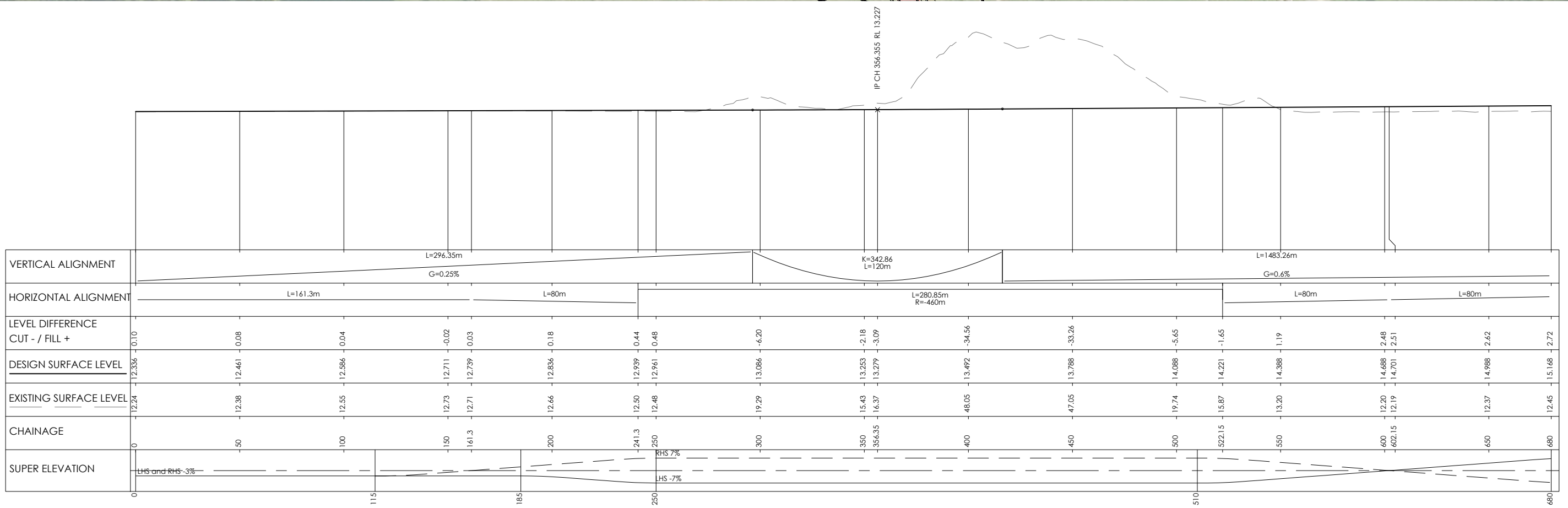
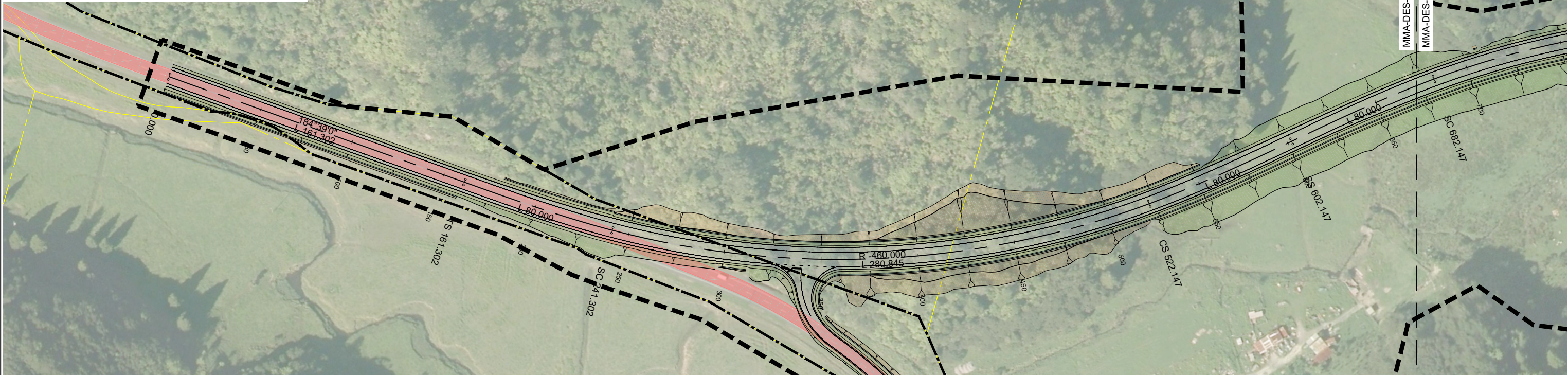
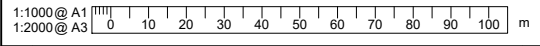


