

SETTING OUT CO-ORDINATES

LEVELS ARE TOP OF EARTHWORKS

Code	Y	X	Elevation
P1	48257.533	3289573.761	787.478
P2	48247.274	3289589.743	787.478
P68	48223.366	3289574.783	787.198
P3	48222.201	3289573.038	787.198
P4	48203.452	3289595.548	787.137
P5	48231.948	3289513.773	787.478
P6	48221.259	3289630.261	787.478
P7	48189.354	3289610.079	787.097
P8	48222.955	3289574.803	786.698
P9	48222.194	3289574.100	786.698
P11	48202.288	3289594.784	786.415
P12	48201.979	3289594.080	786.415
P13	48201.207	3289593.316	787.137
P14	48188.428	3289609.125	786.211
P15	48187.729	3289608.410	786.211
P16	48186.772	3289607.491	787.097
P17	48201.366	3289622.726	787.431
P18	48188.304	3289631.503	787.036
P19	48187.148	3289630.277	786.912
P20	48186.462	3289629.549	786.912
P21	48185.304	3289628.321	787.036
P22	48187.784	3289655.734	787.387
P23	48184.593	3289644.428	786.990
P24	48183.285	3289643.090	786.723
P25	48181.440	3289641.264	786.723
P26	48180.209	3289639.811	786.990
P27	48184.864	3289687.687	787.311
P28	48181.453	3289686.241	786.913
P29	48180.000	3289684.504	786.404
P30	48182.219	3289682.413	786.404
P31	48182.781	3289680.688	786.913
P32	48183.538	3289678.114	787.244
P33	48088.544	3289692.006	786.779
P34	48107.661	3289685.383	786.816
P35	48106.625	3289684.103	786.719
P36	48104.596	3289681.094	786.719
P37	48103.548	3289680.298	786.816
P38	48105.447	3289715.742	787.217
P39	48097.705	3289691.451	785.827
P40	48096.447	3289689.730	785.827
P41	48128.984	3289720.577	787.189
P42	48091.809	3289697.498	786.749
P43	48091.057	3289696.492	786.912
P44	48090.458	3289695.091	786.912
P45	48089.572	3289694.802	786.749
P46	48087.782	3289748.530	786.994
P47	48090.838	3289727.258	786.562
P48	48090.674	3289727.036	786.381
P49	48090.080	3289726.233	786.381
P50	48049.916	3289726.011	786.562
P51	48034.784	3289738.106	786.488
P52	48034.190	3289737.302	786.488
P53	48065.298	3289757.693	786.854
P54	48064.629	3289759.030	786.771
P55	48074.579	3289764.050	786.461
P56	48068.875	3289755.612	786.364
P57	48091.883	3289842.051	793.210
P58	48288.128	3289560.725	792.602
P57	48201.853	3289672.079	787.198
P58	48200.948	3289692.968	787.137
P59	48186.432	3289607.123	787.097
P60	48185.019	3289627.302	787.036
P61	48189.891	3289638.425	786.990
P62	48126.459	3289660.288	786.913
P63	48123.295	3289679.054	786.816
P64	48084.935	3289668.517	785.827
P65	48086.263	3289694.403	786.749
P66	48084.613	3289725.613	786.962
P67	48033.902	3289736.893	786.629
P68	48245.219	3289566.222	787.330

STORMWATER ATTENUATION CALCULATION

DESCRIPTION: BISHOP PROPERTY - CAMPERDOWN

LATITUDE: 29 49 49
LONGITUDE: 30 49

SMATHERS RETURN Tc DEPTH (mm) INTENSITY
1:10 15 33.1 110 = 132.4 mm/hr
1:50 15 53.6 150 = 214.4 mm/hr

RATIONAL METHOD: $Q_p = C \times I (mm/hr) \times A (m^2) / 3600$ IS

PRE-DEVELOPED RUNOFF COEFFICIENT CALCULATION

Area (m ²)	C
PRE-DEVELOPED SITE	14272 0.45 0.45
CONCRETE	0 0.90 0.00
ROOFS	0 1.00 0.00
ROADS/DRIVEWAYS	0 0.80 0.00
LAWNS	0 0.30 0.00
TOTAL AREA	14272 m ² 0.45 0.10 = 236 IS
Q 50 =	382 IS

POST-DEVELOPED RUNOFF COEFFICIENT CALCULATION

Area (m ²)	C
DEVELOPED SITE	14272 0.75 0.75
CONCRETE	0 0.90 0.00
ROOFS	0 1.00 0.00
ROADSIDE WALKS/APPRONS	0 0.80 0.00
LAWNS AND GARDENS	0 0.30 0.00
TOTAL AREA	14272 m ² 0.75 0.10 = 394 IS
Q 50 =	637 IS

