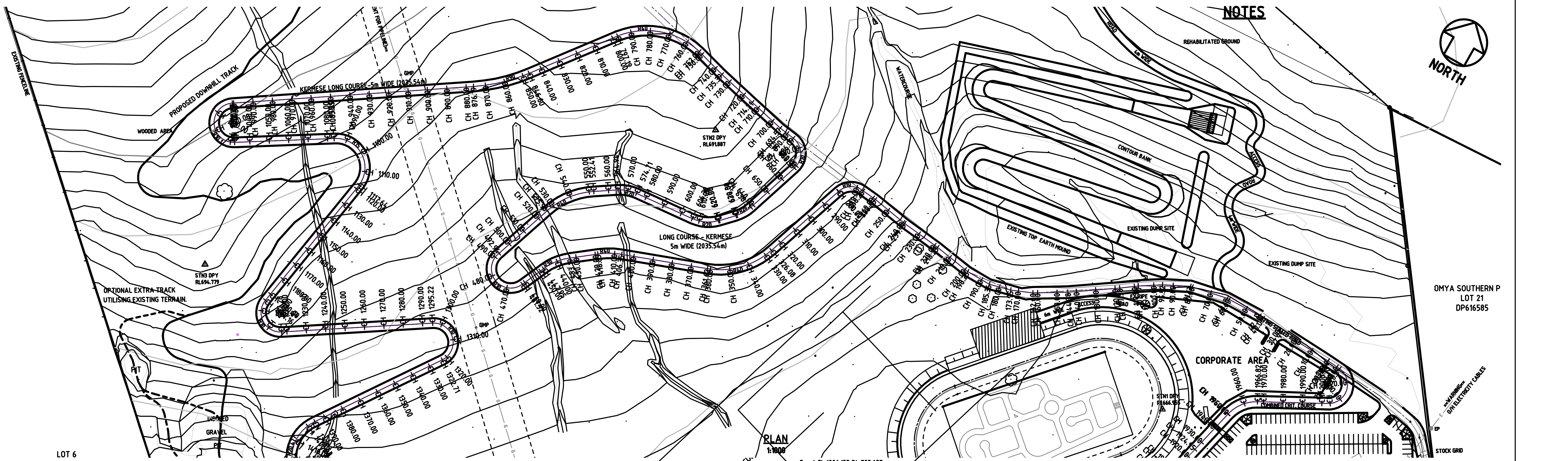
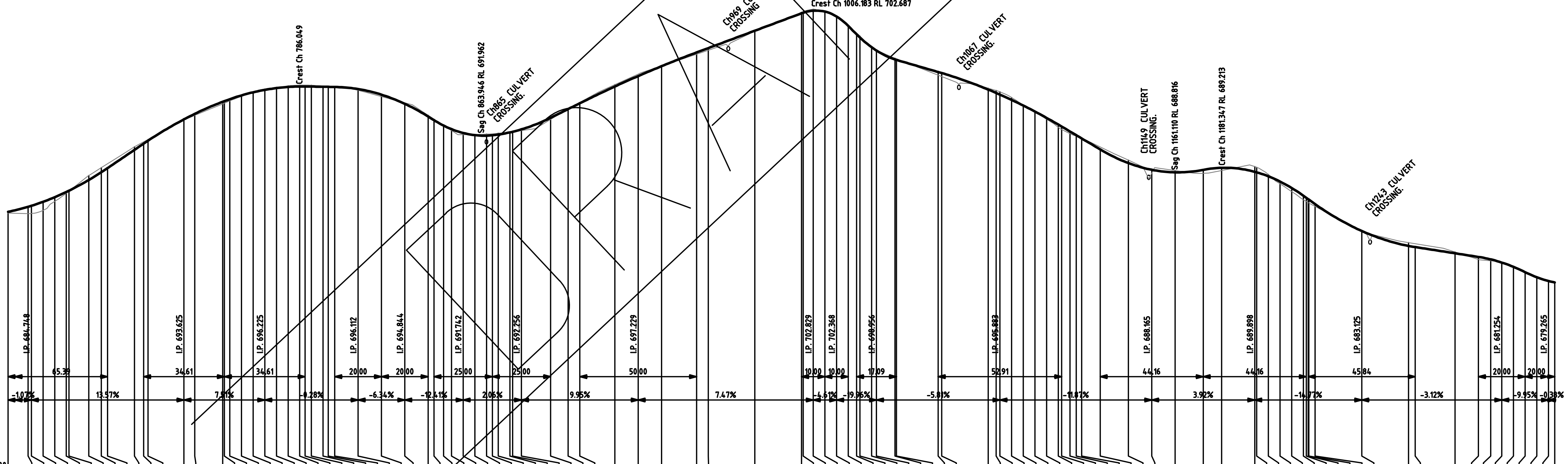




CHAINAGE	NATURAL SURFACE	DESIGN C.L.	CUT/FILL
660.00	685.33	685.43	+0.10
668.58	685.28	685.86	+0.58
670.00	685.29	685.95	+0.66
675.00	685.56	686.29	+0.73
680.00	686.32	686.68	+0.36
685.00	687.03	687.13	+0.11
686.09	687.20	687.24	+0.04
694.57	688.54	688.16	-0.38
700.00	689.22	688.83	-0.39
702.70		689.19	
714.21	691.01	690.75	-0.26
718.09		691.28	
720.00	691.64	691.53	-0.11
735.39	693.32	693.36	+0.04
740.00	693.70	693.83	+0.13
752.00	694.69	694.87	+0.18
752.70		694.92	
755.00	694.95	695.09	+0.14
760.00	695.34	695.41	+0.07
765.00	695.70	695.68	-0.02
770.00	695.97	695.89	-0.08
775.00	696.11	696.04	-0.07
780.00	696.23	696.14	-0.09
785.00	696.30	696.18	-0.12
787.30		696.18	
790.00	696.28	696.17	-0.12
795.00	696.21	696.15	-0.06
797.19	696.16	696.15	-0.02
800.00	696.09	696.14	+0.05
810.00		695.96	
820.00	695.32	695.48	+0.15
830.00		694.69	
840.00	693.71	693.60	-0.10
842.50		693.29	
846.60	692.84	692.83	-0.01
850.00	692.41	692.53	+0.12
855.00	692.04	692.19	+0.15
860.00	692.05	692.01	-0.04
865.00	692.09	691.97	-0.13
867.50		692.00	
870.00	692.17	692.06	-0.10
875.00	692.27	692.24	-0.03
876.19	692.30	692.30	-0.00
880.00	692.40	692.50	+0.10
892.50		693.50	
900.00	694.26	694.25	-0.02
905.00		694.74	
920.00	696.33	696.18	-0.15
930.00		697.07	
940.00	697.94	697.92	-0.02
955.00		699.10	
960.00	699.29	699.47	+0.18
980.00	700.92	700.96	+0.04
1000.00	702.53	702.46	-0.07
1000.67	702.58	702.50	-0.08
1005.00	702.80	702.68	-0.13
1010.00	702.55	702.60	+0.05
1015.00	702.12	702.18	+0.05
1020.00	701.37	701.37	+0.00
1023.55		700.66	
1025.00	700.49	700.38	-0.11
1030.00	699.57	699.55	-0.03
1032.09	699.27	699.26	-0.02
1040.00	698.60	698.50	-0.10
1040.64		698.46	
1058.55		697.42	
1060.00	697.03	697.33	+0.30
1080.00	696.03	695.91	-0.12
1083.35	695.83	695.63	-0.20
1085.00	695.72	695.48	-0.24
1090.00	695.23	695.03	-0.21
1095.00	694.59	694.54	-0.05
1100.00	693.99	694.03	+0.03
1105.00	693.36	693.48	+0.12
1110.00	692.67	692.91	+0.24
1111.45		692.74	
1115.00	692.14	692.32	+0.19
1117.64	691.91	692.01	+0.09
1120.00	691.74	691.73	-0.01
1127.92		690.79	
1140.00	689.86	689.61	-0.25
1150.00		689.04	
1160.00	688.97	688.82	-0.15
1172.08		689.03	
1180.00	688.97	689.21	+0.24
1194.16	689.31	688.87	-0.44
1195.00	689.24	688.82	-0.43
1200.00	688.63	688.48	-0.15
1205.00	687.84	688.03	+0.19
1210.00	687.17	687.48	+0.31
1215.00	686.46	686.82	+0.35
1216.24		686.64	
1217.08		686.51	
1217.28	686.19	686.48	+0.30
1220.00	685.89	686.09	+0.20
1240.00	683.74	683.79	+0.05
1260.00	682.79	682.51	-0.28
1262.92		682.41	
1280.00	681.99	681.88	-0.11
1290.00		681.57	
1295.22	681.24	681.36	+0.11
1300.00	681.06	681.08	+0.03
1305.00	680.70	680.71	+0.01
1310.00	680.26	680.26	-0.00
1315.00	679.78	679.82	+0.04
1320.00	679.44	679.50	+0.06
1322.71	679.35	679.38	+0.03

SCALES: H 1:1000 V 1:200

PRELIMINARY DESIGN-(GREEN COURSE-2035.54m)

LONGITUDINAL SECTION - LONGCOURSE FROM CH660.000 TO CH1322.713

NOTE:- VERTICAL DESIGN COMPUTED BY CAD.THIS IS NOT A FINAL DESIGN.

REV	DESCRIPTION	INITIALS	DATE
A	ISSUED FOR APPROVAL	GW	15-08-09
B	ISSUED FOR APPROVAL	GW	19-10-10

CONSULTANT

CHECKED

APPROVED

SCALES (A1): 1:10, 1:20, 1:50, 1:100, 1:200, 1:500, 1:750, 1:1000

SURVEYED	GW/MC
DRAWN	GW
DESIGN	GW
DATE	AUG 09
DATUM	AHD

CHECKED

TECHNICAL SERVICES MANAGER

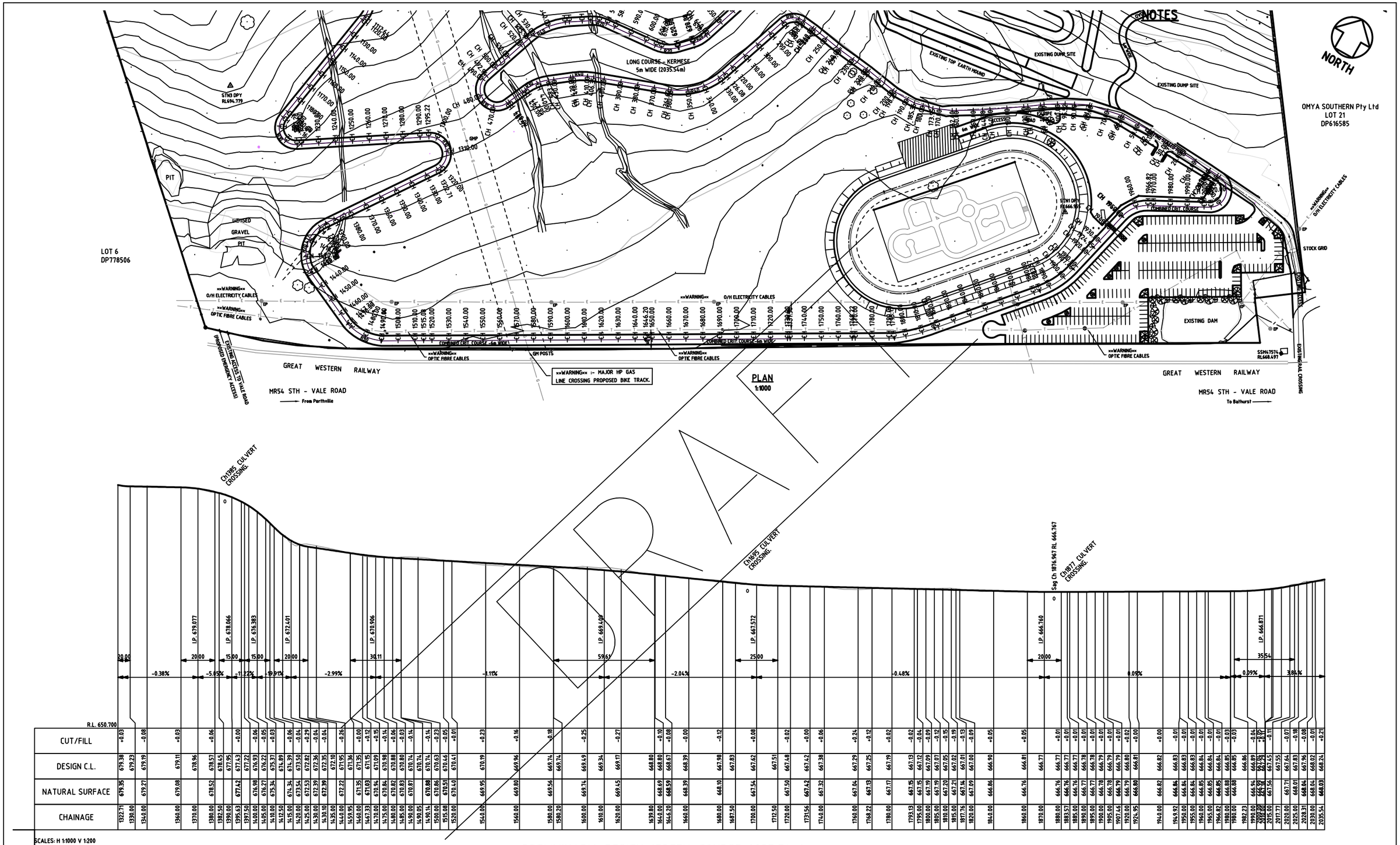
DIRECTOR ENGINEERING SERVICES

BATHURST REGIONAL COUNCIL

PROJECT: BATHURST BICYCLE PARK, VALE ROAD, ORTON PARK

DESCRIPTION: KERMESE LONG COURSE PLAN & LONGITUDINAL SECTION CH660.00-CH1322.71

JOB No.	DWG No.	SHEET No.	REV.
__/-000	EN9702	6	B.



PRELIMINARY DESIGN-(GREEN COURSE-2035.54m)

LONGITUDINAL SECTION - LONGCOURSE FROM CH1322.713 TO CH1980.000

NOTE:- VERTICAL DESIGN COMPUTED BY CAD.THIS IS NOT A FINAL DESIGN.

CONSULTANT		REV	DESCRIPTION	INITIALS	DATE
		A	ISSUED FOR APPROVAL	GW	15-08-09
		B	ISSUED FOR APPROVAL	GW	19-10-10
CHECKED	APPROVED				

SCALES (A1)

1:10 0 0.1 0.2 0.3 0.4 0.5 Metres
1:20 0 0.2 0.4 0.6 0.8 1.0
1:50 0 0.5 1.0 1.5 2.0 2.5
1:100 0 1 2 3 4 5
1:200 0 2 4 6 8 10 Metres
1:500 0 5 10 15 20 25
1:750 0 7.5 15 22.5 30 37.5
1:1000 0 10 20 30 40 50

SURVEYED	GW/MC
DRAWN	GW
DESIGN	GW
DATE	AUG 09
DATUM	AHD

CHECKED

TECHNICAL SERVICES MANAGER

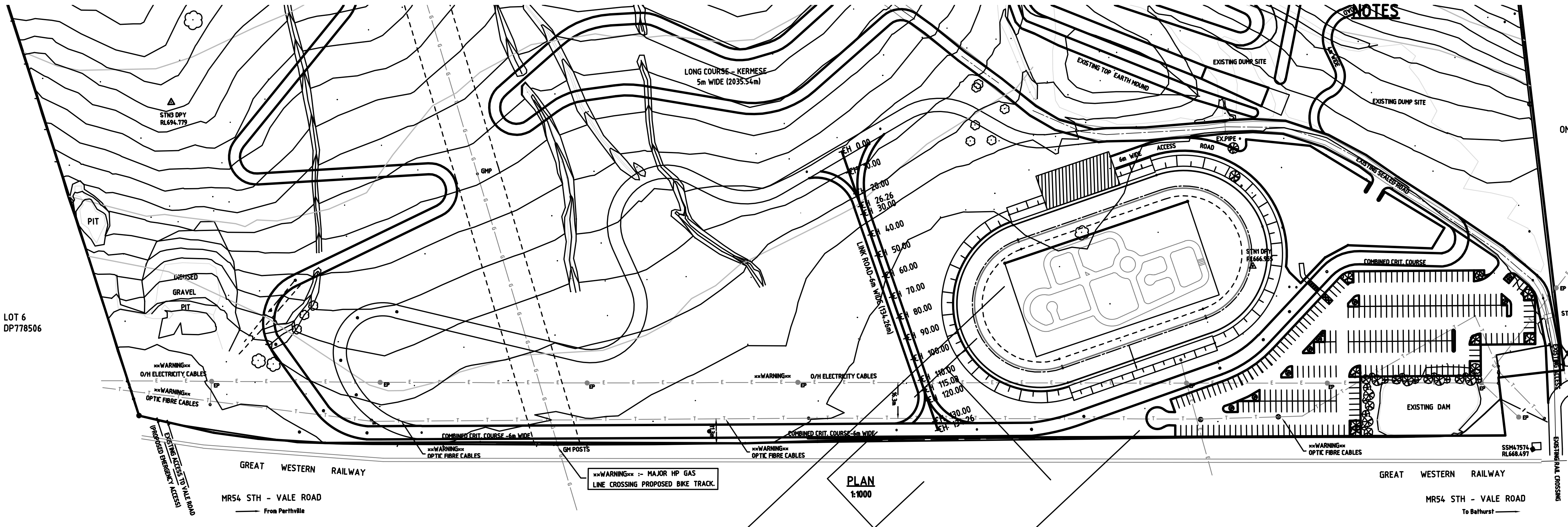
DIRECTOR ENGINEERING SERVICES

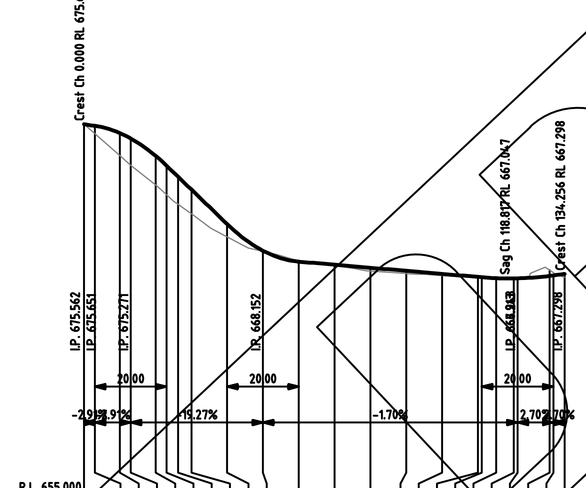
BATHURST REGIONAL COUNCIL

PROJECT
BATHURST BICYCLE PARK
VALE ROAD, ORTON PARK

DESCRIPTION
KERMESE LONG COURSE
PLAN & LONGITUDINAL SECTION
CH1322.71-CH2035.54

JOB No.	DWG No.	SHEET No.	REV.
__/-000	EN9702	7	B.