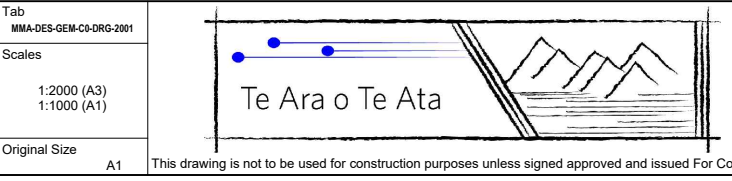
- NOTES
1. COORDINATE SYSTEM: NEW ZEALAND TRANSVERSE MERCATOR 2000 (NZTM2000).
  2. HEIGHT DATUM: TARANAKI 1970 SEA LEVEL (TARAHT 1970).
  3. FOR GENERAL ARRANGEMENTS SEE DRAWINGS MMA-DES-GEM-C0-DRG-1000\_1010.
  4. FOR CROSS SECTIONS SEE DRAWINGS MMA-DES-GEM-C0-DRG-3011\_3014.
  5. FOR TUNNEL DESIGN SEE DRAWING MMA-DES-TUN-C0-DRG-1001.
  6. FOR BRIDGE DESIGN SEE DRAWINGS MMA-DES-STR-C0-1101\_1103.



LONGITUDINAL SECTION - MCE1-2



Tab	MMA-DES-GEM-C0-DRG-2001				
Scales	1:2000 (A3) 1:1000 (A1)				
Original Size	A1				
QDO'S	WHE	GC	LG	LG	14/11/2017
Draw	Design	Design	Design	Approved	Date



**NZ TRANSPORT AGENCY**  
WAKA KOTAHĪ  
**Mt Messenger Bypass**

**MT MESSENGER BYPASS**  
**GEOMETRICS**  
**PLAN AND LONG SECTION**  
**SHEET 1**

Approved	<b>D. KENDERDINE</b>
Status	<b>FOR CONSENT</b>
Drawing Number	<b>MMA-DES-GEM-C0-DRG-2001</b>
Revision	<b>A</b>

- NOTES
1. COORDINATE SYSTEM: NEW ZEALAND TRANSVERSE MERCATOR 2000 (NZTM2000).
  2. HEIGHT DATUM: TARANAKI 1970 SEA LEVEL (TARAHT 1970).
  3. FOR GENERAL ARRANGEMENTS SEE DRAWINGS MMA-DES-GEM-CO-DRG-1000\_1010.
  4. FOR CROSS SECTIONS SEE DRAWINGS MMA-DES-GEM-CO-DRG-3011\_3014.
  5. FOR TUNNEL DESIGN SEE DRAWING MMA-DES-TUN-CO-DRG-1001.
  6. FOR BRIDGE DESIGN SEE DRAWINGS MMA-DES-STR-CO-1101\_1103.



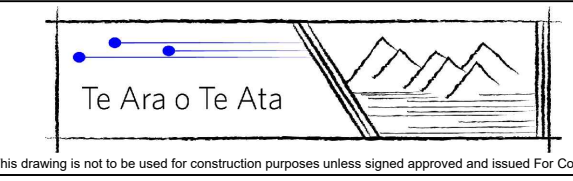
VERTICAL ALIGNMENT	L=1483.26m G=0.6%																				
HORIZONTAL ALIGNMENT	L=237.01m R=460m			L=80m		L=30m		L=80m			L=226.61m R=460m			L=80m							
LEVEL DIFFERENCE CUT - / FILL +	2.72	2.86	2.46	1.75	1.38	-1.82	-2.96	3.44	-0.41	-4.98	-6.10	-3.16	-12.23	-19.40	-25.92	-26.32	-27.79	-0.45	-1.55	-0.98	-1.30
DESIGN SURFACE LEVEL	15.168	15.181	15.288	15.588	15.888	16.188	16.488	16.603	16.788	17.083	17.263	17.388	17.688	17.743	17.988	18.288	18.588	18.888	19.103	19.188	19.248
EXISTING SURFACE LEVEL	12.45	12.52	12.63	13.84	14.51	18.00	13.53	13.16	17.20	22.06	23.37	20.55	29.91	37.14	43.91	44.61	46.37	48.44	47.55	48.21	48.54
CHAINAGE	680	700	750	800	850	900	919.16	950	999.16	1029.16	1050	1100	1109.16	1150	1200	1250	1300	1335.78	1350	1360	
SUPER ELEVATION																					

LONGITUDINAL SECTION - MCE1-2

1:1000 @ A1  
1:2000 @ A3

Rev	Description	Drawn	Checked	Designed	Design Checked	Approved	Date
A	FOR CONSENT	QDO'S	WHE	GC	LG	LG	14/11/2017

