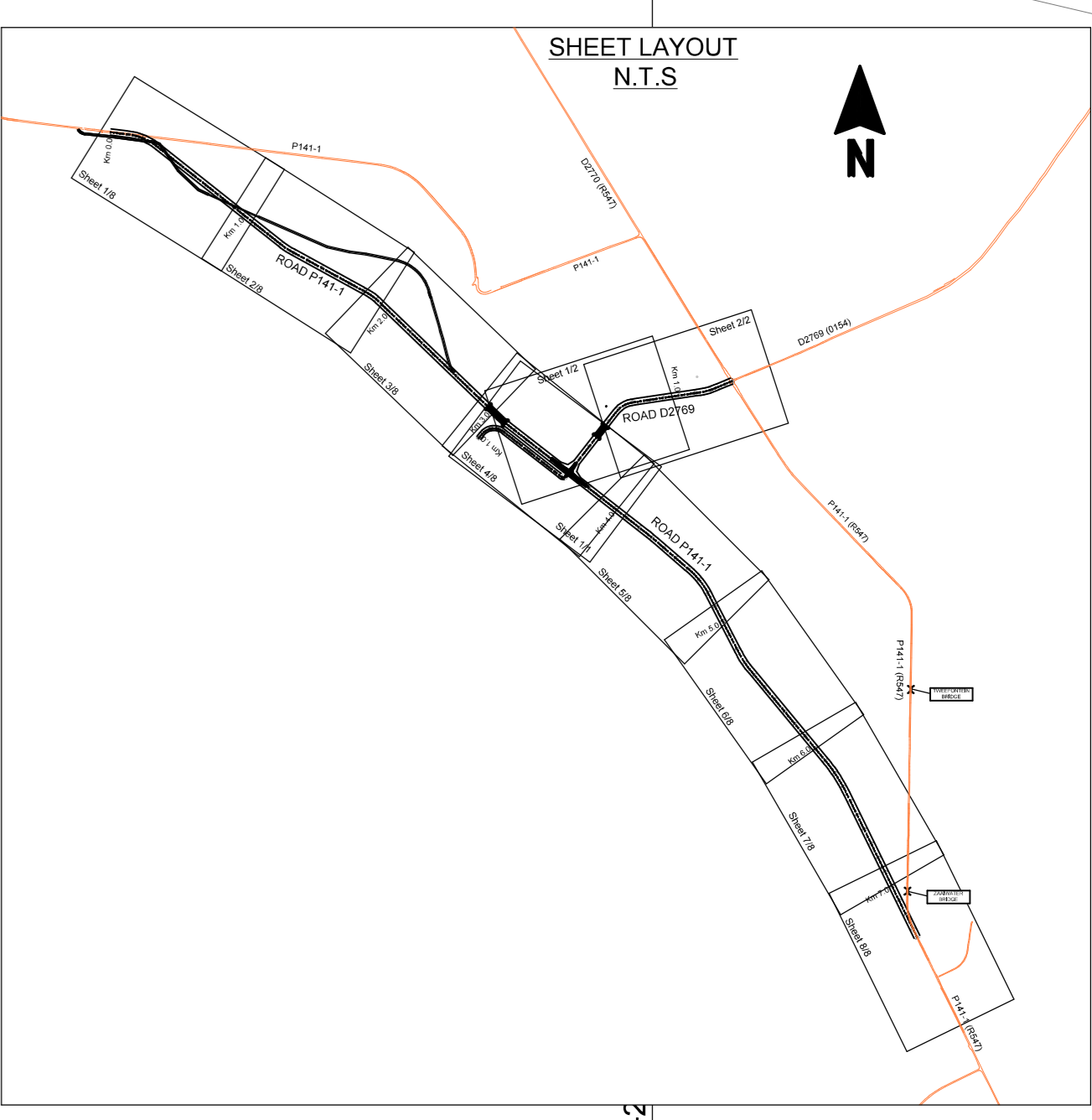


LEGEND

- FENCE & GATE
- POWER LINES
- TELEPHONE LINES
- DIRECTION OF TRAFFIC MOVEMENT
- RAILROADS
- WATER PIPE LINES
- CULVERT NOTATION
- CADASTRAL INTERSECTION/BOUNDARY
- EXISTING ROAD
- EXISTING RAILWAY
- FUTURE RAILWAY