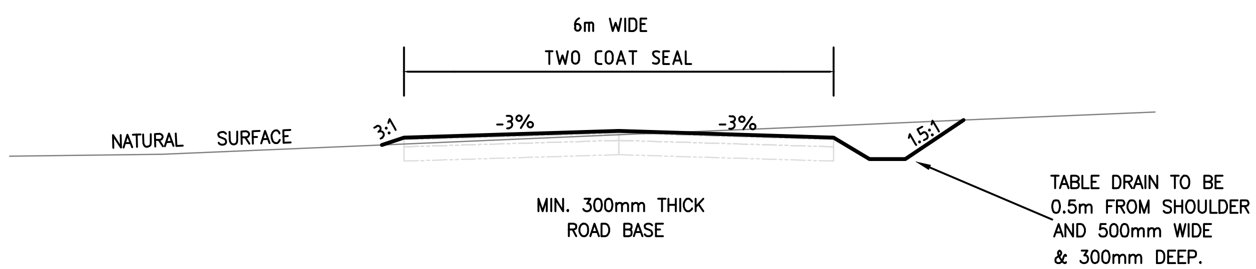


CUT/FILL	-0.02		+1.25		+1.64		+1.54	+1.36	+0.71	+0.03	-0.06	+0.05	+0.18	+0.15	+0.09	+0.05		-0.03	-0.02		-0.32		+0.20
DESIGN C.L.	675.65	675.56	675.16	674.86	673.89	673.34	672.73	672.01	670.08	668.59	667.98	667.81	667.64	667.47	667.30	667.13	667.11	667.06	667.05	667.05	667.18	667.21	667.30
NATURAL SURFACE	675.67		673.91		672.26		671.19	670.65	669.36	668.56	668.04	667.76	667.46	667.32	667.21	667.08		667.09	667.07		667.51		667.09
CHAINAGE	0.00	3.06	10.00	13.06	20.00	23.06	26.26	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00	110.00	111.09	115.08	120.00	121.09	130.00	131.09	134.26

SCALES: H 1:1000 V 1:200

PRELIMINARY DESIGN-(YELLOW COURSE)

LONGITUDINAL SECTION - LINK ROAD FROM CH0.00 TO CH134.256



TYPICAL CROSS SECTION

N.T.S

DRAFT

NOTE:- VERTICAL DESIGN COMPUTED BY CAD.THIS IS NOT A FINAL DESIGN.

CONSULTANT

CHECKED | APPROVED

REV	DESCRIPTION	INITIALS	DATE
A	ISSUED FOR APPROVAL	GW	15-08-09
B	ISSUED FOR APPROVAL	GW	19-10-10

SCALES (A1)

1:10 — 0 0.1 0.2 0.3 0.4 0.5 Metres
1:20 — 0 0.2 0.4 0.6 0.8 1.0
1:50 — 0 0.5 1.0 1.5 2.0 2.5
1:100 — 0 1 2 3 4 5
1:200 — 0 2 4 6 8 10 Metres
1:500 — 0 5 10 15 20 25
1:750 — 0 7.5 15 22.5 30 37.5
1:1000 — 0 10 20 30 40 50

SURVEYED	GW/MC
DRAWN	GW
DESIGN	GW
DATE	AUG 09
DATUM	AHD

CHECKED

TECHNICAL SERVICES MANAGER

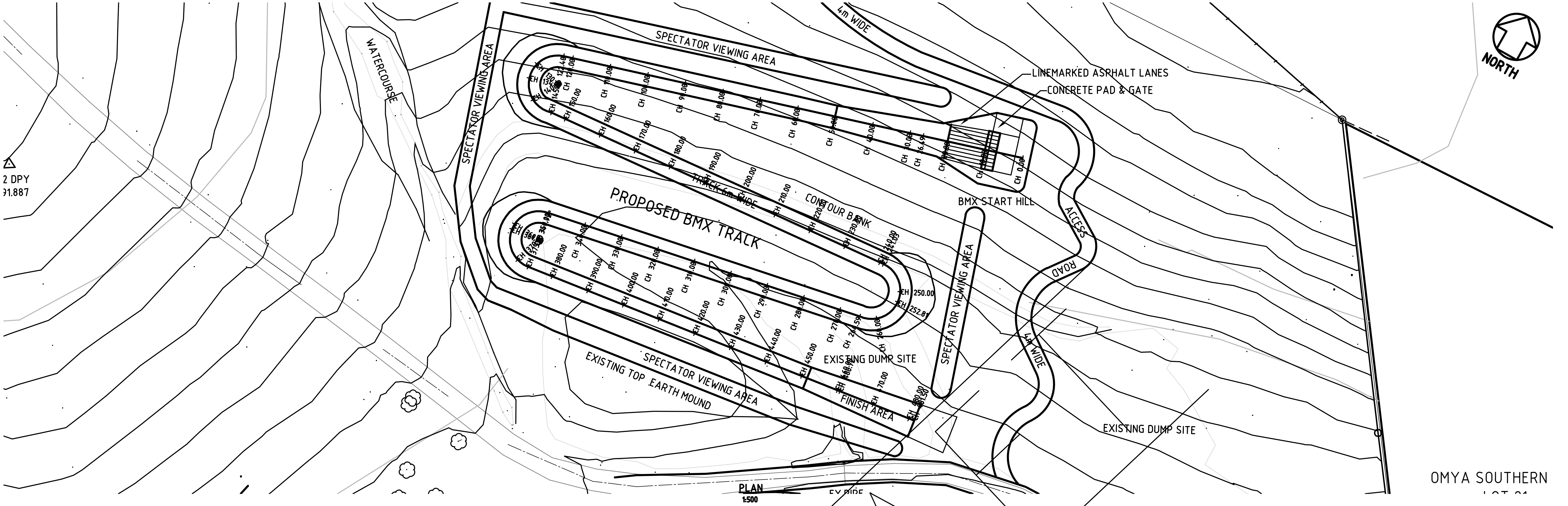
DIRECTOR ENGINEERING SERVICES

BATHURST REGIONAL COUNCIL

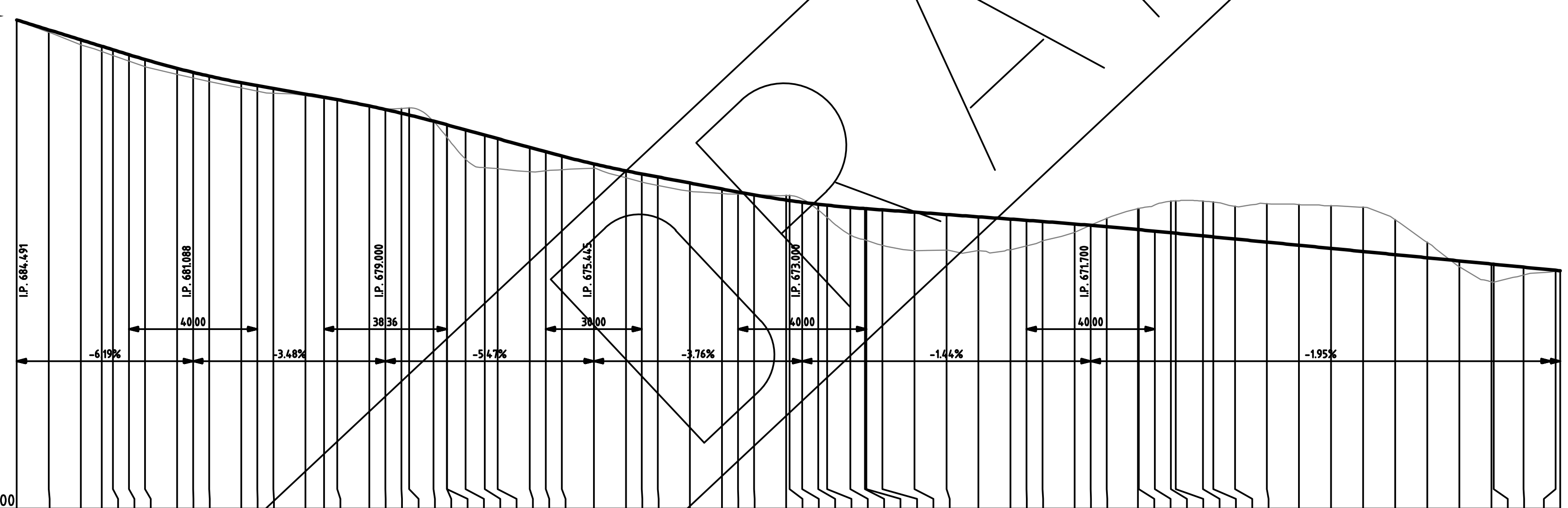
PROJECT
BATHURST BICYCLE PARK
VALE ROAD, ORTON PARK

DESCRIPTION
LINK ROAD
PLAN & LONGITUDINAL SECTION
CH0.00-CH134.256

JOB No.	DWG No.	SHEET No.	REV.
__/-000	EN9702	8	B.



NOTE:- PROVISION FOR 2m START HILL WITH PADDOCK /ASSEMBLY AREA , CONCRETE PAD/APRON,START GATE & ASPHALT LINEMARKED LANES.



CHAINAGE	NATURAL SURFACE	DESIGN C.L.	Cut / Fill
0.000	684.497	684.491	-0.006
10.000	683.728	683.872	+0.144
20.000	682.943	683.254	+0.310
26.492	682.528	682.852	+0.324
30.000	682.281	682.635	+0.354
35.000		682.325	
40.000	681.579	682.025	+0.445
50.000	681.103	681.474	+0.371
55.000		681.223	
60.000	680.652	680.990	+0.338
70.000	680.252	680.574	+0.323
75.000		680.392	
80.000	679.917	680.218	+0.301
90.000	679.765	679.870	+0.105
95.818		679.668	
100.000	679.474	679.517	+0.044
110.000	679.140	679.122	-0.018
115.000		678.905	
120.000	678.976	678.674	-0.302
122.401	679.005	678.559	-0.446
130.000	678.171	678.175	+0.004
134.182		677.951	
134.182	677.170	677.951	+0.781
140.000	675.801	677.633	+1.832
145.963	675.280	677.307	+2.026
150.000	675.214	677.086	+1.872
160.000	675.027	676.539	+1.511
165.000		676.265	
170.000	675.143	675.999	+0.856
180.000	675.244	675.509	+0.265
190.000	674.642	675.076	+0.434
195.000		674.881	
200.000	674.161	674.693	+0.532
210.000	673.801	674.317	+0.515
220.000	673.656	673.940	+0.285
225.000		673.752	
230.000	673.593	673.571	-0.021
240.000	673.536	673.253	-0.283
241.027	673.536	673.224	-0.312
245.000		673.116	
250.000	672.630	672.993	+0.362
252.808	672.157	672.930	+0.773
260.000	671.077	672.791	+1.713
264.589	670.765	672.717	+1.952
265.000		672.711	
270.000	670.425	672.639	+2.213
280.000	670.090	672.494	+2.405
290.000	670.127	672.350	+2.223
300.000	670.091	672.206	+2.115
310.000	670.137	672.061	+1.924
315.000		671.989	
320.000	670.698	671.915	+1.217
330.000	671.239	671.758	+0.519
335.000		671.675	
340.000	672.109	671.588	-0.521
349.717	672.708	671.411	-1.297
350.000	672.722	671.405	-1.317
355.000		671.309	
360.000	673.176	671.212	-1.964
361.498	673.199	671.183	-2.017
370.000	673.190	671.016	-2.173
373.279	673.122	670.952	-2.169
380.000	672.861	670.821	-2.039
390.000	673.020	670.626	-2.394
400.000	672.972	670.431	-2.542
410.000	672.890	670.235	-2.655
420.000	672.799	670.040	-2.759
430.000	672.021	669.845	-2.176
440.000	670.607	669.649	-0.958
450.000	669.094	669.454	+0.360
460.000	668.152	669.259	+1.107
460.716	668.120	669.245	+1.125
470.000	668.574	669.064	+0.490
480.000	668.797	668.868	+0.071
481.499	668.839	668.839	+0.000

PRELIMINARY DESIGN

PROPOSED BMX TRACK (481.5m LONG x 6m WIDE)

REV	DESCRIPTION	INITIALS	DATE
A	ISSUED FOR APPROVAL	GW	15-08-09
B	ISSUED FOR APPROVAL	GW	19-10-10

CONSULTANT

CHECKED | APPROVED

SCALES (A1)

1:10 0 0.1 0.2 0.3 0.4 0.5 Metres
1:20 0 0.2 0.4 0.6 0.8 1.0
1:50 0 0.5 1.0 1.5 2.0 2.5
1:100 0 1 2 3 4 5
1:200 0 2 4 6 8 10 Metres
1:500 0 5 10 15 20 25
1:750 0 7.5 15 22.5 30 37.5
1:1000 0 10 20 30 40 50

SURVEYED	GW/MC
DRAWN	GW
DESIGN	GW
DATE	AUG 09
DATUM	AHD

CHECKED

TECHNICAL SERVICES MANAGER

DIRECTOR ENGINEERING SERVICES

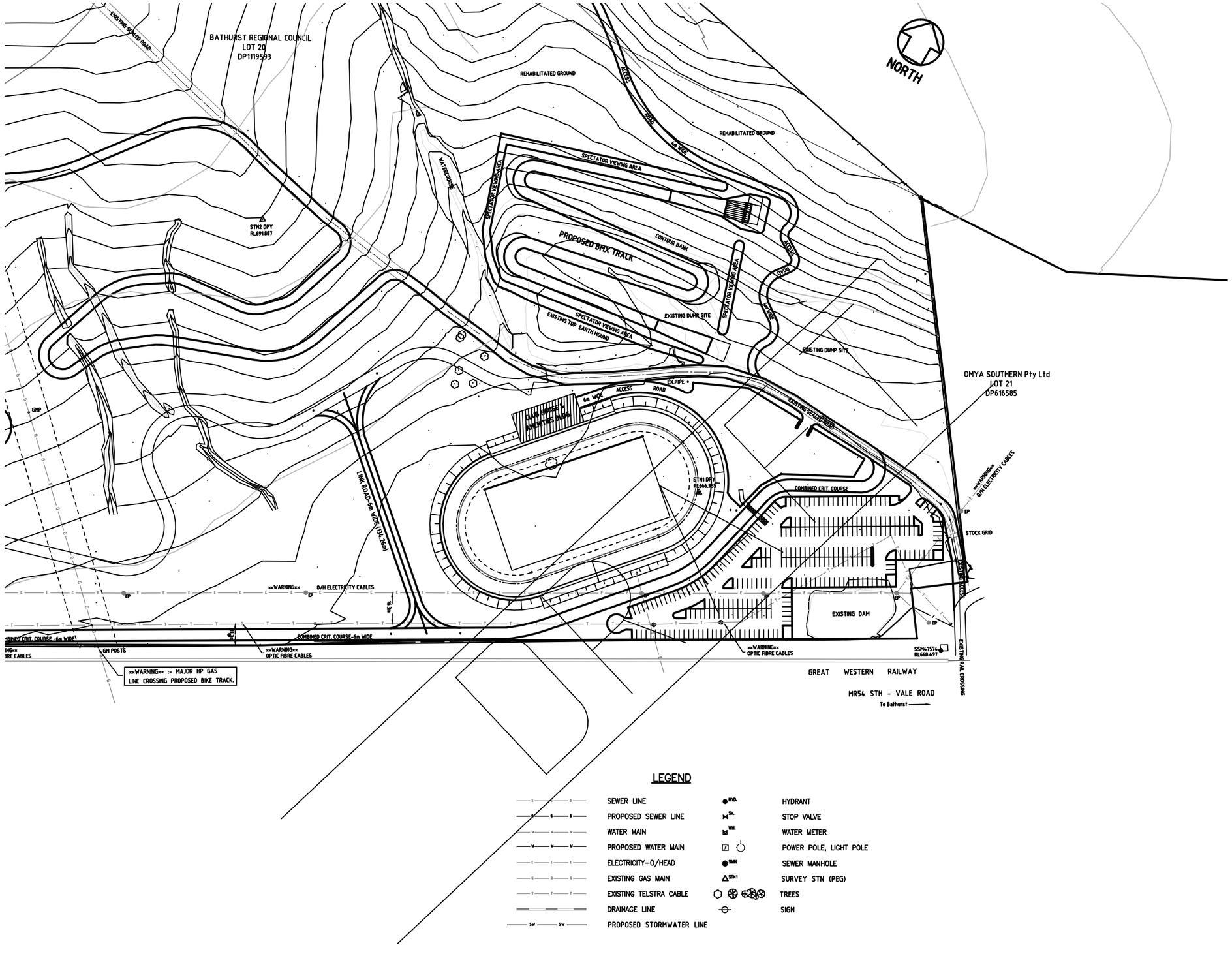
BATHURST REGIONAL COUNCIL

PROJECT
BATHURST BICYCLE PARK
VALE ROAD, ORTON PARK

DESCRIPTION
PROPOSED BMX TRACK
PLAN & LONGITUDINAL SECTION

JOB No.	DWG No.	SHEET No.	REV.
__/-000	EN9702	9	B.