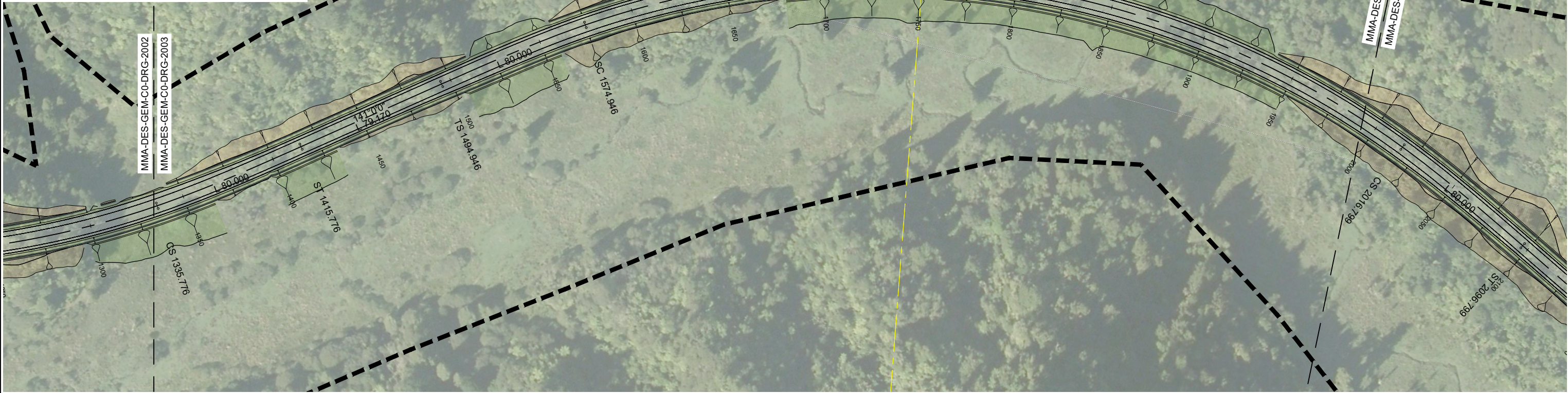
Tab	MMA-DES-GEM-CO-DRG-2002
Scales	1:2000 (A3) 1:1000 (A1)
Original Size	A1



**MT MESSENGER BYPASS**  
**GEOMETRICS**  
**PLAN AND LONG SECTION**  
**SHEET 2**

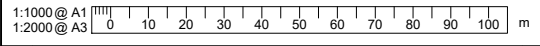
Approved	<b>D. KENDERDINE</b>
Status	<b>FOR CONSENT</b>
Drawing Number	<b>MMA-DES-GEM-CO-DRG-2002</b>
Revision	<b>A</b>

- NOTES
1. COORDINATE SYSTEM: NEW ZEALAND TRANSVERSE MERCATOR 2000 (NZTM2000).
  2. HEIGHT DATUM: TARANAKI 1970 SEA LEVEL (TARAHT 1970).
  3. FOR GENERAL ARRANGEMENTS SEE DRAWINGS MMA-DES-GEM-CO-DRG-1000\_1010.
  4. FOR CROSS SECTIONS SEE DRAWINGS MMA-DES-GEM-CO-DRG-3011\_3014.
  5. FOR TUNNEL DESIGN SEE DRAWING MMA-DES-TUN-CO-DRG-1001.
  6. FOR BRIDGE DESIGN SEE DRAWINGS MMA-DES-STR-CO-1101\_1103.



VERTICAL ALIGNMENT	L=1483.26m G=0.6%															K=86.96 L=600m				
HORIZONTAL ALIGNMENT	L=80m			L=79.17m			L=80m			L=441.85m R=460m					L=80m					
LEVEL DIFFERENCE CUT - / FILL +	-1.30	-3.40	-2.93	-5.02	-7.82	-3.89	2.58	-8.89	-18.11	-7.69	2.18	-3.22	-2.49	-3.01	-2.83	-3.11	-19.25	-18.34	-24.62	
DESIGN SURFACE LEVEL	19.248	19.488	19.583	19.788	20.058	20.088	20.388	20.538	20.688	20.988	21.288	21.588	21.888	22.188	22.488	22.934	23.668	23.979	24.462	
EXISTING SURFACE LEVEL	20.54	22.88	22.51	24.81	27.87	23.98	17.80	15.74	38.79	28.68	19.11	18.37	19.39	19.18	19.66	26.05	42.92	42.32	49.08	
CHAINAGE	1360	1400	1415.78	1450	1494.95	1500	1550	1574.95	1600	1650	1700	1750	1800	1850	1900	1950	2000	2016.8	2040	
SUPER ELEVATION	RHS 4.9%			LHS -3%			RHS -3%			LHS 7%			RHS -7%			LHS 4.9%			RHS -3%	