PRE-DEVELOPED RUNOFF VOLUME: $V_i = Q_i \times 24 \times 60 / 2000$ m³

1:10	213m ³
1:50	344m ³

POST-DEVELOPED RUNOFF VOLUME: $V_i = Q_i \times 24 \times 60 / 2000$ m³

1:10	354m ³
1:50	574m ³

REQUIRED STORAGE - $V_{st} = V_i - V_{pre}$ m³

1:10	142m ³
1:50	230m ³

PRE-DEVELOPED 1:10 RUNOFF: $C_{10} = C \times 110 \times A (m^2) / 0.236$ m³/s

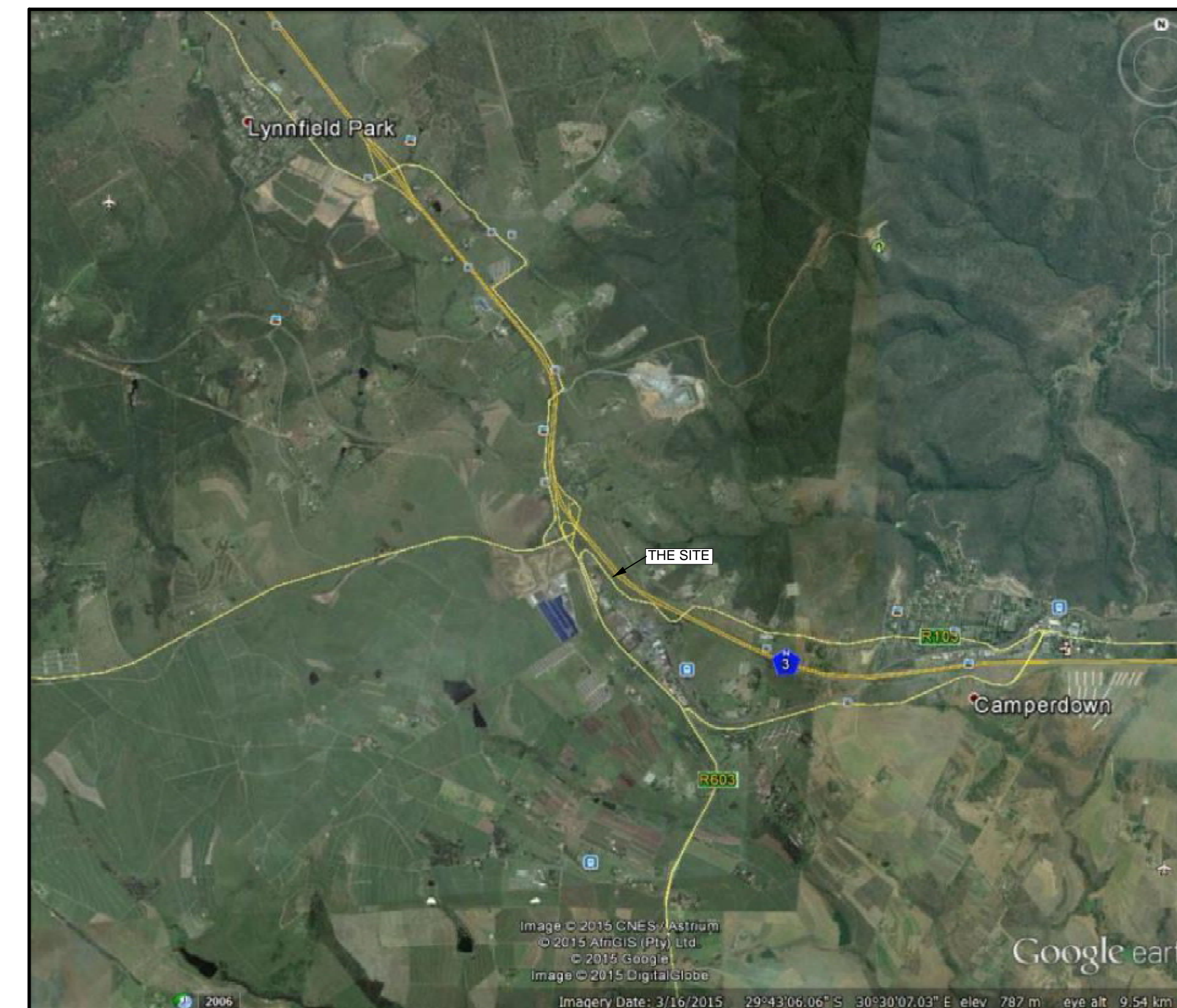
STORMWATER MANAGEMENT DECISIONS

- PROVIDE STORAGE FACILITY WITH CAPACITY OF 229 m³.
- THE DEVELOPED SITE IS TO DISCHARGE NOT MORE THAN 236 IS AT A TOTAL MAXIMUM STORAGE OF 229 m³.
- STORMWATER DISCHARGE FROM THE DEVELOPED SITE IS TO BE DIRECTED TO EXISTING COLLECTOR.
- ATTENUATION INFRASTRUCTURE TO BE LOCATED IN SOUTHERN CORNER OF SITE.