NOTES



LEGEND

SEWER LINE		HYD.	HYDRANT
PROPOSED SEWER LINE		SV.	STOP VALVE
WATER MAIN		WM.	WATER METER
PROPOSED WATER MAIN			POWER POLE, LIGHT POLE
ELECTRICITY–O/HEAD		SMH	SEWER MANHOLE
EXISTING GAS MAIN		STN1	SURVEY STN (PEG)
EXISTING TELSTRA CABLE			TREES
DRAINAGE LINE			SIGN
SW SW PROPOSED STORMWATER LINE			

CONSULTANT		REV	DESCRIPTION	INITIALS	DATE
		A	ISSUED FOR APPROVAL	GW	15-08-09
		B	ISSUED FOR APPROVAL	GW	19-10-10
CHECKED	APPROVED				

SCALES (A1)

1:10 0 0.1 0.2 0.3 0.4 0.5 Metres
1:20 0 0.2 0.4 0.6 0.8 1.0
1:50 0 0.5 1.0 1.5 2.0 2.5
1:100 0 1 2 3 4 5
1:200 0 2 4 6 8 10 Metres
1:500 0 5 10 15 20 25
1:750 0 7.5 15 22.5 30 37.5
1:1000 0 10 20 30 40 50

SURVEYED	GW/MC
DRAWN	GW
DESIGN	GW
DATE	AUG 09
DATUM	AHD

CHECKED
TECHNICAL SERVICES MANAGER
DIRECTOR ENGINEERING SERVICES

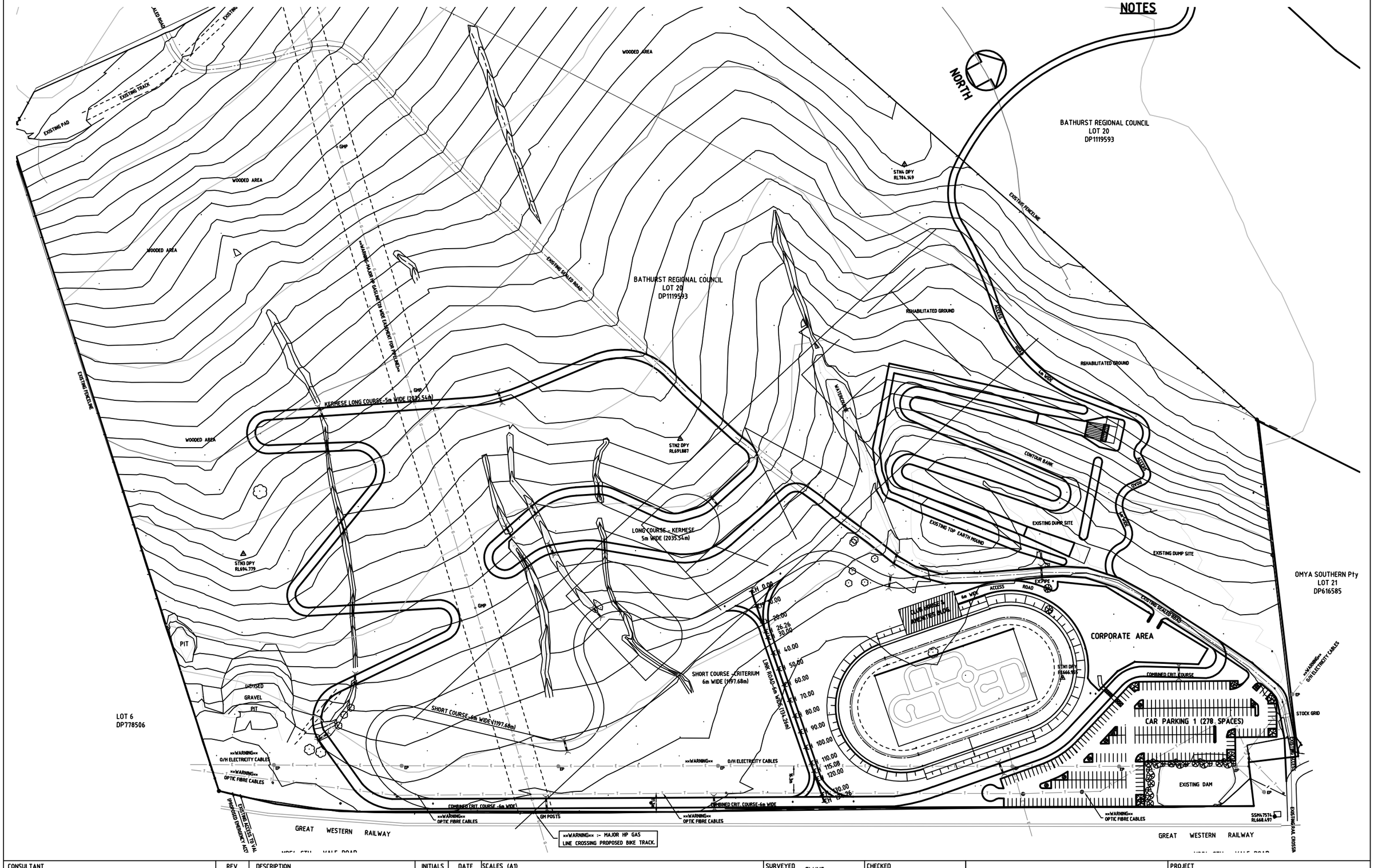
BATHURST REGIONAL COUNCIL

PROJECT
BATHURST BICYCLE PARK
VALE ROAD, ORTON PARK

DESCRIPTION
UTILITY PLAN

JOB No.	DWG No.	SHEET No.	REV.
__/-000	EN9702	10	B.

NOTES



CONSULTANT		REV	DESCRIPTION	INITIALS	DATE
		A	ISSUED FOR APPROVAL	GW	15-08-09
		B	ISSUED FOR APPROVAL	GW	19-10-10
CHECKED	APPROVED				

SCALES (A1)

1:10 0 0.1 0.2 0.3 0.4 0.5 Metres
1:20 0 0.2 0.4 0.6 0.8 1.0
1:50 0 0.5 1.0 1.5 2.0 2.5
1:100 0 1 2 3 4 5
1:200 0 2 4 6 8 10 Metres
1:500 0 5 10 15 20 25
1:750 0 7.5 15 22.5 30 37.5
1:1000 0 10 20 30 40 50

SURVEYED	GW/MC
DRAWN	GW
DESIGN	GW
DATE	AUG 09
DATUM	AHD

CHECKED

TECHNICAL SERVICES MANAGER

DIRECTOR ENGINEERING SERVICES

BATHURST REGIONAL COUNCIL

PROJECT
BATHURST BICYCLE PARK
VALE ROAD, ORTON PARK

DESCRIPTION
DRAINAGE PLAN

JOB No.	DWG No.	SHEET No.	REV.
_/-000	EN9702	11	B.

CLUBHOUSE DIMENSIONS TO BE DETERMINED

CLUB HOUSE & AMENITIES BLDG

6m WIDE ACCESS ROAD

EXISTING SEALED ROAD

NORTH

CORPORATE AREA

COMBINED CRIT. COURSE

CAR PARKING 1 (278 SPACES)

EXISTING ACCESS

EXISTING DAM

STOC

STN1 DFY
RL666.955

PROPOSED VELODROME & JUNIOR EDUCATION CENTRE
(ASPHALT CONCRETE SURFACE)

Current Track Length333.33m

STRAIGHT 69.28m

GRASSED AREA

GRASSED LONG AREA

145.278m

53m

45m WIDE

GRASSED AREA

R31-CL.
Arc97.389m

R31

R26.5

R45

3.5m

10m

88m

STRAIGHT 69.28m

18m

12.0m

Track 7m

××WARNING××

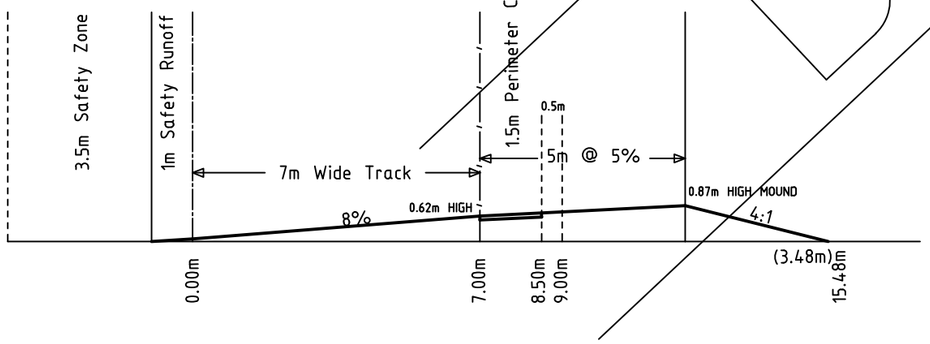
O/H ELECTRICITY CABLES

EP

16.3m

PLAN
1:200

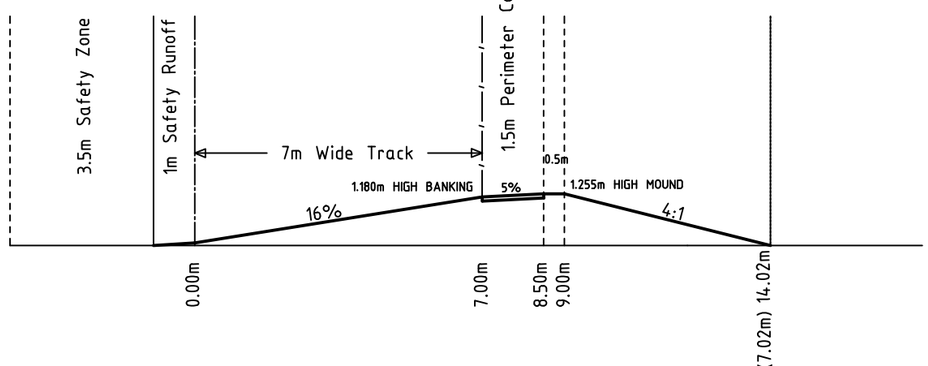
TOTAL LENGHT OF TRACK (BASED ON C.L. 333.34m)
76m WIDE (TRACK FENCE TO TRACK FENCE)
145.3 LONG (TRACK FENCE TO TRACK FENCE)



TYPICAL CROSS SECTION

N.T.S

VELODROME ON STRAIGHTS



TYPICAL CROSS SECTION

N.T.S

VELODROME ON BENDS

DRAFT

CONSULTANT		REV	DESCRIPTION	INITIALS	DATE
		A	ISSUED FOR APPROVAL	GW	15-08-09
		B	ISSUED FOR APPROVAL	GW	19-10-10
CHECKED	APPROVED				

SCALES (A1)

1:10 0 0.1 0.2 0.3 0.4 0.5 Metres
1:20 0 0.2 0.4 0.6 0.8 1.0
1:50 0 0.5 1.0 1.5 2.0 2.5
1:100 0 1 2 3 4 5
1:200 0 2 4 6 8 10 Metres
1:500 0 5 10 15 20 25
1:750 0 7.5 15 22.5 30 37.5
1:1000 0 10 20 30 40 50

		CHECKED
SURVEYED	GW/MC	
DRAWN	GW	
DESIGN	GW	TECHNICAL SERVICES MANAGER
DATE	AUG 09	
DATUM	AHD	DIRECTOR ENGINEERING SERVICES

BATHURST REGIONAL COUNCIL

PROJECT: BATHURST BICYCLE PARK
VALE ROAD, ORTON PARK

DESCRIPTION: PLAN & TYPICAL CROSS SECTIONS OF PROPOSED 333m VELODROME.

JOB No.	DWG No.	SHEET No.	REV.
__/-000	EN9702	12	B.

SECTION 4 – STATEMENT OF ENVIRONMENTAL EFFECTS

Dr BARBARA MCTAGGART

Mactaggart

Natural Resource Management

STATEMENT OF ENVIRONMENTAL EFFECTS
AND
FAUNA AND FLORA ASSESSMENT

BATHURST BICYCLE PARK

FOR

BATHURST REGIONAL COUNCIL

Barbara Mactaggart

1 March 2011

205 William Street, Bathurst NSW 2795 Ph: (02) 6332 2665 Mobile: 0418 622 665 Fax: (02) 6331 9695
Email: btags@iprimus.com.au

Table of Contents

Figures

Tables

1. INTRODUCTION

1.1. Purpose of report

This Statement of Environmental Effects (SEE) has been prepared by Mactaggart Natural Resource Management as part of a proposal to develop a Bicycle Park along Vale Road, Bathurst. Following a review of the Development Application (DA), as lodged inclusive of the 'Bathurst Bicycle Park Feasibility Study' (Feasibility Study), a number of issues have been raised by Bathurst Regional Council. These are:

- A SEE and a Fauna and Flora report have not been provided, which would indicate the impacts from the proposed development;
- As assessment would need to be made in regards to the type of woodland (i.e. is it an Endangered Ecological Community - EEC) that would be impacted;
- Details regarding the construction of bike trails have not been provided. There are associated issues with ongoing erosion with most 'natural trails'; and
- The velodrome is to be constructed on an ephemeral wetland that is situated within the 1% AEP flood level.

In addition, it was recognised by BRC that for an appropriate assessment to be conducted the DA should be accompanied by 'a SEE including an assessment of the impact on the Box-Gum Woodland and other potentially threatened species occurring on the land'.

The SEE attempts to address these issues and the impacts of the development on the Box-Gum Woodland and other potentially threatened species occurring on the land as listed in the *Threatened Species Conservation Act* 1995 and the *Environment Protection and Biodiversity Conservation Act* 1999.

This report does not assess the suitability of the subject site for the proposed Bicycle Park development nor the impacts from this development in regards to civil, environmental engineering, traffic and neighbouring issues as these were covered in the Feasibility Study commissioned by Simply Great Leisure (SGL) (2010).

2. PROPOSED DEVELOPMENT

Bathurst Regional Council is proposing to develop a Bicycle Park featuring a multi-disciplinary bike facility including:

- 333.33 m outdoor velodrome,
- Criterium long course,
- Criterium short course,
- BMX track,
- Mountain bike downhill course,
- Junior education course,
- Club house and amenities building, and
- Sealed car park.

The proposed development site (subject site) is located approximately 5km south of the centre of the Bathurst CBD on the western side of Vale Road (Figure. 1). The subject site (Lot 20 DP 1119593) and the area to the north and west of the site is currently owned and controlled by BRC. The site is bounded to the north-east by Oyma Southern Pty Ltd., east by the Main Western Railway and to the south by private land ownership.

Site access would be from Vale Road across the Main Western Railway over a rail crossing. An alternate access has been considered from College Road. Any environmental impacts with this access option have not been addressed in this SEE.

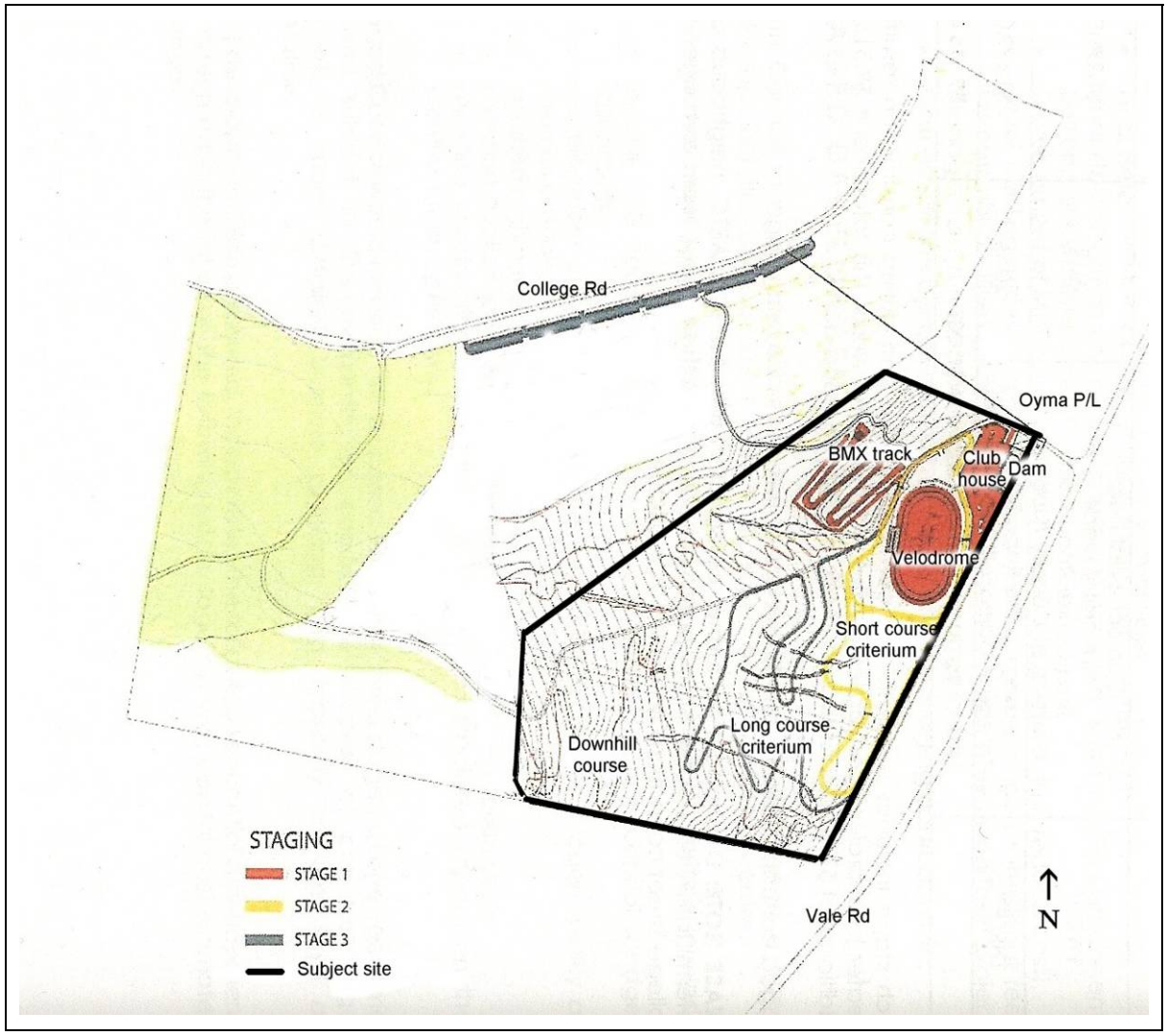


Figure 1. Subject site and the proposed staging of development (figure modified from SGL 2010). (Note: the figure does not accurately represent the preferred timeline).

The indicative timeline proposed for development is staged over three time frames and includes:

- Stage 1 - Velodrome, BMX track, mountain bike courses, club house, amenities buildings and car park;
- Stage 2 – Short course criterium; and
- Stage 3 – Long course criterium.

3. THE EXISTING ENVIRONMENT

3.1. Land use of subject site

The site is zoned 1A (General Rural) and is currently grazed by horses under an agistment agreement with BRC. Currently the grazing pressure is very low with the horses tending to graze the floodplain area.

3.2. Surrounding land use

The surrounding land use comprises agriculture, nature conservation, a rock crushing plant, decommissioned quarry, road and rail infrastructure and a waste disposal depot. Agriculture is chiefly present on the Queen Charlotte Vale floodplain where the land is used primarily for grazing and cropping and grazing occurs on the privately owned land to the south of the subject site. Oyma Southern Pty Ltd is an operational rock crushing plant and the BRC waste disposal depot lies to the west of the site.