LONGITUDINAL SECTION - MCE1-2

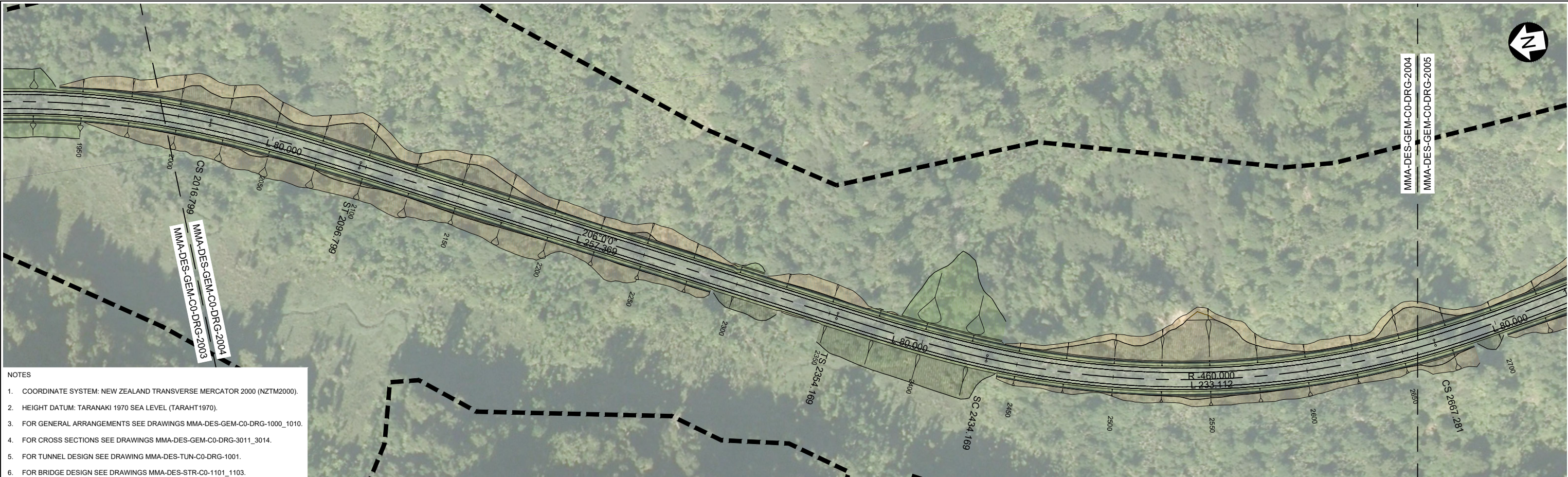


Tab	MMA-DES-GEM-CO-DRG-2003
Scales	1:2000 (A3) 1:1000 (A1)
Original Size	A1
Drawn	QDO'S
Checked	WHE
Designed	GC
Design Checked	LG
Approved	LG
Date	14/11/2017

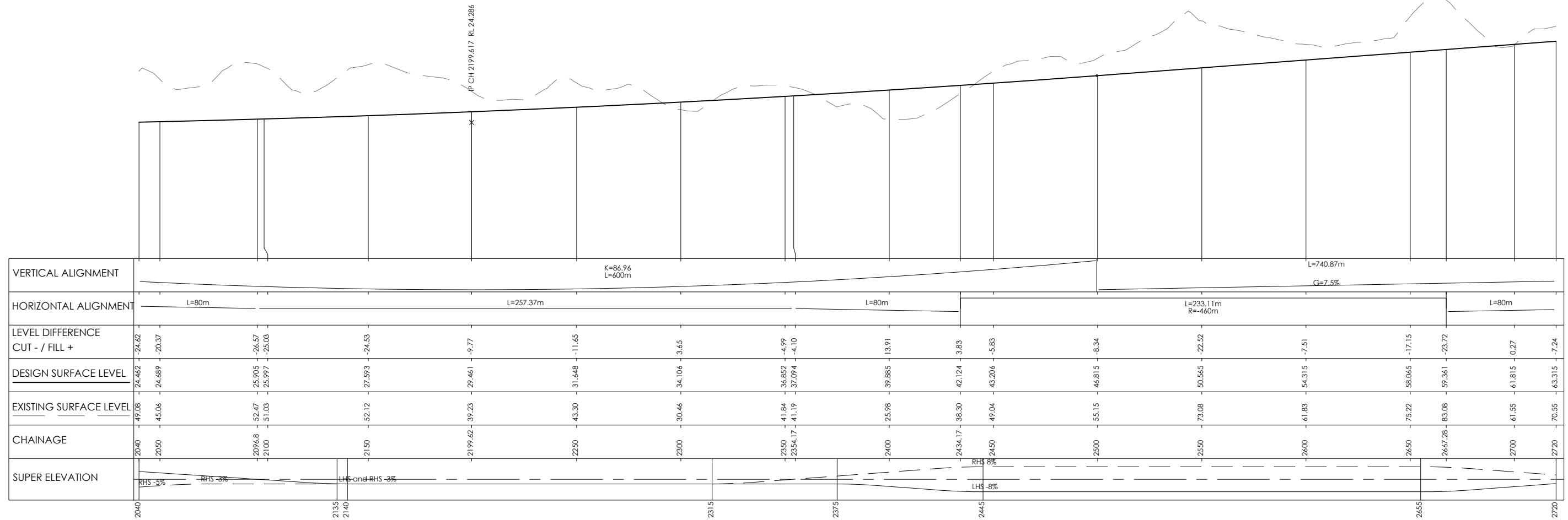


MT MESSENGER BYPASS  
GEOMETRICS  
PLAN AND LONG SECTION  
SHEET 3

Approved	D. KENDERDINE
Status	FOR CONSENT
Drawing Number	MMA-DES-GEM-CO-DRG-2003
Revision	A