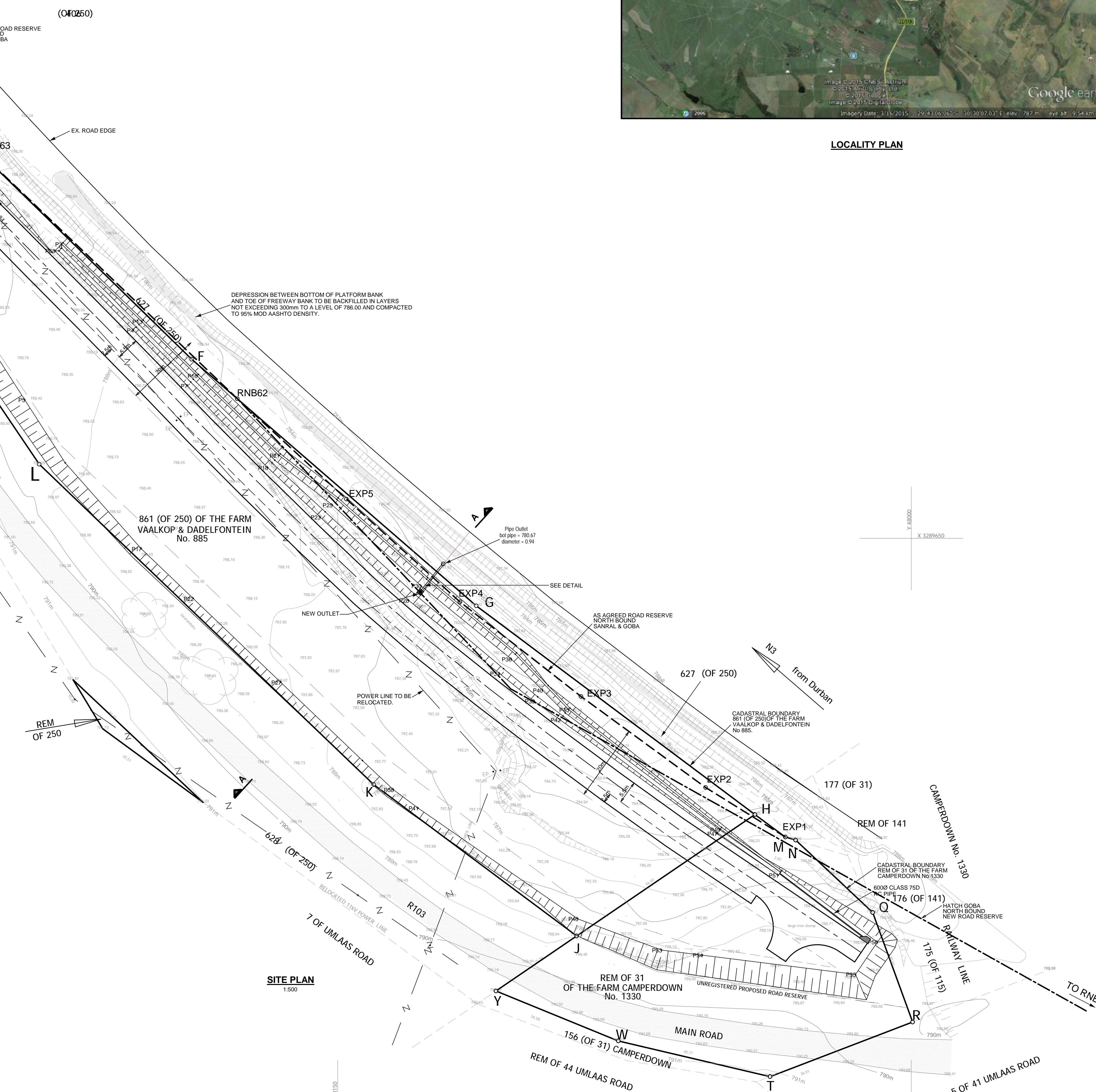
CO-ORDINATE SCHEDULE

861 (OF 250) OF THE FARM VAALKOP & DADELFFONTEIN No. 885				REM OF 31 OF THE FARM CAMPERDOWN No. 1330				AGREED MODIFIED NORTH BOUND EXPROPRIATION SANRALUGOBA				NEW ROAD RESERVE NORTH BOUND HATCH GOBA			
NAME	Y	X		NAME	Y	X		NAME	Y	X		NAME	Y	X	
A	48455.649	3289293.745		H	48040.904	3289722.244		EXP 1	48032.935	3289728.122		RNB 57	47684.65	3289928.24	
B	48384.439	3289278.971		M	48032.935	3289728.122		EXP 2	48032.935	3289728.122		RNB 58	47613.41	3289821.95	
C	48303.649	3289486.449		N	48032.935	3289728.122		EXP 3	48086.372	3289641.353		RNB 59	47681.93	3289822.23	
D	48276.793	3289511.998		Q	48010.088	3289747.865		EXP 4	48118.061	3289646.400		RNB 60	47688.10	3289810.63	
E	48246.802	3289546.635		R	47999.654	3289775.522		EXP 5	48147.614	3289679.741		RNB 61	48104.77	3289809.36	
F	48188.204	3289603.149		T	48036.926	3289795.796		EXP 6	48274.629	3289526.843		RNB 62	48176.11	3289613.61	
G	48113.766	3289667.645		W	48076.614	3289781.468						RNB 63	48246.10	3289546.58	
H	48040.904	3289722.244		Y	48188.623	3289766.394						RNB 64	48209.70	3289640.33	
J	48087.502	3289754.000										RNB 65	48305.34	3289498.91	
K	48140.586	3289714.403										RNB 66	48354.26	3289446.20	
L	48202.064	3289630.815													

CADASTRAL LINE LEGEND



LOCALITY PLAN



SITE PLAN
1:500

DRAWING REFERENCE

DRAWING NO.	TITLE
5124/1	GENERAL LAYOUT
5124/2	TYPICAL SECTIONS



NORTH POINT

NOTES

- ALL EARTHWORKS, LAYERWORKS ETC. TO BE TESTED AND APPROVED BY THE ENGINEER PRIOR TO PROCESSING THE FOLLOWING LAYERS.