3.3. Topography

The subject site comprises both a very gently inclined floodplain and a moderately inclined hillside (~13-16%) with an overall elevation change of approximately 90m. The floodplain lies at approximately 670m and the highest point on the subject site is approximately 760m. The general aspect of the slope is north, north east.

3.4. Geology

Most of the Bathurst area consists of a suite of middle to Late Carboniferous granites of the Bathurst Batholith and is typically coarse-grained and deeply weathered (Pogson & Watkins 1998). Small basaltic remnants exist on the ridge between Perthville and Dunkeld and include Mount Panorama (Pogson & Watkins 1998), which is in close proximity to the subject site.

Extensive areas along Queen Charlotte Vale Creek comprise Quaternary alluvium, which is usually coarse sand at the base and massive sandy loam to clay in the upper five meters. The massive sandy loam was often buried by stratified sandy post-European settlement alluvium (Pogson & Watkins 1998).

3.5. Soils

The dominant soil landscapes and their component soil types found on the subject site are outlined below with reference to Kovac *et al* (1989).

Bathurst soil landscape: This is the most dominant group in the Bathurst Basin and is located on undulating to rolling hills around Bathurst. The main soil type found on the hillside of the subject site is the non-calic brown soils. They are formed on coarse granites forming deep well-drained sandy loams with sandy clay loam subsoils of moderate chemical fertility and neutral pH. Soils are moderately erodible due to the sandy texture and weak surface structure.

Macquarie soil landscape: This alluvial soil landscape is found on the alluvial plains and terraces of Queen Charlotte Vale Creek. The dark coloured prairie soils and alluvial sands and loams are present on the floodplain and benches and red earths and red podzolics are present on the terraces. The major soil group is the prairie soils, which are black, moderately to well-structured loam to clay loams with subsoils light to medium clays. Topsoil erodibility is moderate; however subsoil erodibility is low.

3.6. Climate

The subject site would generally experience its hottest weather in January and the mean maximum temperature is recorded to be 27^{o}C, while the mean minimum for July, the coldest month, is 0.5^{o}C. The highest rainfall generally occurs during the warmer months reaching a peak in January. There is an excess of rainfall over evaporation in the winter months providing an accumulation of water especially in the lower slopes where soils become saturated. High intensity rainfall events and storms are more common during the months of October to February, with December typically having the most intense rainfall events (Bureau of Meteorology 2011).

3.7. Surface hydrology

The subject site has overland surface runoff down the hillslope to the floodplain where a farm dam captures some of the runoff. During periods of heavy precipitation the water can pond in the north-eastern corner alongside the railway line embankment. Prior to the construction of the railway line and road the water would have flowed along multiple flowlines across the floodplain and into the creek. The site does not feature any streams as shown on the 1:25,000 topographical map.

3.8. Fauna and flora

An on-site rapid habitat assessment of the fauna and flora was undertaken on the subject site. The subject site was covered by vehicle and on foot and stratified according to broad physiognomic units. That is, each unit was based on the vegetation community type (e.g. woodland, grassland), landform type (e.g. hillslope, floodplain) and type of habitat (e.g. terrestrial, farm dam). For the purpose of this report these physiognomic units will be referred to as habitat types. The on-site assessment was undertaken on the 27th January 2011.

The vegetation communities were described in terms of their structural formation according to Specht (1970), dominant species and life-forms of dominant species. In addition size, general health, connectivity to other timbered areas, conservation value, abundance of exotic species in each stratum, age status and abundance, per cent cover of each stratum and connectivity were noted. Further, habitat features such as tree hollows, logs, leaf litter, bare ground and rocks were recorded and expressed according to the categories outlined below. .

- *Tree health* – Very poor, poor, moderate, good, very good;
- *Age class of dominant overstorey species* – juvenile, sapling, mature, very mature, senescing;
- *Abundance of overstorey species in each age class* - very few, few, many, common, abundant;
- *Connectivity* – isolated, connection through widely scattered timber, connected through small patches of remnants, connected to large patch of remnant woodland;
- *Conservation value of vegetation community* – very poor, poor, moderate, good, very good;
- *Per cent cover of mid and ground stratum* – very sparse (<10%), sparse (10-30%), moderately dense (30-70%) dense (51- 75%), dense (70-100%);
- *Proportion of exotic species* – very low, low, moderate, high, very high;
- *Tree hollows and logs* – very few, few, many, common, abundant;

- *Per cent cover of leaf litter and rock* very sparse (1-6%), sparse (7-25%), moderate (26-50%) dense (51- 75%), very dense (76-100%).

During the initial reconnaissance and on-site survey, opportunities were taken to observe or hear mammals, avifauna, reptiles or amphibians. Observations in the field included direct sightings, animal tracks, nests, scats and other traces. Frog species were recorded as being present using opportunistic call identification and sightings as well as tadpole and egg mass identification in the dam.

Following the on-site survey a number of habitat types have been identified for the purpose of this report and these are described below (Figure 2).

Figure 2. Habitat types on the subject site

1. ***Farm dam/ephemeral wetland:***

   There is a constructed farm dam in the north-east corner of the subject site and following prolonged precipitation water builds up behind the railway line embankment adjacent to the dam. It has been referred to as an ephemeral wetland, however, it appears to have little conservation value given the rapidity of water loss, the modified nature of the vegetation and the marked change in natural hydrology of the floodplain from its original state.

   The exotic *Cyperus eragrostis* (Umbrella Sedge) is the dominant species fringing the farm dam. Trampling by watering horses has considerably reduced the fringing cover of sedge on the western side. Other species in association include the native Water Couch (*Paspalum paspalodes*), *Carex appressa* and *Rumex* sp. (dock) and the exotic

Phalaris aquatica (Phalaris) and *Paspalidium dilatatum* (Paspalum). There was an absence of floating or attached aquatic plants.

On the water or in the vicinity of the dam were Black Ducks, a pair of Masked Lapwings and many damselfies. Feral pigeons were also perched on power lines near the dam. No amphibians were seen or heard during the field survey, however species likely to occur include *Crinia signifera* (Common Eastern Froglet), *Crinia parainsignifera* (Beeping Plains Froglet) and *Limnodynastes tasmaniensis* (Spotted Marsh Frog). There is some possibility that *Limnodynastes peronii* and *Limnodynastes dumerilii* could also occur.

The conservation value of the dam given the current land management and status is only moderate to poor given the lack of diversity and structural complexity of the vegetation community and absence of aquatic habitat features such as submerged logs and semi-emergent reed beds.

2. Floodplain:

Prior to European settlement the floodplain would likely to have been treeless with dense groundcover vegetation comprising mainly sedges, rushes, tussock grasses (the graminoids), some forbs and scattered shrubs (Mactaggart et al. 2009). With the construction of the Western Railway line and Vale Road, the modification of the catchment through clearing and grazing, and channel deepening of Queen Charlotte Vale Creek (Vale Creek) the original hydrological characteristics of the floodplain have been significantly altered. There is also reduced overtop flooding from Vale Creek and greater peak discharges from the catchment. Together with the impacts of past and present grazing and ground disturbance the floodplain area resembles little to what it would have been like two centuries ago.

The floodplain vegetation community is a closed grassland dominated with the exotic *P. dilatatum* and *P. aquatica* grasses. Other common species include *C. appressa*, *Rumex* sp., *Juncus* sp , *Lythrum* sp. (Loosestrife) and the exotic *Cynodon dactylon* (Common Couch), *Plantago lanceolata* (ribwort) and *Trifolium arvense* (Haresfoot Clover). Occurring less commonly were *Trifoliium repens* (White Clover) and scattered *Rosa rubiginosa* (Sweet Briar). The proportion and abundance of exotic species to natives is high.

The conservation value of the floodplain is poor with the general loss of its original species composition, biomass and structural complexity.

3. Lower slope grassy herbland

The vegetation communities of the lower slope reflect the high disturbance history and land use in the area. Most of the area forms a closed grassy herbland with the original woodland being completely cleared and the proportion and abundance of exotic species being very high – in most parts comprising 100% of the species diversity. The dominant species or species in association is variable and a patchy mosaic of different vegetation communities form along the lower slope. Downslope of the proposed BMX track lies a decommissioned quarry where the dumping of plant refuse, logs and land fill have taken place and further south are the remnant and regenerating ornamental plants from a source unknown.

Exotic species commonly or abundantly occurring in the lower slopes area include *Silybum marianum* (Variegated Thistle), *Carthamus lanatus* (Saffron Thistle), *Brassica* sp. (wild turnip), *P. aquatica*, *Conyza* sp. (fleabane), *R. rubiginosa*, *Rubus*

fruticosus (Blackberry), *Echium plantagineum* (Paterson's Curse), *Cirsium vulgare* (Black Thistle), *T. arvense, Plantago lanceolata, Modiola caroliniana* (Carolina Mallow), *Hypericum perforatum* (St. John's Wort) and the cosmopolitan species *Rumex* sp. and *Polygonum aviculare* (Wireweed).

Trees in the vicinity of the relic ornamental plantings form the only upperstorey species in the lower slopes area. *Robinia pseudoacacia* (Black Locust) are present as mature and regenerating trees. Conifers, *Lycium ferocissimum* (African Boxthorn), *Ailanthus altissima* (Tree of Heaven), *Malus sp.* (apple), *Prunus* spp. (plums and peach) are also present – many of which are also regenerating. In particular, the *L. ferocissimum* provide habitat for small birds such as the Superb Blue Wren.

The very high proportion of weeds and the loss of the original woodland community and associated habitat features have significantly reduced the conservation value of the area to a poor status.

4. Midslope grassy herbland:

This midslope grassy herbland area has been cleared of the original woodland and now comprises a very dense layer of grasses and forbs with a very high proportion of exotic species. These include *P. aquatica, C. lanatus, Brassica* sp., *C. dactylon, E. plantagineum, Dactylis glomerata* (Cocksfoot), *Bromus diandrus* (Great Brome), *T. arvense, P. lanceolata, Verbascum vergatum* (Twiggy Mullein) and *Eragrostis* sp. (lovegrass). Scattered *R. rubiginosa* are also found throughout the area. A fox was sighted in this area.

Similarly to the lower slope area the conservation value is poor given the absence of the original woodland and habitat features and the dominance of exotic grasses and forbs.

5. Mid to upper slope woodland:

The woodland occurring on the subject site connects to other patches of woodland mostly through widely scattered timber and small patches of remnants. On the southern side of the subject site on private property the woodland connects with a narrow strip of scattered timber and to the north and north-west the woodland connects with scattered trees and small patches of remnants particularly on Council controlled land. On a broader landscape scale the woodland connects with significant vegetation on and around the Mount Panorama precinct and further beyond to the Boundary Road Reserve and along Sawpit and Jordan Creeks. The significance of this remnant woodland connectivity has been identified in the Bathurst Vegetation Management Plan (Mactaggart 2003).

There are two main areas of woodland on the subject site. The southern patch forms a strip on the southern boundary and is approximately 1.5 ha in size. The northern patch within the subject site is comparable in size. Connectivity to the woodland remnants outside the subject site effectively increases the patch size.

The southern patch of timber is a grassy box, moderately dense woodland dominated by *Eucalyptus melliodora* (Yellow Box) and sub-dominated by *E. bridgesiana* (Apple Box). The mid-storey is devoid of native species and only comprises *R. fruticosa, R. rubiginosa* and *L. ferocissimum* as widely scattered individuals. The ground stratum has only a moderate proportion of exotic species compared with the treeless areas and is of moderate density. Native grass and forb species in association with the woodland include *Austrostipa sp.* (speargrass), *Austrodanthonia* spp. (wallaby

grasses), *Sporobolus creber* (Slender Rat's Tail grass), *Wahlenbergia* (Native Bluebell), *Poa sieberiana* (Snowgrass), *Geranium solanderi* (geranium), *Elymus scaber* (Common Wheat Grass) and *Chrysocephalum* sp. (Yellow Buttons).

Exotic species are found clustered or scattered and include *E. plantagineum, Brassica* sp., *Eleusine tristachya*. (Goose Grass), *B. diandrus*, *T. arvense*, *Petrorhagia nanteuilii* (Proliferous Pink), *Conzya* sp., *D. glomerata, Asparagus officinalis* (Asparagus), *M. caroliniana, P. lanceolata*, and *T. arvense*.

The health of the upperstorey eucalypts is good with little evidence of mistletoe attack or dieback. There is notable regeneration of the woodland with many juvenile and sapling *E. melliodora* being present. More common in the community are mature trees – a few with small hollows. There are a few logs that provide fauna habitat in the woodland and leaf litter was recorded as being moderate.

Birds were common in the woodland compared to the paucity of this faunal group in the more disturbed areas. Birds observed included the Cuckoo Shrike, White-plumed Honeyeater, Noisy Miner, Red-rumped Parrot, Willie Wagtail, Superb Fairy Wren, Wattlebird, Australian Raven, Dollarbird, Australian Magpie and possibly the Black-chinned honeyeater. Pest species such as the House Sparrow and Blackbird were also observed. Eastern Grey kangaroos were also sighted.

In the northern patch *E. bridgesiana* is a co-dominant species with *E. blakelyi* as a sub-dominant. The mid-stratum is also more densely vegetated with *R. fruticosa, R. rubiginosa* and *L. ferocissimum*.

3.9. Pests and weeds

The subject site has had a history of disturbance with clearing, grazing, quarrying and past erosion greatly modifying the site from its original status of timbered hillslopes and a graminoid dominated floodplain.

Many of the weeds recorded on the subject site have been listed above in the habitat descriptions. Those listed as noxious under the *Noxious Weeds Act* NSW (1993) in the Upper Macquarie County Council (includes the Bathurst Regional LGA) are the Blackberry, Sweet Briar, African Boxthorn, St. John's Wort and the Tree-of-Heaven.

Fauna species observed include the Red Fox, Common Blackbird, Sparrow and the Feral Pigeon.

3.10. Threatened species, populations & ecological communities

A desktop analysis of the threatened species, populations and ecological communities and their habitats known or likely to occur in the subject site was undertaken with reference being made to a number of sources. These include the 2009 Comprehensive Bathurst State of the Environment Report (Bathurst Regional Council 2009), state and federal listings and habitat assessments in DECCW and DSEWPC websites (Department of Environment Climate Change & Water 2011; Department of Sustainability Environment Water Population and Communities 2011) and other references including the 'Birds of the Bounday Road Landcare Reserve' (Marshall 2009), 'Reader's Digest Complete Book of Australian Birds' (Reader's Digest 1998) and 'Reptiles and Amphibians of Australia' (Cogger 2000).

Box-Gum Woodland EEC/ Box-Gum Grassy Woodland CEEC

The remnant woodland areas on the subject site are recognised as being part of an endangered community in both the state and federal legislation. Protection is sought through the following Acts with the listing being slightly different in each:

- 'White Box Yellow Box Blakely's Red Gum Woodland' (Box-Gum Woodland) listed as an Endangered Ecological Community (EEC) in the NSW *Threatened Species Conservation Act* (1995) (TSC Act); and
- 'White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland' (Box Gum Grassy Woodlands) listed as Critically Endangered Ecological Community (CEEC) in the federal *Environment Protection & Biodiversity Conservation Act* 1999 (EPBC Act).

The Box-Gum Woodland EEC in the TSC Act is characterised by the presence or prior occurrence of White Box, Yellow Box or Blakely's Red Gum (NPWS n.d.). There are five main features in the Final Determination that govern whether the EEC exists (Table 1) and these have been used to confirm that the woodland at the subject site is a Box-Gum Woodland EEC.

Table 1. Identifying remnant woodland as an EEC under TSC Act

Features of a Box-Gum Woodland EEC	Applicable
Whether the site is within the area defined in the Determination	✓
Whether the characteristic trees of the site are (or are likely to have been) White Box, Yellow Box or Blakely's Red Gum	✓
Whether the site is mainly grassy	✓
Whether any of the listed characteristic species occur (including as part of the seedbank in the soil)	✓
If the site is degraded, whether there is potential for assisted natural regeneration of the overstorey or understorey	✓

Further, the definition of the Box-Gum Woodland explicitly recognises that some remnants are degraded and the Final Determination specifically includes treeless areas in the EEC '*as a result of past clearing or thinning'* (NPWS n.d.). As such, highly disturbed sites that have few if any native species in the understorey are specifically included in the community provided "*vegetation, either understorey or overstorey or both, would, under appropriate management, respond to assisted natural regeneration, such as where the natural soil and associated seed bank are still at least partially intact*"(NPWS n.d.). Therefore, the cleared and grazed grassy herblands of the lower and mid-slopes were assessed in accordance with this inclusion and the varying conditions of the remnants in the EEC (Table 2). It was determined that the grassy herblands are not part of the Box-Gum EEC.

Table 2. Identifying grassy herbland as an EEC under TSC Act

Features of a modified Box-Gum Woodland EEC	Applicable
Vegetation, either understorey or overstorey or both, would, under appropriate management, respond to assisted natural regeneration, such as where the natural soil and associated seed bank are still at least partially intact	X Unlikely

Multi-aged overstorey with a grassy, herb-rich understorey	X Absence of overstorey Box-Gums
Partially cleared/thinned stands with a mixture of native and exotic understorey species	X as above
Stands where White Box, Yellow Box or Blakely's Red Gum have been killed and other species dominate the canopy	X as above
Grasslands (secondary or derived grasslands), where the tree overstorey has been removed and only the Box-Gum Woodland understorey is present	X Absence of Box-Gum woodland understorey (chiefly exotic species)
Degraded remnants that have few, if any, native species in the understorey	X Absence of Box-Gum Woodland and native species in understorey

In the EPBC Act the 'Box Gum Grassy Woodlands and Derived Grasslands' is characterised by a species-rich understorey of native tussock grasses, herbs and scattered shrubs, and the dominance or prior dominance, of White Box, Yellow Box or Blakely's Red Gum trees.(Department of the Environment Water Heritage n.d.). The box-gum grassy woodlands now exist as remnants in three different states.

1. An overstorey of eucalypt trees exists, but there is no substantial native understorey.
2. A native understorey exists, but the trees have been cleared.
3. Both a native understorey and an overstorey of eucalypts exist in conjunction.

The condition criteria outlined in Table 3 are the minimum level at which patches are to be included in the listed ecological community (Department of the Environment Water Heritage n.d.).