- NOTES
1. COORDINATE SYSTEM: NEW ZEALAND TRANSVERSE MERCATOR 2000 (NZTM2000).
  2. HEIGHT DATUM: TARANAKI 1970 SEA LEVEL (TARAHT1970).
  3. FOR GENERAL ARRANGEMENTS SEE DRAWINGS MMA-DES-GEM-CO-DRG-1000\_1010.
  4. FOR CROSS SECTIONS SEE DRAWINGS MMA-DES-GEM-CO-DRG-3011\_3014.
  5. FOR TUNNEL DESIGN SEE DRAWING MMA-DES-TUN-CO-DRG-1001.
  6. FOR BRIDGE DESIGN SEE DRAWINGS MMA-DES-STR-CO-1101\_1103.

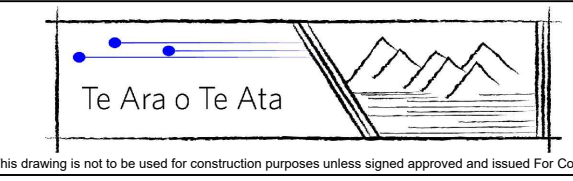


LONGITUDINAL SECTION - MCE1-2

1:1000 @ A1  
1:2000 @ A3

Rev	Revision Description	Drawn	Checked	Designed	Design Checked	Approved	Date
A	FOR CONSENT	QDO'S	WHE	GC	LG	LG	14/11/2017

Tab	MMA-DES-GEM-CO-DRG-2004
Scales	1:2000 (A3) 1:1000 (A1)
Original Size	A1

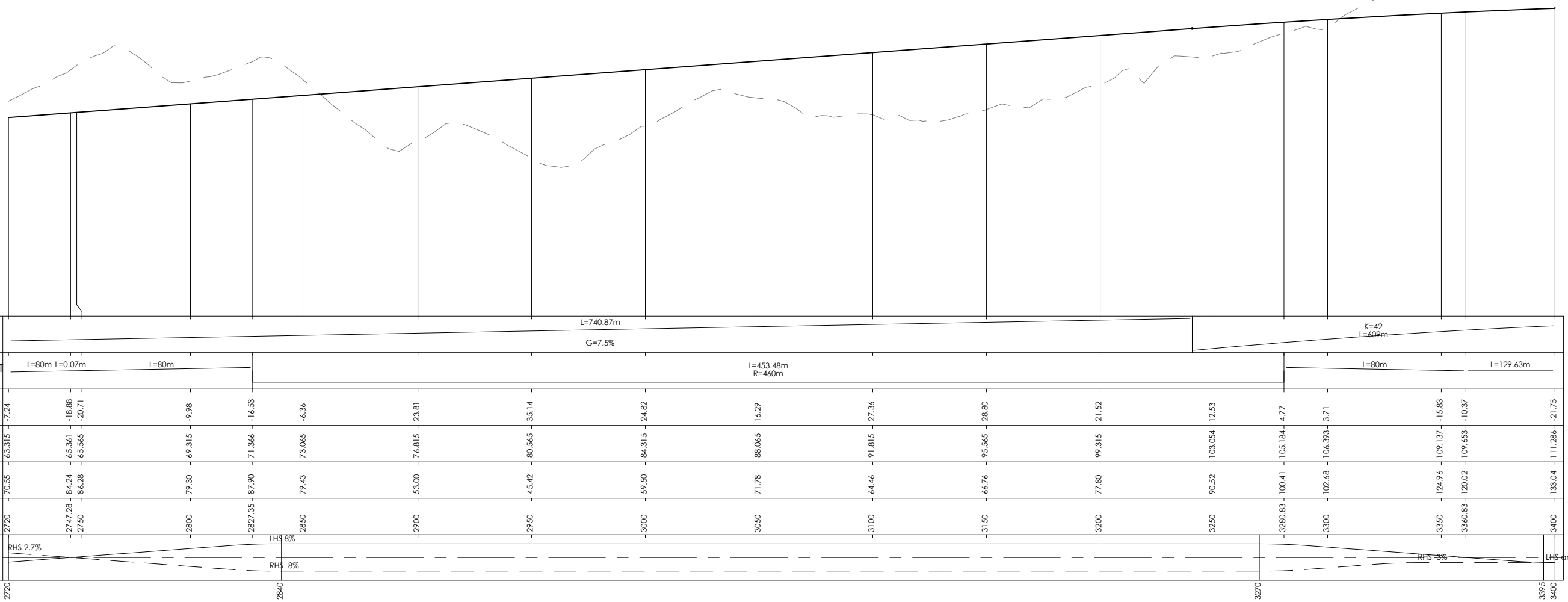
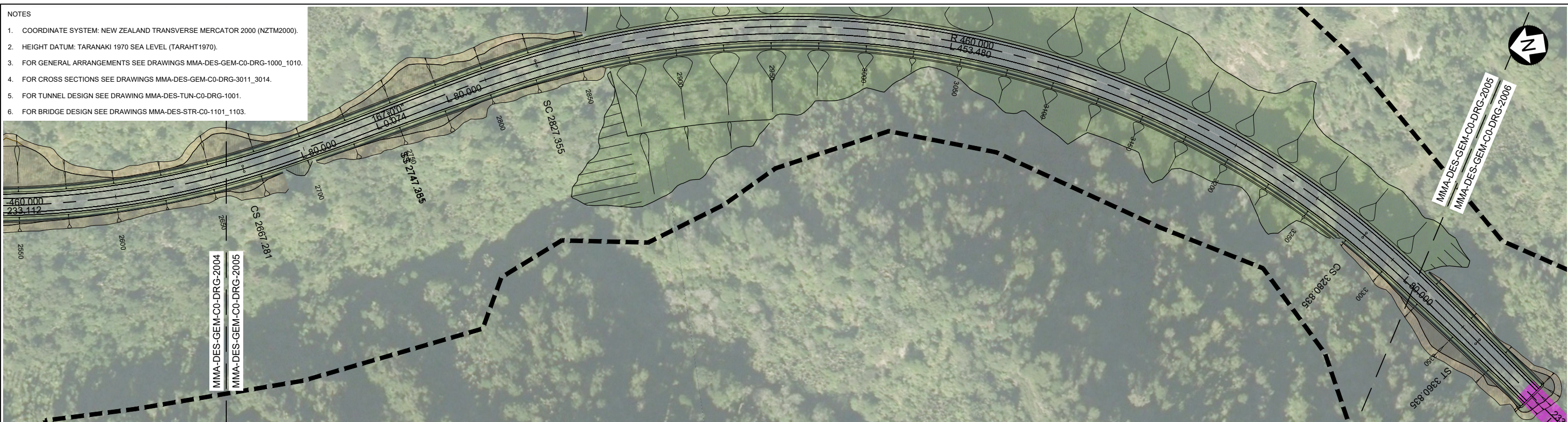