CULVERT NUMBER (No.)	DESIGN DISTANCE (km)	REFERENCE LAYOUT DRAWING	OPENINGS / SIZE TYPE & CULVERT (CLASS)	SKEW ANGLE (deg)	SETTING OUT DETAILS				HYDRAULIC INFORMATION					REMARKS			
					LEFT (m)	RIGHT (m)	TOTAL (m)	INVERT LEVELS (1.22m No.)	LEFT (m)	RIGHT (m)	RETURN PERIOD (1 year)	AREA (km ²)	RUNOFF (m ³ /s)		GRADE IN STRUCTURE (%)	HW/D (m/m)	FREE BOARD (m)
ROAD P141-1																	
1	0.905 000	MRS 06/xx/011/yn	41240x2400 BC (75S)	90	8.992	9.308	18.300	15	1534.228	1534.010	25	10.343	102.887	-1.183	1.778	-0.364	
2	1.370 000	MRS 06/xx/021/yn	2750x750 BC (200S)	90	7.979	10.321	18.300	15	1535.534	1534.401	25	0.171	1.634	-6.192	3.756	0.068	
3	1.720 000	MRS 06/xx/021/yn	2750x750 BC (200S)	90	7.360	8.500	15.860	13	1534.124	1533.105	25	0.184	1.834	-6.430	3.002	-0.364	
4	2.050 000	MRS 06/xx/021/yn	31240x1200 BC (75S)	90	8.819	9.481	18.300	15	1533.634	1533.028	25	2.869	14.520	-3.313	2.762	-0.364	
5	2.670 000	MRS 06/xx/031/yn	2900x900 BC (175S)	90	8.890	13.070	21.960	18	1539.000	1536.151	25	0.506	3.121	-12.973	5.554	-0.134	
6	2.870 000	MRS 06/xx/031/yn	1750x750 BC (200S)	90	16.157	20.443	36.600	30	1538.486	1535.592	25	0.126	0.886	-7.908	13.360	-0.134	
7	3.430 000	MRS 06/xx/031/yn	11200x900 BC (150S)	90	9.867	12.093	21.960	18	1529.459	1527.943	25	0.528	3.809	-6.902	5.057	-0.134	
8	3.900 000	MRS 06/xx/041/yn	2900x900 BC (175S)	90	7.382	8.478	15.860	13	1531.241	1530.488	25	0.400	2.924	-4.748	2.394	-0.134	
9	4.370 000	MRS 06/xx/041/yn	31200x1200 BC (150S)	90	7.298	8.562	15.860	13	1528.586	1527.590	25	1.142	7.120	-6.278	2.348	-0.364	
10	4.720 000	MRS 06/xx/041/yn	62400x1200 BC (75S)	90	7.707	8.153	15.860	13	1571.809	1571.503	25	13.135	36.780	-1.935	1.735	-0.134	
11	5.950 000	MRS 06/xx/041/yn	1750x750 BC (200S)	90	8.840	8.240	17.080	14	1536.733	1537.144	25	0.119	0.981	2.407	3.171	-0.775	
12	6.240 000	MRS 06/xx/051/yn	1750x750 BC (200S)	90	9.383	7.697	17.080	14	1535.460	1536.175	25	0.184	1.595	4.185	2.892	-1.071	
13	7.100 000	MRS 06/xx/051/yn	412100x1200 BC (75S)	90	8.239	7.621	15.860	13	1513.894	1514.119	25	7.500	23.122	2.680	1.829	-0.559	
D2769																	
14	0.680 000	MRS 06/xx/101/yn	2900x900 BC (175S)	90	7.582	8.278	15.860	13	1560.968	1560.089	25	0.298	4.996	-3.020	2.096	-0.134	
MIA ACCESS																	
15	0.230 000	MRS 06/xx/101/yn	2900x900 BC (150S)	90	6.429	5.771	12.200	10	1525.658	1526.116	25	0.528	4.885	3.752	2.013	-0.552	



SURVEYED BY: LIDAR SURVEY NOVEMBER 2011 PROVIDED BY XSTRATA		DESIGNED BY: TWEEFONTEIN PROJECT XSTRATA COAL SA		ENGINEERING AND ENVIRONMENTAL CONSULTING: JEFFARES & GREEN PTY (Ltd) TEL: (012) 348-7900 FAX: (012) 348-7978 E-MAIL: jg@jg.co.za		APPROVED BY: ONTWERP GOEDGEKEUR DESIGN APPROVED: PR 980444		GOEDGEKEUR DEUR APPROVED BY: rms Raadgevende Ingenieur for Consulting Engineers		ONTWERP DEUR CHECKED BY: NAGESIEN DEUR		MIPUMALANGA REGERING OPENBARE WERKE, PAAIE EN VERVEER: 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/-/Sp	
WYSIGINGS / AMENDMENTS		DATE		DATE		DATE		DATE		DATE		DATE		DATE		DATE		DATE		DATE		DATE	
TWEEFONTEIN PROJECT XSTRATA COAL SA		JEFFARES & GREEN		PR 980444		MIPUMALANGA GOVERNMENT PUBLIC WORKS, ROADS AND TRANSPORT		MPUMALANGA		MRS 06/-/Sp		MPUMALANGA		MPUMALANGA		MPUMALANGA		MPUMALANGA		MPUMALANGA		MPUMALANGA	