Table 3. Identifying remnant woodland as being Critically Endangered Community under EPBC Act

Condition criteria of a degraded Box-Gum Grassy Woodland CEC	Applicable
An overstorey of eucalypt trees exists, but there is no substantial native understorey	X
A native understorey exists, but the trees have been cleared	X
Both a native understorey and an overstorey of eucalypts exist in conjunction	✓

Threatened species

No other threatened flora and fauna species, populations and ecological communities and their habitats known or likely to occur in the subject site were positively recorded on the subject site. However, following a literature review and habitat assessment in the study area 21 threatened species were considered to have potential to occur in the area. These species, along with their conservation status and habitat requirements are listed in Appendix A.

4. ENVIRONMENTAL SITE CONSTRAINTS

The most significant environmental constraints to the proposed development are soil erosivity and the listing of the Box-Gum Woodland/Grassy Woodland in the TSC and EPBC Acts.

Soil erosion

The non-calcic brown soils can be prone to water and colluvial erosion when the topsoil is left exposed due to the groundcover vegetation being denuded through high grazing pressure and trampling, cultivation or mechanical disturbance. The subsoils are less erodible; however, rilling or gullying can occur if the impact continues or the weakly structured topsoils are not protected with adequate vegetation cover. This erosivity can be exacerbated on the moderately inclined sloping hillsides – the steepest having an incline of approximately 16%. These soils and hillslopes are in the areas of the Box-Gum Woodland patches and the grassy herblands. The steepest gradient is along the southern boundary where a patch of Box-Gum Woodland lies. Soil conservation works on the proposed site for the BMX track was undertaken by the NSW Soil Conservation Service as part of the quarry restoration.

Box-Gum Woodland/Grassy Woodland

Any action that is assessed to significantly impact on the Box-Gum Woodland will trigger the TSC Act, which would require an approval authority to consider the impacts of the proposed action on the EEC. Also, under the EPBC Act an action will require approval from the minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance. For the proposed development on the subject site it would be an assessment of the Box-Gum Grassy Woodland as it is listed in the Act as a matter of national environmental significance.

5. ENVIRONMENTAL IMPACTS OF THE PROPOSED DEVELOPMENT

BRC's preliminary layout plans have been used as the foundation for the preparation of a conceptual site layout plan as presented in the Feasibility Study. However, an itemised works schedule, final design plan and methods of construction for the proposed development have not yet been detailed. Therefore, only non-specific impacts of the proposed development can be given at this stage. The impacts of the proposed development in this SEE refer only to those that would impact, or are likely to impact on the natural environment (Table 4). Impacts on the existing infrastructure have been covered in the Feasibility Study.

Table 4. Impacts on the environment

Activity/Use	Works/Action	Impact on environment
Aquatic and semi-aquatic habitats		
Construction of car park Use of car park	Roadworks – vegetation removal, grading, paving	Sediments and contaminants entering the dam Possible changes of water inflows into the dam Temporary reduction in dam usage by aquatic birds during periods of construction

Floodplain		
Construction of the velodrome and clubhouse	Haulage of building materials Site survey Clearing site for infrastructure Importation of clean fill for building foundation to raise above existing floodplain level	Loss of some native graminoids and forb species Alteration of the flood pattern of the floodplain (change in storage capacity, and relative elevations), although already reduced capacity as functioning floodplain due to railway line and road
Grassy herblands		
Construction of criterium, mountain bike courses, and BMX tracks Construction of site access roadways Maintenance of tracks & roadways Weed control Amenity planting	Sediment & erosion control Slashing around tracks Road grading Road and track works – vegetation removal, grading, paving Importation of construction and building material Smoking on site	Potential for localised erosion Spread of weeds Weedicides killing non-targeted native species Dropping lighted cigarettes/matches may cause fires
Box-Gum Woodland		
Weed control Public access	Increased pedestrian trafficking Spraying thistles, noxious weeds and other undesirable plants Firewood collection Smoking on site	Damage to groundcover vegetation Inadvertent introduction of weed propagules Weedicides killing non-targeted native species Removal of fallen logs reduces habitat features Dropping lighted cigarettes/matches may cause fires

6. SIGNIFICANCE OF IMPACTS

This section assesses the significance of the impacts in relation to threatened species, populations and ecological communities and their habitats known or likely to occur in the subject site under the TSC Act. It also assesses the significance of Matters of National Environmental Significance under the EPBC Act.

6.1. Assessment of Significance

This Assessment of Significance (Seven-part Test) has been prepared with due consideration of Section 94 of the TSC Act - 'Significant effect on threatened species, populations or ecological communities, or their habitats'. Threatened species listed in the TSC Act and EPBC Act that are likely to occur on the subject site have been identified and listed in Appendix A along with their habitat requirements. It is considered that the preferred habitat for each of these species (generally woodlands) would not be impacted directly or indirectly by the proposed development so Assessments of Significance were not undertaken.

An Assessment of Significance has been prepared, however, for the Box-Gum Woodland due to its known occurrence on the subject site and proximity to the proposed development. The assessment is presented in Appendix B.

The findings from the assessment of significance is that there are no significant impacts likely to occur as a result of the proposed development on threatened species, populations, ecological communities or their habitats.

6.2. National environmental significance

The matters of national environmental significance under the EPBC Act and the impact assessment in the area of the proposed action are outlined in Table 5. The full assessment of the listed threatened species and ecological communities are provided in Appendix B. To conclude: no action has, will have, or is likely to have, a significant impact on a matter of national environmental significance in the area of the proposed action.

Table 5. Matters of national significance and their impact assessment

Matter of national significance	Impact assessment
Listed threatened species and ecological communities	No impact on threatened species or the critically endangered ecological community would be significantly impacted in the area of proposed action
Migratory species protected under international agreements	No migratory species protected under international agreements are likely or known to occur in the area of proposed action. E.g. the Painted Snipe listed in the China-Australia Migratory Bird Agreement (AMBA) and Black-tailed Godwit listed in the Korea-AMBA are also listed in the Bathurst SoE as threatened species. However, there is no favourable habitat in the subject site for listed migratory species.
Ramsar wetlands of international importance	The area of proposed action is not part of or in the vicinity of any listed Rasar wetlands of international importance
Commonwealth marine environment	The area of proposed action is not part of or in the vicinity of any marine environment
World Heritage properties	The area of proposed action is not part of or in the vicinity of any listed World Heritage properties
National Heritage places	The area of proposed action is not part of or in the vicinity of any listed National Heritage places
Great Barrier Reef Marine Park	The area of proposed action is not part of or in the vicinity of the Great Barrier Reef Marine Park
Nuclear actions	The proposed development would not involve any nuclear actions

6.3. Impacts on the EEC

With the current land management practices on the subject site the integrity of the vegetation in the Box-Gum Woodland EEC/Grassy Woodland CEEC (Box-Gum Woodland EEC) is likely to improve in condition given eucalypt regeneration and the likelihood of the native herbage increasing in dominance. The *ecosystem*, however, is not as robust and has lost

considerable resilience over the broader landscape. With intervention the status can improve especially if it is integrated into the overall conservation management of the Box-Gum woodlands in the area.

The proposed development would not have a significant impact on the EEC. However, an impact assessment would need to be undertaken if any action is proposed in the EEC in the future. It is recommended that a downhill track should not be constructed in the patches of Box-Gum Woodland given the significance of these areas.

6.4. Koala Habitat Protection

Potential Koala habitat was also addressed according to the State Environmental Planning Policy No. 44 – Koala Habitat Protection as the Bathurst Local Government Area is listed in Schedule 1 of this planning instrument. The proposed development would not significantly impact on potential Koala habitat. With the protection and enhancement of the woodland the habitat value has potential to improve.

7. RECOMMENDATIONS

The following recommendations are given to minimise the impacts of the proposed development on the fauna, flora, threatened species and the endangered ecological community on the subject site and study area:

Management of the EEC

- Recommend that the woodland areas be monitored to gauge any change in condition as a result of the bike park development or from general trafficking, dumping of rubbish, etc.
- Consideration should be given to constructing the mountain bike course in the grassy herblands with landscaping and obstacle construction undertaken in advance and track stabilisation works being employed to minimize erosion;
- Plan for the opportunity of enhancing the condition of the Box-Gum Woodland and improving its landscape connectivity through conservation initiatives recognised in the Vegetation Management Plan and currently being adopted by BRC on Council controlled land;
- Manage the EEC as a conservation area;
- Erect barriers to restrict public access and vehicular movement in the Box-Gum Woodland areas. This may include signage to highlight the conservation value f the area;
- Any revegetation or rehabilitation program would need to adopt best management practices in regards to enhancing Box-Gum Woodlands (i.e. select indigenous species, incorporate understorey and ground cover species and habitat features such as logs, install nest boxes etc.);
- Manage or restrict grazing in the woodland areas;
- Do not slash within the woodland areas;
- Retain fallen timber and logs and mitigate against the collection of firewood as accessibility to the public is increased;

- Avoid the spread of weeds into the EEC by restricting vehicular movement (decreases disturbance and minimizes the spread of propagules from the neighbouring weedy, grassy herblands);
- Control browsing animals such as rabbits and hares;
- Any vehicular turning bays and car parks should avoid the Box-Gum Woodland patches;

Aquatic environment

- Improve habitat value of the dam by restricting stock access or by providing an off-dam watering point, introducing logs on the banks and in the water, plant some trees/shrubs nearby for birds, keep perimeter of dam unslashed to buffer sediments and contaminants from the catchment and retain vegetation within drains entering the dam.

Environmental land management

- During the construction phase of the proposed development work compounds and site access roads should be situated away from the dam or patches of Box-Gum Woodland;
- Throughout the construction and post construction phases exposed surfaces should be stabilised as soon as possible and sediment and erosion control measures should be adopted;
- Minimise the loss of groundcover herbage unless stabilised to avoid soil erosion and sediment transfer;
- It is encouraged that any amenity planting be sympathetic to the Box-Gum Woodland;
- Any weed management program needs to consider the habitat value of Sweet Briar and African Boxthorn for the avifauna and the stabilising benefits of the grasses and forbs. A staged and judicious removal of weeds is therefore necessary;
- Do not plant exotic species in the EEC or potentially invasive species anywhere on subject site;
- Mitigate against the dumping of rubbish and garden refuse and in areas outside the subject site but accessible to the public;
- Control foxes in conjunction with rabbit and hare control;

8. CONCLUSION

There is no significant impact on threatened species, populations or EECs that is likely to occur from any action resulting from the current Bicycle Park development proposal. It is also considered that the construction and use of the velodrome, club house, criterium, and mountain bike courses, car park and BMX track, would not have an impact on any fauna or flora on the subject site. This has been determined by the fact that the habitat types to be impacted are of low conservation value, primarily due to the high level of prior disturbance, high dominance of weed species, general loss of original species and vegetation structure and paucity of fauna and favourable habitat.

Significant constraints to development are the erosivity of the soils and the need to protect the Box-Gum Woodland EEC. To protect and enhance the Box-Gum Woodland areas it is recommended that the mountain bike courses be constructed in areas not covered by the Box-Gum Woodland and opportunities be made to enhance the Box-Gum Woodland through conservation works and by improving its connectivity through the landscape. Erosion needs to be mitigated against through the adoption of appropriate erosion and sediment control measures to reduce the likelihood of sediment movement.

If any future development is likely to have a significant impact on the Box-Gum Woodland then it is necessary that the fauna and flora be comprehensively surveyed and a threatened species impact assessment be undertaken in accordance with the TSC and EPBC Acts. The fauna/fauna assessment for this SEE should not be relied upon given the intended rapid nature of the survey methodology, sub-optimal timing of survey in summer and that species composition and structure can change over time.

9. REFERENCES

Bathurst Regional Council (2009) Comprehensive State of the Environment report. Bathurst Regional Council, Bathurst.

Bureau of Meteorology (2011) Climate statistics for Bathurst Agricultural Station. http://www.bom.gov.au/climate/averages/tables/cw_063005_All.shtml. Cited

Cogger HG (2000) *Reptiles and amphibians of Australia.* Reed New Holland.

Department of Environment Climate Change & Water (2011) Threatened species, populations and ecological communities of NSW. http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/home_species.aspx. Cited

Department of Sustainability Environment Water Population and Communities (2011) EPBC Act lists. http://www.environment.gov.au/epbc/about/lists.html#species. Cited

Department of the Environment Water Heritage (n.d.) Advice to the Minister for the Environment and Heritage from the Threatened Species
Scientific Committee (TSSC) on Amendments to the List of Ecological Communities
under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). http://www.environment.gov.au/biodiversity/threatened/communities/pubs/box-gum.pdf. Cited

Department of the Environment Water Heritage and the Arts (2099) Matters of National Environmental Significance: significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999. http://www.environment.gov.au/epbc/publications/pubs/nes-guidelines.pdf. Cited

Kovac M, Murphy B Lawrie J (1989) Bathurst Soil Landscape Series S1 55-8. Soil Conservation Service of New South Wales, Sydney.

Mactaggart B (2003) Bathurst Vegetation Management Plan. Terra Consulting (NSW) Pty Ltd, Orange.

Mactaggart B, Goldney D Erskine WD (2009) Bathurst Urban Waterways Management Plan. Cenwest Environmental Services, Bathurst.

Marshall C (2009) Birds of the Bounday Road Landcare Reserve, unpublished report, Bathurst.

NPWS (n.d.) Identification guidelines for Endangered Ecological Communities: White Box Yellow Box Blakely's Red Gum Woodland (Box-Gum Woodland). Threatened Species Unit.

Pogson DJ Watkins JJ (1998) *Bathurst 1:250,000 geological sheet SI/55-8: Explanatory notes.* Geological Survey of New South Wales, Sydney.

Reader's Digest (1998) *Reader's Digest complete book of Australian birds.* Reed Books, Australia.

Simply Great Leisure (2010) Bathurst bicycle park feasibility study: final draft report for Bathurst Regional Council.

Specht RL (1970) Vegetation. In: *The Australian environment* (ed. G. W. Leeper) pp. 44-67. CSIRO - Melbourne University Press, Melbourne.

Appendix A.

Threatened species with potential to occur on the subject site

Scientific name	Common name	Conservation status		Recorded*	Habitat requirements
		TSC Act	EPBC Act		
				Avifauna	
Lophoictinia isura	Square-tailed Kite	V	-	Predicted	Found in a variety of timbered habitats including dry woodlands and open forests; shows a particular preference for timbered watercourses.
Callocephalon fimbriatum	Gang Gang Cuckatoo	V	-	Known	In summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In winter, may occur at lower altitudes in drier more open eucalypt forests and woodlands, and often found in urban areas. Recorded in Boundary Road Reserve
Lathamus discolor	Swift Parrot	E	E	Predicted	Migrates to the Australian south-east mainland between March and October; on the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations.
Anthochaera phrygia	Regent Honeyeater	CE	E	known	Inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. Recorded in Boundary Road Reserve
Stagonopleura guttata	Diamond Firetail	V	-	Known	Found in grassy eucalypt woodlands, including Box-Gum Woodlands, Feeds exclusively on the ground, on ripe and partly-ripe grass and herb seeds and green leaves, and on insects, Birds roost in dense shrubs or in smaller nests built especially for roosting, Recorded in Boundary Road Reserve
Melithreptus gularis gularis	Black-chinned Honeyeater	V		Known	Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark (*Eucalyptus sideroxylon*), White Box (*E. albens*), Inland Grey Box (*E. microcarpa*), Yellow Box (*E. melliodora*).
Neophema pulchella	Turquoise Parrot	V	-	-	Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland.
Ninox connivens	Barking Owl	V	-	Predicted	Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. Is flexible in its habitat use and hunting can extend in to closed forest and more open areas.

Hieraaetus morphnoides	Little Eagle	V	-	Known	Occupies open eucalypt forest, woodland or open woodland. Sheoak or acacia woodlands and riparian woodlands of interior NSW are also used. Recorded in Boundary Road Reserve
Daphoenositta chrysoptera	Varied Sittella	V	-	-	Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Recorded in Boundary Road Reserve
Pyrrholaemus saggitatus	Speckled Warbler	V	-	Known	The Speckled Warbler lives in a wide range of *Eucalyptus* dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Recorded in Boundary Road Reserve
Climacteris picumnus victoriae	Brown Treecreeper	V	-	Predicted	Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range
Grantiella picta	Painted Honeyeater	V	-	Known	Inhabits Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus Amyema.
Melithreptus gularis gularis	Black-chinned Honeyeater	V	-	Known	Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark (*Eucalyptus sideroxylon*), White Box (*E. albens*), Inland Grey Box (*E. microcarpa*), Yellow Box (*E. melliodora*) and Forest Red Gum (*E. tereticornis*).
Melanodryas cucullata cucullata	Hooded Robin	V	-	known	Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses. Sightings on Mount Panorama
Pomatostomus temporalis temporalis	Grey-crowned Babbler	V	-	Predicted	Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains.

				Mammals	
Phascolarctos cinereus	Koala	V	-	Known	Inhabit eucalypt woodlands and forests.
Saccolaimus flaviventris	Yellow-bellied Sheathtail Bat	V	-	Predicted	The Yellow-bellied Sheathtail-bat is a wide-ranging species found across northern and eastern Australia.
Pteropus poliocephalus	Grey-headed Flying-Fox	V	V	-	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Known to roost in sites along the Macquarie River, Bathurst in 2010
				Flora	
Lepidium hyssopifolium	Aromatic Peppercress	E	E	Known	The species occurs in a variety of habitats including woodland with a grassy understorey and grassland. Appears to respond to disturbance, having appeared after soil disturbance at one site. Known to occur near Hen and Chicken Lane, Perthville.

* Predicted or known to occur in the Bathurst sub-region of the Central West Catchment Management Region (Source Department of Environment Climate Change & Water 2011)

Appendix B.

Threatened Species Assessment

Assessment of Significance

Assessment for the Box-Gum Woodland Endangered Ecological Community

a) In the case of a threatened species, whether the life cycle of the species is likely to be disrupted such that a viable local population of the species is likely to be placed at risk of extinction.

N/A

b) In the case of an endangered population, whether the life cycle of the species that constitutes the endangered population is likely to be disrupted such that the viability of the population is likely to be significantly compromised.

N/A

c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

No. The extent of the EC would not change as there would be no removal of trees within the EEC.