**MT MESSENGER BYPASS**  
**GEOMETRICS**  
**PLAN AND LONG SECTION**  
**SHEET 4**

Approved	<b>D. KENDERDINE</b>
Status	<b>FOR CONSENT</b>
Drawing Number	<b>MMA-DES-GEM-CO-DRG-2004</b>
Revision	<b>A</b>

NOTES

1. COORDINATE SYSTEM: NEW ZEALAND TRANSVERSE MERCATOR 2000 (NZTM2000).
2. HEIGHT DATUM: TARANAKI 1970 SEA LEVEL (TARAHT 1970).
3. FOR GENERAL ARRANGEMENTS SEE DRAWINGS MMA-DES-GEM-C0-DRG-1000\_1010.
4. FOR CROSS SECTIONS SEE DRAWINGS MMA-DES-GEM-C0-DRG-3011\_3014.
5. FOR TUNNEL DESIGN SEE DRAWING MMA-DES-TUN-C0-DRG-1001.
6. FOR BRIDGE DESIGN SEE DRAWINGS MMA-DES-STR-C0-1101\_1103.



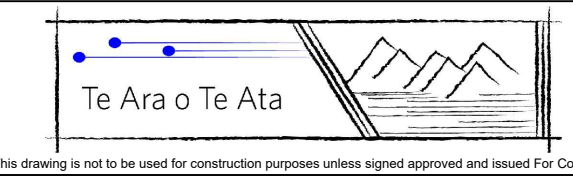
VERTICAL ALIGNMENT	L=740.87m G=7.5%																		K=42 L=609m	
HORIZONTAL ALIGNMENT	L=80m L=0.07m		L=80m		L=453.48m R=460m												L=80m		L=129.63m	
LEVEL DIFFERENCE CUT - / FILL +	7.24	-18.88	-20.71	-9.98	-16.53	-6.36	23.81	35.14	24.82	16.29	27.56	28.80	21.52	12.53	4.77	3.71	-15.83	-10.37	-21.75	
DESIGN SURFACE LEVEL	63.315	65.361	65.565	69.315	71.366	73.065	76.815	80.565	84.315	88.065	91.815	95.565	99.315	103.054	105.184	106.393	109.137	109.653	111.286	
EXISTING SURFACE LEVEL	70.55	84.24	86.28	79.30	87.90	79.43	53.00	45.42	59.50	71.78	64.46	66.76	77.80	90.52	100.41	102.48	124.96	120.02	133.04	
CHAINAGE	2720	2747.28	2750	2800	2827.35	2850	2900	2950	3000	3050	3100	3150	3200	3250	3280.83	3300	3350	3340.83	3400	
SUPER ELEVATION	RHS 2.7%		LHS 8%												RHS 3%		LHS and RHS -3%			