- EMBANKMENT SLOPES ARE NOT TO EXCEED 1 IN 1.5 UNLESS OTHERWISE SPECIFIED BY THE ENGINEER ON SITE.
- THE ENGINEER TO DETERMINE THE EXTENT OF THE SUBSOIL DRAINS ON SITE.
- FILL IS TO BE COMPACTED TO A MIN. OF 98% MOD. AASHTO.
- ALL CUT AND FILL EMBANKMENTS AND ANY OTHER AREAS REQUIRED BY THE ENGINEER ARE TO BE GRASSED WITH HAND PLANTED RUNNERS.
- ALL EMBANKMENTS TO BE TOPSOILED TO A DEPTH OF 75mm.
- ANY EX. CIVIL ENG. INFRASTRUCTURE DAMAGED DURING CONSTRUCTION PERIOD IS TO BE REPAIRED TO THE ENGINEER'S SATISFACTION.
- ALL EXISTING SLOPES STEEPER THAN 1:6 IN FILL AREAS ARE TO BE BENCHED.
- ROAD LEVELS GIVEN ARE FINISHED LEVELS. BULK EARTHWORKS LEVELS ARE TO BE CONSTRUCTED TO UNDERSIDE OF LAYERWORKS.
- TEMPORARY EARTH BERMS ARE TO BE CONSTRUCTED ALONG CRESTS OF EMBANKMENTS FOR THE CONTROL OF STORMWATER RUN-OFF.

NO.	AMENDMENT	APPROVED	DATE
C	PARKING AREA OMITTED.	G.P.	JULY 15
B	ROAD REVISED UP TO CH 67.84	G.P.	JUNE 15
A	MODIFIED NORTHBOUND EXPROPRIATION BOUNDARY ADDED.	G.P.	MAY 15

REVISIONS

AS BUILT

SUPERVISING AUTHORITY: _____
DATE: _____

CLIENT: _____

GEVON STEDA cc

THEMIS GEOINTECH cc/TA
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THE FARM BISHOP NO. 18641 CAMPERDOWN PROPOSED INDUSTRIAL DEVELOPMENT

GENERAL LAYOUT ACCESS ROAD AND STORMWATER MANAGEMENT

CONSULTING ENGINEER	DESIGNED: M.P.
SIGNATURE: _____	DRAWN: K.M.
PR. NO.: _____	CHECKED: G.P.
DATE: _____	SCALE: 1:500
REFERENCE NO. 51242	DATE: FEB 15
CAD FILE: S/.....	FIGURE NO. 1
	REVISION C