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

No. The composition of the EC should not be impacted by the proposed development. The development is restricted to other vegetation types and would not directly or indirectly adversely modify the composition of the EC.

d) In relation to the habitat of a threatened species, population or ecological community:
(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed

No habitat of the EEC is likely to be removed or modified. The development is restricted to other vegetation types and would not directly or indirectly adversely modify the composition of the EC.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action

The ECC is connected to other patches of Box-Gum Woodland and this would be retained with no fragmentation resulting from the proposed action.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

No habitat would be removed, modified, fragmented or isolated as a result of the proposed action.

e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).

The Box-Gum Woodland is not listed as ‘critical habitat’ under the TSC Act.

f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

N/A

g) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

No proposed action is listed as a key threatening process under the TSC Act

Conclusion

It can be concluded that there would be no significant impact on the Box-Gum Woodland as a result of the actions of the proposed development of the Bicycle Park

Matters of National Environmental Significance

The threatened species and the critically endangered ecological community known or with potential to occur in the area of proposed action are assessed according to the relevant matter of national significance under the EPBC Act; namely 'listed threatened species and ecological communities'.

The assessment of the threatened species and the critically endangered ecological community are provided according to the significant impact criteria in Tables B.1 – B.3. An action is likely to have a significant impact on threatened species or endangered ecological communities if there is a real chance or possibility that it will record affirmative to one of the impact criterion listed in the tables.

Table B.1 Assessment of an endangered species

Significant impact criteria	Significantly impacted y/n		
	Swift Parrot	Regent Honeyeater	Aromatic Peppercress
Lead to a long-term decrease in the size of a population	X	X	X
Reduce the area of occupancy of the species	X	X	X
Fragment an existing population into two or more populations	X	X	X
Adversely affect habitat critical to the survival of a species	X	X	X
Disrupt the breeding cycle of a population	X	X	X
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	X	X	X
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	X	X	X
Introduce disease that may cause the species to decline	X	X	X
Interfere with the recovery of the species	X	X	X

Table B.2 Assessment of a vulnerable species

Significant impact criteria	Significantly impacted y/n	
	Green & Gold Bell Frog	Grey-headed Flying-fox
Lead to a long-term decrease in the size of an important population of a species	X	X
Reduce the area of occupancy of an important population	X	X
Fragment an existing important population into two or more populations	X	X
Adversely affect habitat critical to the survival of a species	X	X

Disrupt the breeding cycle of an important population	X	X
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	X	X
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	X	X
Introduce disease that may cause the species to decline,	X	X
Interfere substantially with the recovery of the species	X	X

Table B.3 Assessment of a critically endangered ecological community

Significant impact criteria	Significantly impacted y/n
	Box Gum Grassy Woodlands and Derived Grasslands
Reduce the extent of an ecological community	X
Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines	X
Adversely affect habitat critical to the survival of an ecological community	X
Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns	X
Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	X
Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: -- assisting invasive species, that are harmful to the listed ecological community, to become established, or -- causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community,	X
Interfere with the recovery of an ecological community	X

ADDENDUM
STATEMENT OF ENVIRONMENTAL EFFECT
BATHURST BICYCLE PARK

Barbara Mactaggart
22 June 2011

ENVIRONMENTAL IMPACTS OF ALTERNATE SITE ACCESS

The proposed development includes site access from Vale Road across the Main Western Railway over a rail crossing. An alternate access has been considered from College Road and the environmental impacts of this approach were not specifically addressed in the Statement of Environmental Effects (SEE).
The purpose of this addendum is to address any environmental impacts of this likely access.

EXISTING ENVIRONMENT

Location of alternate site access

An alternate site access has been considered to run from College Road south-east to the proposed Bicycle Park site (the Subject Site as per SEE) on land owned and controlled by Bathurst Regional Council.

Land use

The land is currently zoned 1A (General Rural) and has had a long history of grazing. Presently it is ungrazed.

Physical environment

The access route is on a gently to moderately inclined hillside on moderately erodible non-calcic brown soils. The route is over a shallow drainage line that has been rehabilitated by the NSW Soil Conservation Service (SCS). Eroded banks have been battered into a wide-open grassed channel with a number of flow diversions having been constructed.

Fauna and flora

After a prolonged history of clearing and grazing the flora along the access route is highly modified. Most of the upper and mid-storey native vegetation have been removed and the ground layer is dominated by exotic forbs and grasses forming an open eucalypt woodland. Scattered shrubs, such as *Rosa rubiginosa*, and widely scattered eucalypts occur in the vicinity of the access route.
Kangaroos have been observed in the area.

ENVIRONMENTAL SITE CONSTRAINTS

Soil erosion

The non-calcic brown soils can be prone to water and colluvial erosion when the topsoil is left exposed following mechanical disturbance (e.g. during roadwork construction and maintenance).

ENVIRONMENTAL IMPACTS OF ALTERNATE SITE ACCESS

The environmental impacts are considered for the construction of the access track, which are likely to involve vegetation removal, earthworks (road formation and drainage), haulage of materials, stockpiling road base and road paving.
Likely impacts on the environment as a result of these works and activities include:

- Loss of groundcover vegetation (removal of any eucalypts is unlikely due to their wide spacing and the ease of avoidance);
- Potential for localised soil erosion and sediment transfer;
- Alteration in hydrology of the drainage line if the passage of water is restricted or flow diversions constructed by the SCS are modified.

RECOMMENDATIONS

- Ensure adequate erosion and sediment control during all phases of construction;
- Avoid the removal of eucalypts and ensure any works or activities do not disturb the root system, trunk or canopy of any eucalypts;
- Maintain the hydrological integrity of the drainage line to prevent erosion or water ponding;
- Allow for natural regeneration of exposed soils (e.g. leave site ungrazed). Propagules in the soil should be adequate for natural regeneration. However, if this does not occur seeding with native grass species may be required.

SECTION 5 – ACOUSTIC STUDY

ACCOUSTIC CONSULTING ENGINEERS

Acoustic Consulting Engineers
Sound and Vibration Consulting Engineers
ABN 44 133 737 443

Acoustic Consulting Engineers Pty Ltd
PO Box 3450
PUTNEY NSW 2112
Telephone: +61 (0) 2 8006 5560
Facsimile: +61 (0) 2 8006 5559
www.AcousticConsulting.com.au

Proposed Bathurst Bicycle Park

Noise Assessment
Development Application

Report No.: 100138-02R-DD Rev01

Date: November 2010

Prepared by: Acoustic Consulting Engineers Pty Ltd
PO Box 3450
PUTNEY NSW 2112

Prepared for: Bathurst Regional Council
158 Russell Street
BATHURST NSW 2795

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1 INTRODUCTION

Acoustic Consulting Engineers Pty Ltd was commissioned by Bathurst Regional Council to prepare a noise assessment for the proposed Bathurst Bicycle Park located on the western side of the Western Railway Corridor and Vale Road, approximately 5km to the south of Bathurst CBD.

This report presents a summary of a noise assessment for the purpose of Development Application (DA). The report addresses potential environmental noise impact on the surrounding noise sensitive receivers, caused by the proposed development and noise exposure to the proposed development from the surrounding industry.

Conceptual mitigation measures are recommended to control and manage operational noise from the development.

It is recommended that following the construction, noise output from the PA system(s) (if provided) be calibrated to ensure environmental noise impact from the proposal achieves the recommended assessment objectives.

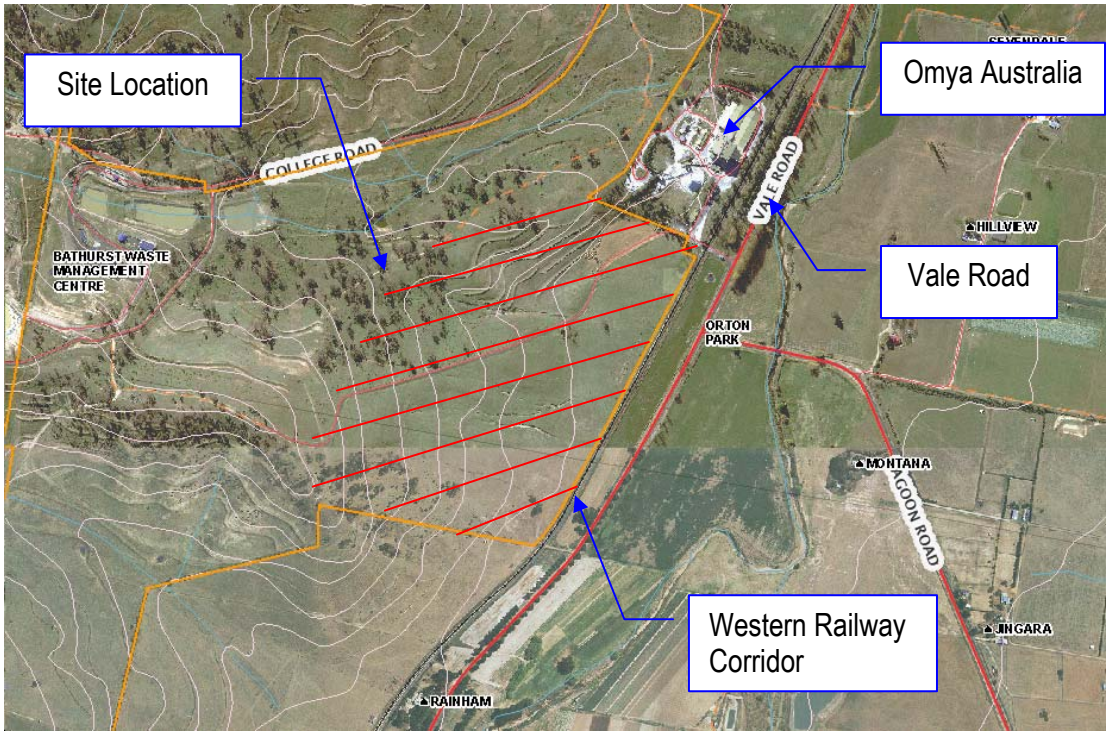
2 DESCRIPTION OF SITE AND PROPOSAL

2.1 Site Description

Figure 1 shows the subject site for the proposed Bathurst Bicycle Park development. The site is owned and managed by Bathurst Regional Council and zoned for rural uses. It is located on the western side of the Western Railway Corridor and Vale Road. To the north of the site is a limestone (calcium carbonate) processing plant operated by Omya Australia Pty Ltd.

The ground topography is rising toward the west and relative flat to the east of the Western Railway Corridor.

Figure 1 Site Location



2.2 Proposal

The objectives of the proposed multi-disciplinary bicycle park are to provide:

- A base for cycling development, particular juniors;
- A venue for development of cycling events;
- A facility for everybody to use and junior development; and
- Growth in bike tourism opportunities

The Bathurst Bicycle Park facilities would consist of:

- A 333m outdoor velodrome (complete with training lighting);
- A criterium long course (Kermesse);
- A criterium short course;

- A BMX track;
- A mountain bike downhill course;
- A mountain bike cross country course;
- A junior education course (flat surface);
- A club house and amenities building; and
- Car-parks

The club house and amenities buildings and facilities would include:

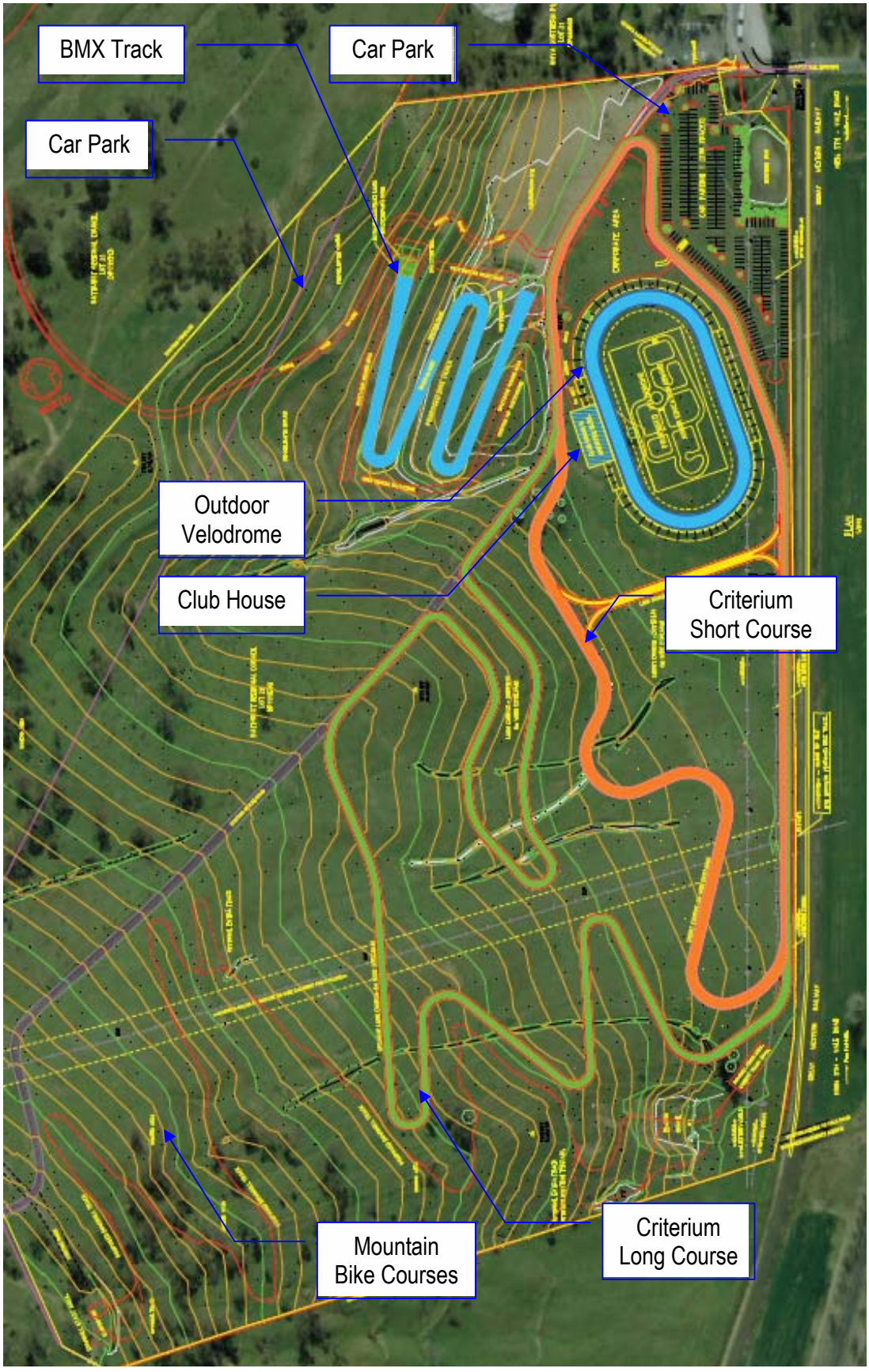
- Central amenities and spectator areas;
- A hall for club activities/presentation;
- Meeting rooms for education;
- Club offices;
- Shelter from wind/climate;
- Undercover marshalling area;
- Bicycle workshop area;
- Workshop/Pro shop areas;
- Storage;
- Café/catering facilities; and
- Temporary infrastructure for major events

The Bathurst Bicycle Park will have frontage to both College Road and the Western Railway Corridor. Site access will be provided from Vale Road via an existing controlled rail crossing and College Road via a new access.

Vale Road is an arterial road with a posted speed limit of 100km/hr. College Road has a posted speed limit of 80km/hr and would be classified as a collector road. The posted speed limits on these roads are 60km/hr, approximately 2-3km to the north of the subject site.

Figure 2 shows a concept layout for the proposed Bathurst Bicycle Park.

Figure 2 Concept Layout



2.3 Potential Acoustic Issues

During the normal use for training and practicing and local events, the number of patrons are relatively small and given the nearest residential receivers are at least 450m from the site, noise from the proposal Bathurst Bicycle Park is not expected to be significant.

The potential acoustic constraints would be noise from crowd cheering, PA systems and traffic generation on public roads during regional and major events which would be held a number of times per year.

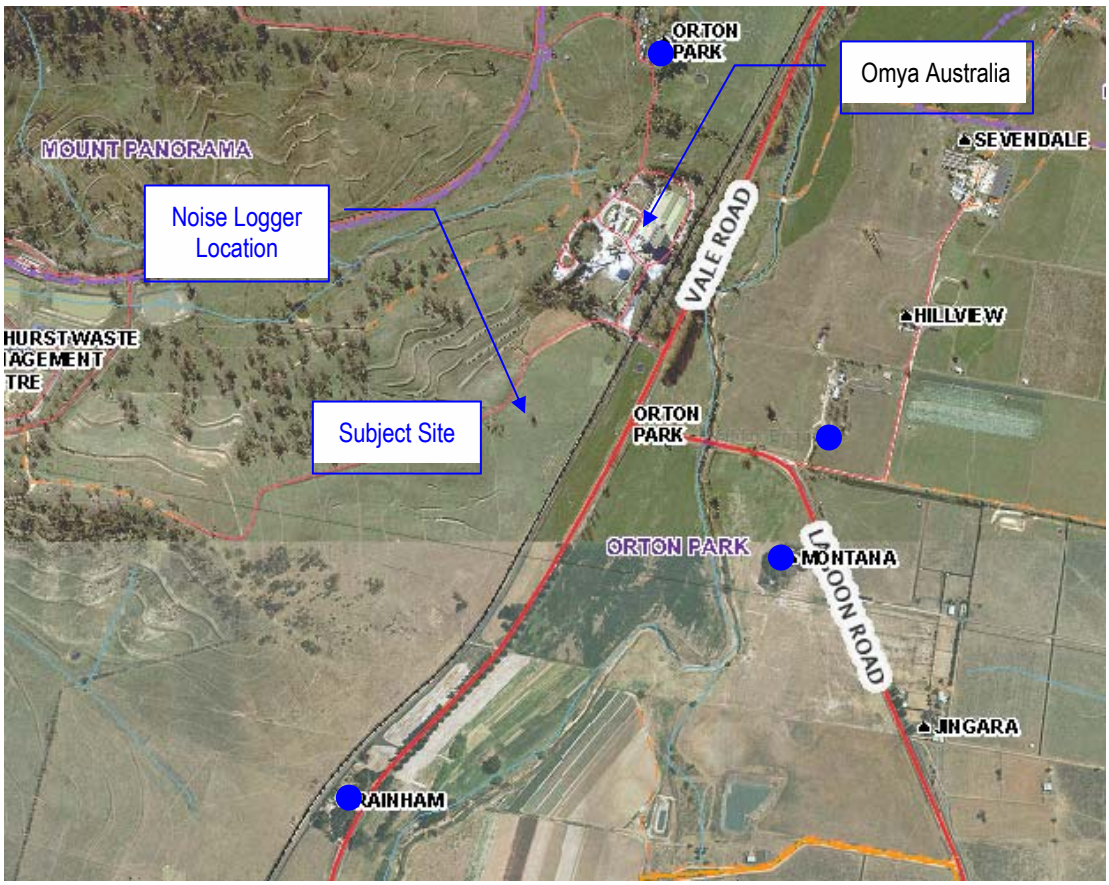
2.4 Potential Noise Sensitive Receivers

The nearest identified noise sensitive receivers are the:

- Scattered residential dwellings to the north, south and east of the subject site; and
- An industrial development (Omya Australia Pty Ltd) to the north of the subject site.