LONGITUDINAL SECTION - MCE1-2

1:1000 @ A1  
1:2000 @ A3

Rev	Revision Description	Draw	QDO'S	WHE	GC	LG	LG	14/11/2017
A	FOR CONSENT							

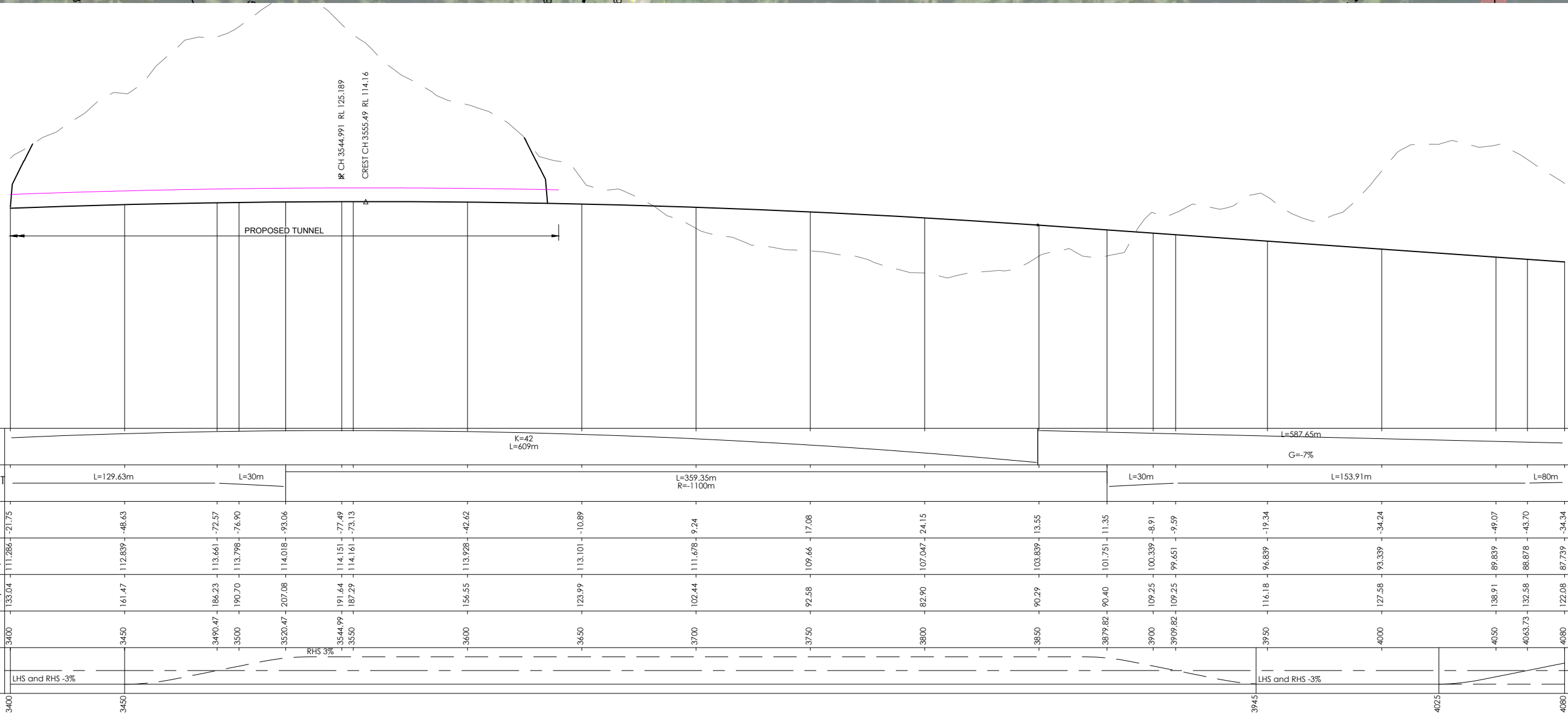
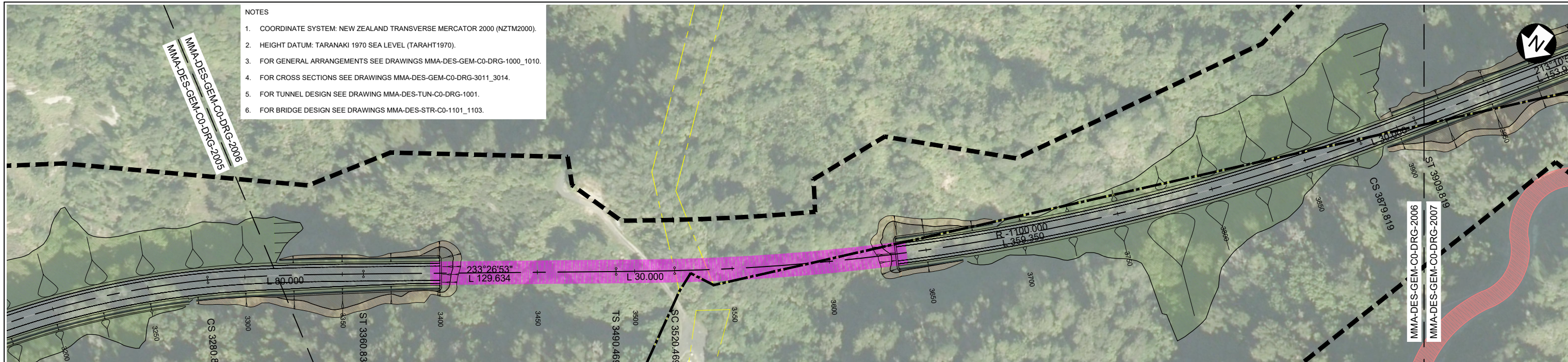
Tab	MMA-DES-GEM-C0-DRG-2005
Scales	1:2000 (A3) 1:1000 (A1)
Original Size	A1