Figure 3 shows the locations of the nearest potentially affected receivers with respect to the subject site.

Figure 3 Potential Noise Sensitive Receivers



3 NOISE MEASUREMENTS

3.1 Industrial Noise

Industrial noise exposure to proposed Bathurst Bicycle Park is due to the Omya Australia's limestone (calcium carbonate) processing plant to the north, particularly the limestone crushing plant.

Observations from the site inspection confirmed that the limestone crushing plant does not operate continuously. Table 1 presents a summary of the measured $L_{Aeq,15min}$ noise levels from the limestone processing plant at various distances.

Table 1 Measured $L_{Aeq,15min}$ Noise Levels from Omya Australia, dB(A)

Measurement Location	Measured $L_{Aeq,15min}$ Noise Level	
	Crushing Plant Operating	Crushing Plant Not Operating
At southern site boundary of Omya Australia	59-62	50-51
70m from Omya Australia's southern site boundary	55-57	45
200m from Omya Australia's southern site boundary	51-54	40 (estimate)

3.2 Background Noise Environment

Existing background and ambient noise levels at a representative location were measured from Monday 25 October 2010 to Sunday 31 October 2010.

Measurement instrumentation consisted of Type 1 SVAN 959 sound and vibration analyser and a prepolarised condenser microphone Type 1 SV-40AE. The instrument was checked before and after the measurements with a Type 1 SVAN SV-30A sound level calibrator and the drifts in calibration were within (0.2dB).

As environmental noise varies with time and the human ear is not equally sensitive to noise at different frequencies, A-weighted statistical levels are used to describe environmental noise. The common parameters used to describe environmental noise are the L_{Amax}, L_{A1}, L_{A10}, L_{A90} and L_{Aeq} levels measured over 15-minute intervals.

The L_{Amax} level is the maximum A-weighted sound pressure level over the sampling period. The L_{A1}, L_{A10} and L_{A90} levels are the A-weighted sound pressure levels exceeded for 1%, 10% and 90% of the sampling periods respectively. The L_{A90} level is usually referred to as the background noise level. The L_{Aeq} level is the A-weighted continuous equivalent (energy average) sound pressure level over the sampling period.

Appendix 1 presents a graphical summary of the L_{Amax}, L_{A1}, L_{A10}, L_{A90} and L_{Aeq} noise levels measured over 15-minute intervals. Table 2 presents a summary of the existing day/evening/ night L_{A90} background and L_{Aeq} ambient noise levels at the monitoring location.

Observations during the site inspections, set up and retrieval of measurement equipment confirmed that the existing noise environment is controlled by industrial noise from Omya Australia Pty Ltd and intermittent road traffic noise from Vale Road and rail traffic noise from the Western Rail Line.

As industrial noise from Omya Australia's limestone crushing plant is not continuous, there are periods when the background noise levels are lower than those presented in Table 2. Observations from the graphical measurement results (Appendix 1) revealed that in the absence of the limestone crushing plant operation, typical L_{A90} background noise during the day and evening periods is 42dB(A).

Table 2 Existing Background and Ambient Noise Levels, dB(A)

Date	Assessment Background Level (L_{A90})			Equivalent Continuous Level (L_{Aeq})		
	Day[1]	Evening[2]	Night[3]	Day[1]	Evening[2]	Night[3]
Monday 25 October 2010		43.3	42.0		51.8	50.8
Tuesday 26 October 2010	43.6	40.8	38.6	54.5	54.0	48.8
Wednesday 27 October 2010	44.8	42.8	43.2	56.2	50.1	51.7
Thursday 28 October 2010	46.2	43.8	42.5	57.4	53.9	50.0
Friday 29 October 2010	45.6	45.1	35.0	56.4	51.6	49.9
Saturday 30 October 2010	44.0	44.8		51.9	51.5	
Rating Background Level (L_{A90})	**45**	**44**	**42**			
Logarithmic Average Level (L_{Aeq})				**56**	**52**	**50**

4 ASSESSMENT OBJECTIVES

4.1 Noise Impact on the Proposal

The Bathurst Bicycle Park would be exposed to industrial noise from Omya Australia Pty Ltd to the north.

With reference to the Department of Environment, Climate Change and Water (DECCW) Industrial Noise Policy (INP), the Bathurst Bicycle Park would be categorised as an active recreational area and the recommended levels of industrial noise should not exceed 55-60dB(A) L_{Aeq}.

4.2 Noise Impact on the Surrounding

4.2.1 Operational Noise

Chapter 159 of the DECCW (formerly EPA) Environmental Noise Control Manual (ENCM) provides guidelines for the establishment of noise assessment objectives for *Lawful Sporting Activities* such as BMX races.

Where offensive noise occurs (ie. the $L_{Aeq,15min}$ noise levels from the sporting activities exceed the background L_{A90} noise level at the affected residential receivers by more than 5dB(A)), the sporting events should be restricted to:

- 7:00am to 6:00pm any weekday;
- 8:00am to 6:00pm Saturdays and Sundays; and
- 6:00pm to 10:00pm two (2) nights per week, excluding Sundays and Public Holidays;

The time restriction may be extended to 11:00am if the $L_{Aeq,15min}$ noise levels from the sporting activities do not exceed the background L_{A90} noise levels at the affected residential receivers.

Between 11:00pm and 8:00am, noise from sporting activities should not be audible at the affected residences.

To allow for special events such as state, national or international competitions, the DECCW would consider application for extensions of times for up to three (3) weekends per year.

For public address (PA) systems, *Chapter 156* of the DECCW:ENCM recommends that the intrusive noise levels should not exceed the background L_{A90} levels by more than 5dB(A) for normal activities and 10dB(A) for infrequent activities with recognised social merit.

It is noted that the ENCM recommended noise levels are in terms of the $L_{A10,15min}$. However, these have been modified to assess the noise as an $L_{Aeq,15min}$ parameter in line with the more recent INP guidelines.

Based on the day and evening background noise level of 42dB(A) L_{A90} (refer to Section 3.2) adopted for the noise assessment, the above restrictions apply if noise from the site exceed 47dB(A) $L_{Aeq,15min}$ at the nearest residences during normal operations.

As the number of local (concurrently held), regional and major sporting events are infrequent and have recognised social benefit, the above restrictions only apply when noise from the events exceed 52dB(A) $L_{Aeq,15min}$ at the nearest residences.

Where no offensive noise is likely to be caused, the restrictions are not applicable.

For the industrial receiver to the north (Omya Australia Pty Ltd), the DECCW:INP recommends that noise from the sporting activities should not exceed 70-75dB(A) $L_{Aeq,15min}$.

4.2.2 Road Traffic Noise

The DECCW Environmental Criteria for Road Traffic Noise (ECRTN) recommends that traffic noise associated with the land use developments should not exceed:

- 60dB(A) $L_{Aeq,15hr}$ during daytime (7:00am – 10:00pm) and 55B(A) $L_{Aeq,9hr}$ during night-time (10:00pm – 7:00am) at the nearest residences along arterial roads; and
- 60dB(A) $L_{Aeq,1hr}$ during daytime peak-hour (7:00am – 10:00pm) and 55B(A) $L_{Aeq,1hr}$ during night-time peak-hour (10:00pm – 7:00am) at the nearest residences along collector roads.

Where the existing road traffic noise levels already exceed the recommended levels, then noise from the developments should not increase the existing noise levels by more than 2dB.

5 NOISE ASSESSMENT

5.1 Noise Impact on the Development

The nearest points of the velodrome and BXM track are in the order of 250m from Omya Australia's limestone crushing plant.

From the measurement results presented in Table 1, a noise level of 55dB(A) $L_{Aeq,15min}$ due to Omya Australia's limestone crushing plant is predicted at the nearest locations of the velodrome and BXM track. At the furthest locations, the predicted noise level is 50dB(A) $L_{Aeq,15min}$.

The majority of the criterium courses are further from the limestone crushing plant, compared to the velodrome and BMX track. However, a small portion of the courses are nearer to the limestone crushing plant. At the nearest point of the criterium courses, the predicted noise level from the limestone crushing plant is 60dB(A) $L_{Aeq,15min}$.

The locations of mountain bike courses have not been finalised, however they would be located towards the south-western corner of the subject site and the predicted noise levels from the limestone crushing plant would be 45-50dB(A) $L_{Aeq,15min}$.

The predictions show that the levels of industrial noise exposure to the proposed Bathurst Bicycle Park are within the DECCW:INP recommended levels of 55-60dB(A) $L_{Aeq,15min}$ for active recreational areas.

5.2 Noise Impact on the Surrounding

With reference to the Bathurst Bicycle Park Feasibility Study Report, the predicted event operations are as follows:

- Bicycle Education and Training Centre – one (1) class at a time with up to 30 students and teachers during school hours. This activity would not coincide with other events or training other than minor weekday daytime use such as high performance, veterans or major event training.
- Velodrome – approximately 40 regular riders and up to 70 riders in local competitions. Local events would attract approximately 160 patrons (riders and spectators) from combined juniors and seniors activities. Regional events would attract approximately 470 patrons.
- Criterium/Kermesse – local events would attract 50 to 100 patrons, including at least 50% of the patrons are riders. Regional and major events would attract up to 300 and 500 patrons respectively.
- Mountain Bike – there would be one (1) to five (5) recreational events per year with high participation when 100 to 150 riders could use the cross country track. It is estimated that local events would attract 50 to 75 riders.

- BMX – state and regional events would attract up 1,200 and 700 patrons respectively. Approximately 50% of the patrons would be riders. Additionally, there would be at least three (3) local events per year with smaller number of patrons (up to 100 patrons).

Table 3 presents a summary of the expected number of patrons (spectators and riders) at various events.

Table 3 Expect Number of Patrons from Events

Activity	Type of Event		
	Local	Regional	Major
Velodrome (track)	160	470	600
Criterium (long/short)	100	300	500
Down-hill/Cross-country	75	400	1,000
BMX	100	700	1,200
Road staging	80	250	600
Bike education	70		
Other activities	10		

Track events cannot be held in conjunction with bike education. Bike education would typically be held on weekdays during school hours.

It is possible that two (2) regional events can be held concurrently. Major events would be held individually and are expected to occur approximately three (3) times a year.

Based on the estimated patrons presented in Table 3, the maximum number of people would be 360 at a local event, 1,170 at a regional event and 1,200 at a major event.

From observations at similar facilities, during normal use, noise from the Bicycle Park would be due to casual/normal conversations between spectators (parents) and riders; and raised/ loud voice from trainers. Occasionally, there would be shouting from a trainer or a spectator.

Based on an average maximum sound power level of 96dB(A) from shouting (male),

Table 4 presents a summary of the predicted maximum noise levels from occasional shouting by a spectator or trainer.

It is noted that the noise assessment objectives are in terms of the $L_{Aeq,15min}$ parameter and as shouting is of not continuous nature, the $L_{Aeq,15min}$ noise levels would be at least 5dB(A) lower than the L_{Amax} levels.

The prediction results show that during normal use, noise from the Bathurst Bicycle Park are well below the assessment objectives and any potential noise impact would be considered insignificant.

Table 4 Predicted L_{Amax} Noise Level from Spectator/Trainer Shouting

Receiver Location	Predicted Noise Level dB(A)	Noise Assessment Objective dB(A)	Compliance
235 College Road "Orton Park" (North)	30	47	√
29 Lagoon Road (East)	35		√
46 Lagoon Road "Montana" (East)	35		√
720 Vale Road "Rainham" (South)	30		√
622 Vale Road "Omya Australia" (North) (at the office buildings)	40	70-75	√

Note: √ denotes compliance with noise assessment objective

During regional and major events which would be held a number of times a year, the crowd numbers could reach 1,200 and with PA systems considered for the velodrome and BMX track, noise the Bicycle Park will be higher. The majority of the patrons would be at the BMX and velodrome spectator areas.

Crowd noise consists of babble from random conversations and transients from laughing, yelling and cheering. The noise levels depend on the crowd numbers, types of events and the degree of random or synchronised cheering. For major sporting events, crowd cheering would be in unison (ie. synchronised) during periods of excitement or spectacular occurrences. However, not all patrons would be cheering at maximum vocal effort simultaneously.

For a crowd of 1,200, it is reasonable to expect about 5% of the patrons cheering at maximum vocal effort simultaneously. Table 5 presents a summary of the predicted noise levels from spectator cheering. The noise predictions allow for 5dB reduction due to absorption from the crowd and directivity loss as not all patrons would be facing the receivers at the same time.

Table 5 Predicted Noise Level from Crowd Cheering from Major Events

Receiver Location	Predicted Noise Level dB(A)	Noise Assessment Objective dB(A)	Compliance
235 College Road "Orton Park" (North)	42	52	√
29 Lagoon Road (East)	48		√
46 Lagoon Road "Montana" (East)	47		√
720 Vale Road "Rainham" (South)	39		√
622 Vale Road "Omya Australia" (North) (at the office buildings)	53	70-75	√

Note: √ denotes compliance with noise assessment objective

The prediction results show that crowd noise from the Bathurst Bicycle Park would satisfy the noise recommended assessment objectives.

At this stage, details of the PA system selection and installation are not available. These details are normally determined during the design phase of the project. The assessment methodology is to determine the likely maximum allowable sound output for the PA systems, based on the distance separation and noise assessment objectives at the receivers.

Maximum allowable sound power level of each loudspeaker will depend on the configuration and number of loudspeakers. For loudspeakers located say 30m apart, up to 10 loudspeakers could be required for the velodrome. The output sound power level for each loudspeaker would need to be at least 90dB(A) in order to produce a noise level of about 60dB(A) at the listener's ear to be clearly audible.

With a sound power level of 90dB(A) from each loudspeaker and assuming up to 20 loudspeakers could be required for the velodrome and BMX track, noise levels of 42dB(A) and 47dB(A) are predicted at the nearest residence and Omya Australia Pty Ltd respectively.

For infrequent sporting events with recognised social benefit, the noise assessment objective is 52dB(A) $L_{Aeq,15min}$. Accordingly, the maximum allowable sound power level for each loudspeaker could be 100dB(A) or higher with appropriate design and installation (eg. orientating the loudspeakers away from the receivers).

It is recommended that the PA systems and output sound power requirements be reviewed during the design phase. If required, the following measures could be considered to control and manage noise from the PA systems:

- The PA systems used for introductions, result summaries, playing background music etc., instead of playing loud music or providing commentaries;
- Selection of loudspeakers with high degree of rear sound rejection;
- Positioning the loudspeakers close to the ground and aiming towards the spectator areas and the ground, away from the residences. Care should be taken to aim loudspeakers away from reflected surfaces such as club house building so as to minimise reflected noise towards the receivers;
- Using low-powered loudspeakers, placing them along the perimeter of the velodrome and BMX track and pointing them downward and inward towards spectator areas and the ground instead of using high-powered loudspeakers placed in few locations;
- Timing aligning the loudspeakers to provide clarity and ease to adjust the sound system output level in the event of the requirements to control noise from the major events;
- Limiting the loudspeaker output volume by sound measurements and calibrating following installations;
- Control of loudspeaker volume by incorporating a sound level limiting circuit to restrict output to the pre-determined level.

5.3 Road Traffic Noise

The Bathurst Bicycle Park will hold local, regional and major events, with some events would be held simultaneously. The Traffic Feasibility Study Report predicts that traffic generation from the site would be:

- 218 vehicles from local events (concurrently held – track, criterium and BMX);
- 298 vehicles (individually held – BMX) and 504 vehicles (two events held concurrently – track and BMX) for regional events; and
- 516 vehicles if a major event (BMX) is held.

The majority of traffic generated by the site would travel to and from Bathurst and arrive over a two-hour period in the morning and depart over a three-hour period in the afternoon/evening.

Assuming equal distributions on Vale Road and College Road, there would be 516 vehicle movements per day and 129 vehicle movements during the morning peak-hours on Vale Road and College Road during major events, held a number of weekends per year.

There are a number of scattered residences, south of Ethelton Avenue, approximately 200-350m from Vale Road. During major events, the predicted road traffic noise level at the nearest residences would be 44dB(A) $L_{Aeq,15hr}$ (50dB(A) $L_{Aeq,peak\text{-}hour}$). As part of the proposal, it is a consideration to reduce the speed limit on Vale Road from 100km/hr to 80km/hr near the site. In this case, the predicted traffic noise level would be 2dB(A) lower. Albeit, the predicted road traffic noise level generated by the site is well within the DECCW:ECRTN recommended level of 60dB(A) $L_{Aeq,15hr}$.

There are a number of scattered residences within the industrial area approximately 3km to the north of the site which are approximately 15m from Vale Road. The posted speed limit on this section of Vale Road is 60km/hr. The predicted road traffic noise level generated by the site is 54dB(A) $L_{Aeq,15hr}$ (60dB(A) $L_{Aeq,peak\text{-}hour}$) at the nearest residences and is within the DECCW:ECRTN recommended level of 60dB(A) $L_{Aeq,15hr}$.

Residences along College Road are approximately 20m from the road. During major events, the predicted road traffic noise levels generated by the site during the morning peak-hours are 60dB(A) $L_{Aeq,peak\text{-}hour}$ north of the site (speed limit of 80km/hr) and 58dB(A) $L_{Aeq,peak\text{-}hour}$ in town (speed limit of 60km/hr). The predicted road traffic noise levels generated by the site are within the DECCW:ECRTN recommended level of 60dB(A) $L_{Aeq,peak\text{-}hour}$ between 7:00am and 10:00pm.

It is noted that the predicted road traffic noise levels above represent conditions during major events which would take place a number of times a year. During normal use of the Bicycle Park, road traffic noise generated by the site would be significantly lower.

6 SUMMARY

This report presents a summary of the results and findings from the noise assessment for the proposed Bathurst Bicycle Park. The assessment has been prepared for the purpose of Development Application only.