**MT MESSENGER BYPASS**  
**GEOMETRICS**  
**PLAN AND LONG SECTION**  
**SHEET 5**

Approved	<b>D. KENDERDINE</b>
Status	<b>FOR CONSENT</b>
Drawing Number	<b>MMA-DES-GEM-C0-DRG-2005</b>
Revision	<b>A</b>

- NOTES
1. COORDINATE SYSTEM: NEW ZEALAND TRANSVERSE MERCATOR 2000 (NZTM2000).
  2. HEIGHT DATUM: TARANAKI 1970 SEA LEVEL (TARAHT1970).
  3. FOR GENERAL ARRANGEMENTS SEE DRAWINGS MMA-DES-GEM-C0-DRG-1000\_1010.
  4. FOR CROSS SECTIONS SEE DRAWINGS MMA-DES-GEM-C0-DRG-3011\_3014.
  5. FOR TUNNEL DESIGN SEE DRAWING MMA-DES-TUN-C0-DRG-1001.
  6. FOR BRIDGE DESIGN SEE DRAWINGS MMA-DES-STR-C0-1101\_1103.



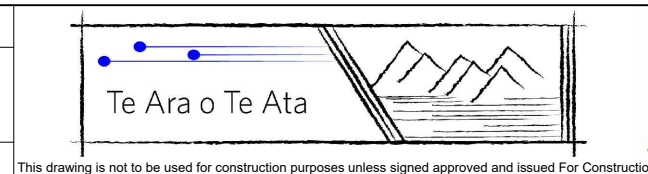
VERTICAL ALIGNMENT	K=42 L=609m																		L=587.65m G=-7%																	
HORIZONTAL ALIGNMENT	L=129.63m						L=30m			L=359.35m R=1100m									L=30m			L=153.91m						L=80m								
LEVEL DIFFERENCE CUT - / FILL +	21.75	-48.63	-72.57	-76.90	-93.06	-77.49	-73.13	-42.62	-10.89	-9.24	-17.08	-24.15	-13.55	-11.35	-8.91	-9.59	-19.34	-34.24	-49.07	-43.70	-34.34															
DESIGN SURFACE LEVEL	111.286	112.839	113.661	113.798	114.018	114.151	114.161	113.928	113.101	111.678	109.66	107.047	103.839	101.751	100.339	99.651	96.839	93.339	89.839	88.878	87.739															
EXISTING SURFACE LEVEL	133.04	161.47	186.23	190.70	207.08	191.64	187.29	156.55	123.99	102.44	92.58	82.90	90.29	90.40	109.25	109.25	116.18	127.58	138.91	132.58	122.08															
CHAINAGE	3400	3450	3490.47	3550	3520.47	3544.99	3550	3600	3650	3700	3750	3800	3850	3879.82	3900	3909.82	3950	4000	4050	4063.73	4080															
SUPER ELEVATION	LHS and RHS -3%																																			

LONGITUDINAL SECTION - MCE1-2

1:1000 @ A1  
1:2000 @ A3

Rev	Description	Drawn	Checked	Designed	Design Checked	Approved	Date
A	FOR CONSENT	QDO'S	WHE	GC	LG	LG	14/11/2017

Tab	MMA-DES-GEM-C0-DRG-2006
Scales	1:2000 (A3) 1:1000 (A1)
Original Size	A1



**MT MESSENGER BYPASS**  
**GEOMETRICS**  
**PLAN AND LONG SECTION**  
**SHEET 6**

Approved	<b>D. KENDERDINE</b>
Status	<b>FOR CONSENT</b>
Drawing Number	<b>MMA-DES-GEM-C0-DRG-2006</b>
Revision	<b>A</b>