The assessment confirms that major noise sources from the Bicycle Park would be due to crowd cheering, PA systems and road traffic generation during regional and major sporting events, held a number of times a year.

The predictions and assessment show that noise from crowd cheering and road traffic during major sporting events satisfies the recommended assessment objectives in the ENCM, INP and ECRTN.

Noise from the PA systems has also been assessed and accordance with the ENCM and maximum allowable sound power level for loudspeakers has been recommended to ensure the compliance with the recommended assessment objectives.

During normal use, noise from the Bicycle Park is not expected to be audible at the nearest residences, except occasional shouting from spectators and trainers. Albeit, the predicted noise levels are within the recommended assessment objectives.

Given the nearest residences are in the order of 450m from the site, other minor noise sources such as vehicle engine starting, car door closing and air-conditioning plant for the club house and offices would not be audible at the nearest residences.

As the proposal is conceptual and details of PA systems and sound power requirements have not been determined, it is recommended PA system design be reviewed during the design phase to ensure that the acoustic requirements for the project are achieved.

Appendix 1 Background and Ambient Noise Measurement Results

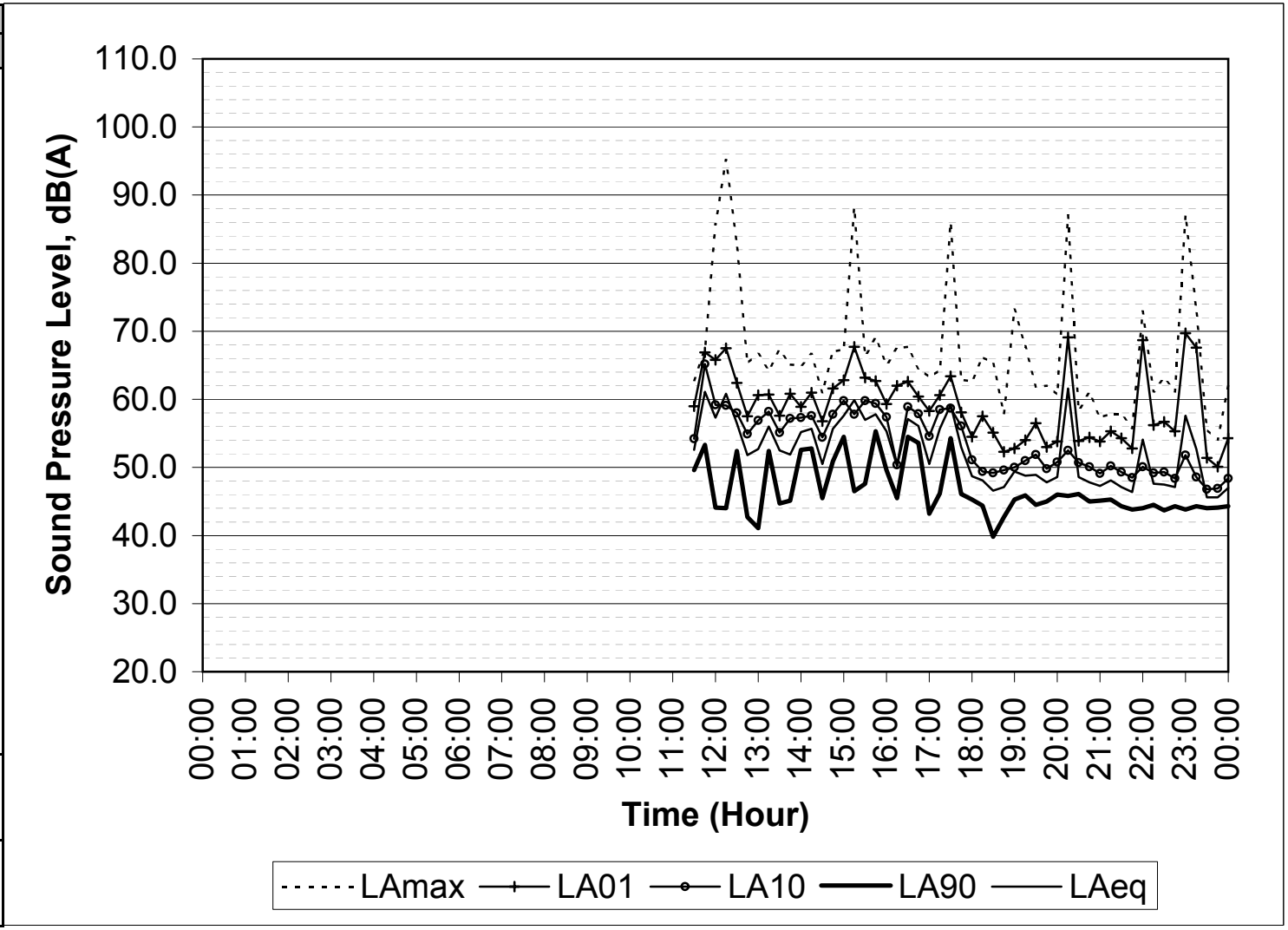
Measurement Location Refer to Figure 3 of 100138-02R-DD
Vale Road, Bathurst

Measurement Date Monday, 25 October 2010

Project Title Bathurst Bike Park
Vale Road, Bathurst

Notes
1. Tabulated L_{Aeq} are logarithically averaged
2. Tabulated L_{A01} and L_{A10} are arithmetically averaged
3. Tabulated L_{A90} are the lowest 10-percentile levels

Time	Average Noise Level			
	L_{Aeq}	L_{A01}	L_{A10}	L_{A90}
00:00-01:00				
01:00-02:00				
02:00-03:00				
03:00-04:00				
04:00-05:00				
05:00-06:00				
06:00-07:00				
07:00-08:00				
08:00-09:00				
09:00-10:00				
10:00-11:00				
11:00-12:00				
12:00-13:00	57.0	62.0	57.2	41.6
13:00-14:00	54.2	59.5	57.0	44.8
14:00-15:00	55.5	60.6	57.4	47.1
15:00-16:00	57.8	63.2	58.6	46.8
16:00-17:00	54.5	60.8	55.5	43.9
17:00-18:00	55.7	59.2	56.1	45.5
18:00-19:00	47.9	54.4	49.6	40.7
19:00-20:00	48.5	54.3	50.9	44.7
20:00-21:00	56.1	57.8	50.6	45.0
21:00-22:00	50.2	57.8	49.5	43.9
22:00-23:00	52.7	59.5	49.7	43.7
23:00-24:00	48.9	55.9	47.7	44.0
Day				
Evening	51.8	55.2	50.2	43.3
Night	50.8	54.9	47.5	42.0
LAeq,15hr LAeq,9hr LAeq,24hr	50.8			



Measurement Location Refer to Figure 3 of 100138-02R-DD
Vale Road, Bathurst

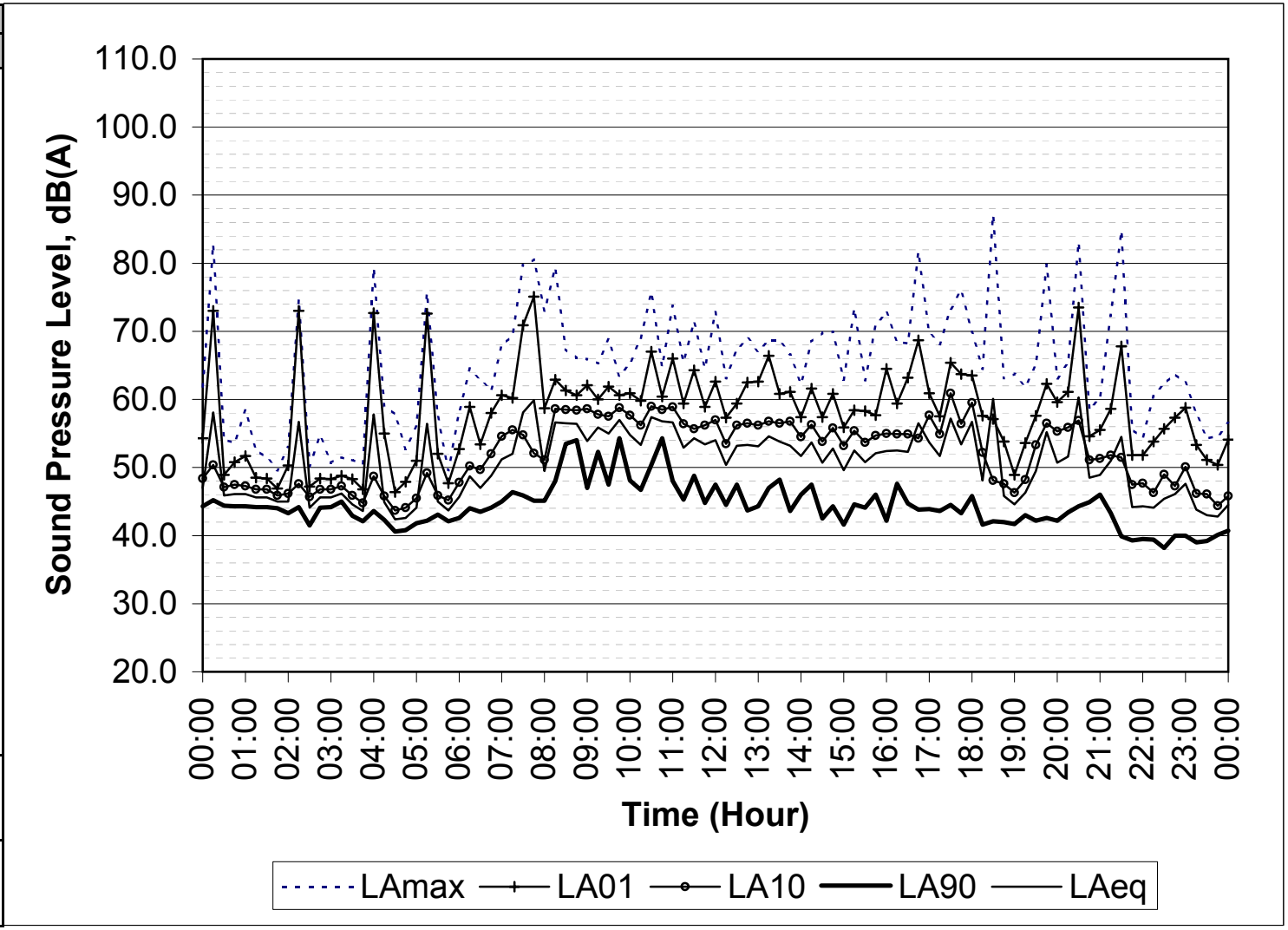
Measurement Date Tuesday, 26 October 2010

Project Title Bathurst Bike Park
Vale Road, Bathurst

Notes

1. Tabulated L_{Aeq} are logarithically averaged
2. Tabulated L_{A01} and L_{A10} are arithmetically averaged
3. Tabulated L_{A90} are the lowest 10-percentile levels

Time	Average Noise Level			
	L_{Aeq}	L_{A01}	L_{A10}	L_{A90}
00:00-01:00	52.8	56.1	48.1	44.3
01:00-02:00	45.3	48.5	46.4	43.5
02:00-03:00	51.5	54.2	46.7	42.3
03:00-04:00	52.4	54.2	46.7	42.3
04:00-05:00	43.6	50.1	44.8	40.7
05:00-06:00	51.2	56.3	47.0	42.1
06:00-07:00	49.2	57.7	51.6	43.7
07:00-08:00	56.7	66.2	53.4	45.1
08:00-09:00	56.0	61.7	58.5	47.3
09:00-10:00	55.8	60.9	58.0	47.7
10:00-11:00	56.3	63.3	58.2	47.1
11:00-12:00	53.7	61.3	56.3	45.0
12:00-13:00	52.7	60.5	55.6	43.9
13:00-14:00	53.4	61.4	56.2	44.3
14:00-15:00	52.0	58.9	54.8	41.9
15:00-16:00	52.0	59.7	54.7	42.8
16:00-17:00	54.1	63.1	55.5	43.8
17:00-18:00	55.3	62.5	57.9	43.4
18:00-19:00	54.6	54.4	48.6	41.6
19:00-20:00	51.6	58.3	53.3	42.2
20:00-21:00	55.3	61.2	53.8	43.7
21:00-22:00	50.6	57.5	49.6	39.4
22:00-23:00	46.0	56.4	48.2	38.6
23:00-24:00	43.6	52.2	45.6	39.1
Day	54.5	61.7	56.2	43.6
Evening	54.0	58.6	52.1	40.8
Night	48.8	52.1	45.8	38.6
LAeq,15hr		54.4		
LAeq,9hr		48.8		
LAeq,24hr		53.3		



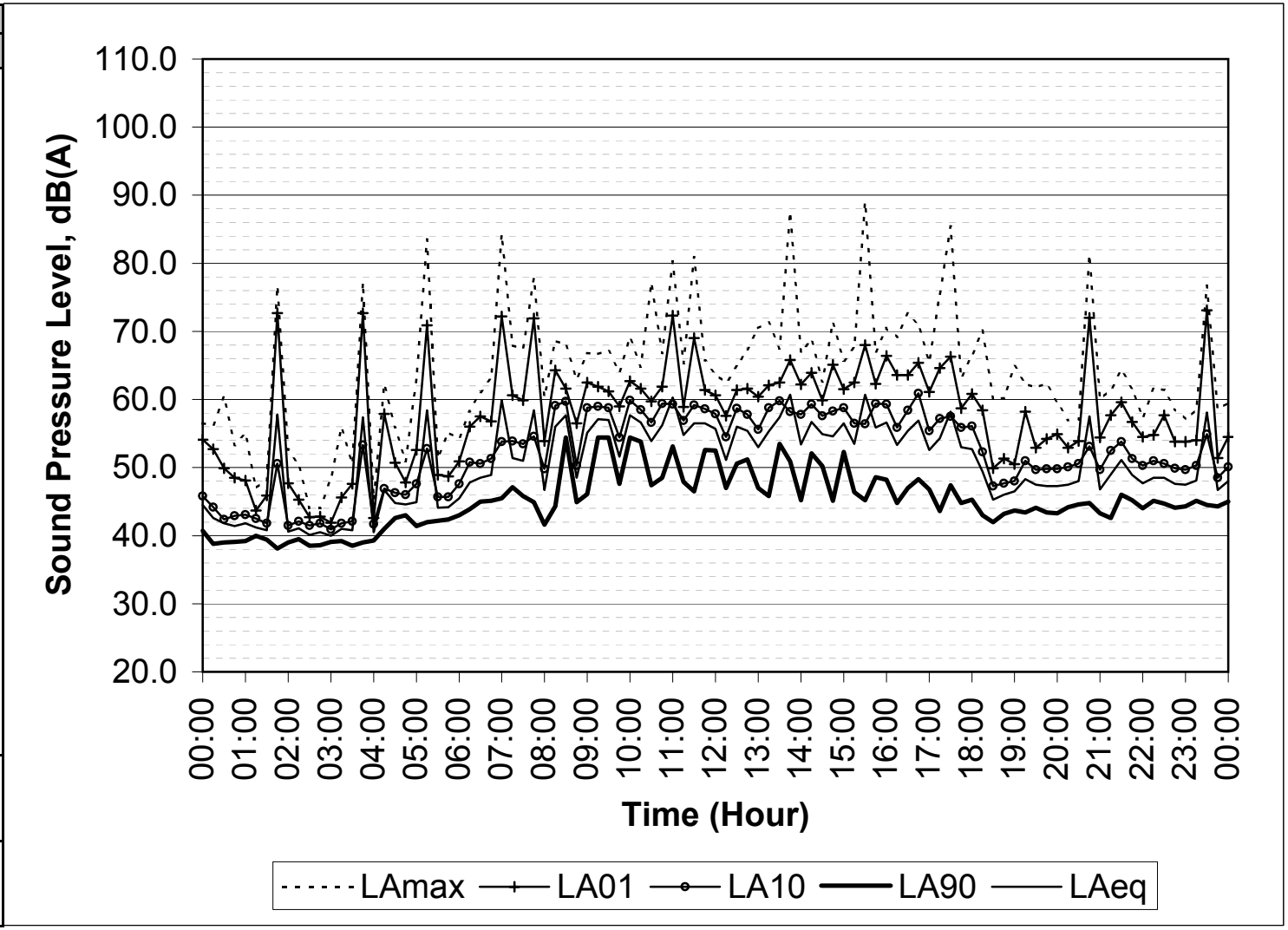
Measurement Location Refer to Figure 3 of 100138-02R-DD
Vale Road, Bathurst

Measurement Date Wednesday, 27 October 2010

Project Title Bathurst Bike Park
Vale Road, Bathurst

Notes
1. Tabulated L_{Aeq} are logarithically averaged
2. Tabulated L_{A01} and L_{A10} are arithmetically averaged
3. Tabulated L_{A90} are the lowest 10-percentile levels

Time	Average Noise Level			
	L_{Aeq}	L_{A01}	L_{A10}	L_{A90}
00:00-01:00	41.9	49.8	43.2	38.9
01:00-02:00	52.0	52.5	44.1	38.4
02:00-03:00	40.4	43.2	41.6	38.5
03:00-04:00	51.7	52.1	44.7	38.7
04:00-05:00	45.3	52.3	46.7	41.1
05:00-06:00	52.9	54.9	48.0	42.1
06:00-07:00	54.7	60.6	51.6	44.2
07:00-08:00	54.0	61.6	53.0	42.6
08:00-09:00	55.4	61.2	57.0	44.5
09:00-10:00	56.4	61.2	58.0	49.6
10:00-11:00	57.4	63.9	58.5	47.7
11:00-12:00	55.9	62.5	58.2	46.9
12:00-13:00	54.3	60.3	56.7	47.0
13:00-14:00	57.6	63.2	58.7	45.4
14:00-15:00	55.8	62.6	58.5	46.6
15:00-16:00	57.5	64.8	57.9	45.6
16:00-17:00	54.9	63.4	57.7	45.4
17:00-18:00	55.2	62.6	56.7	44.0
18:00-19:00	47.1	52.5	48.8	42.3
19:00-20:00	47.6	55.1	50.1	43.3
20:00-21:00	52.6	58.3	50.9	43.6
21:00-22:00	49.4	57.1	52.0	43.0
22:00-23:00	48.1	55.0	50.3	44.2
23:00-24:00	53.1	58.3	51.0	44.4
Day	56.2	62.7	57.3	44.8
Evening	50.1	56.1	50.8	42.8
Night	51.7	55.0	48.9	43.2
LAeq,15hr		55.2		
LAeq,9hr		51.7		
LAeq,24hr		53.9		



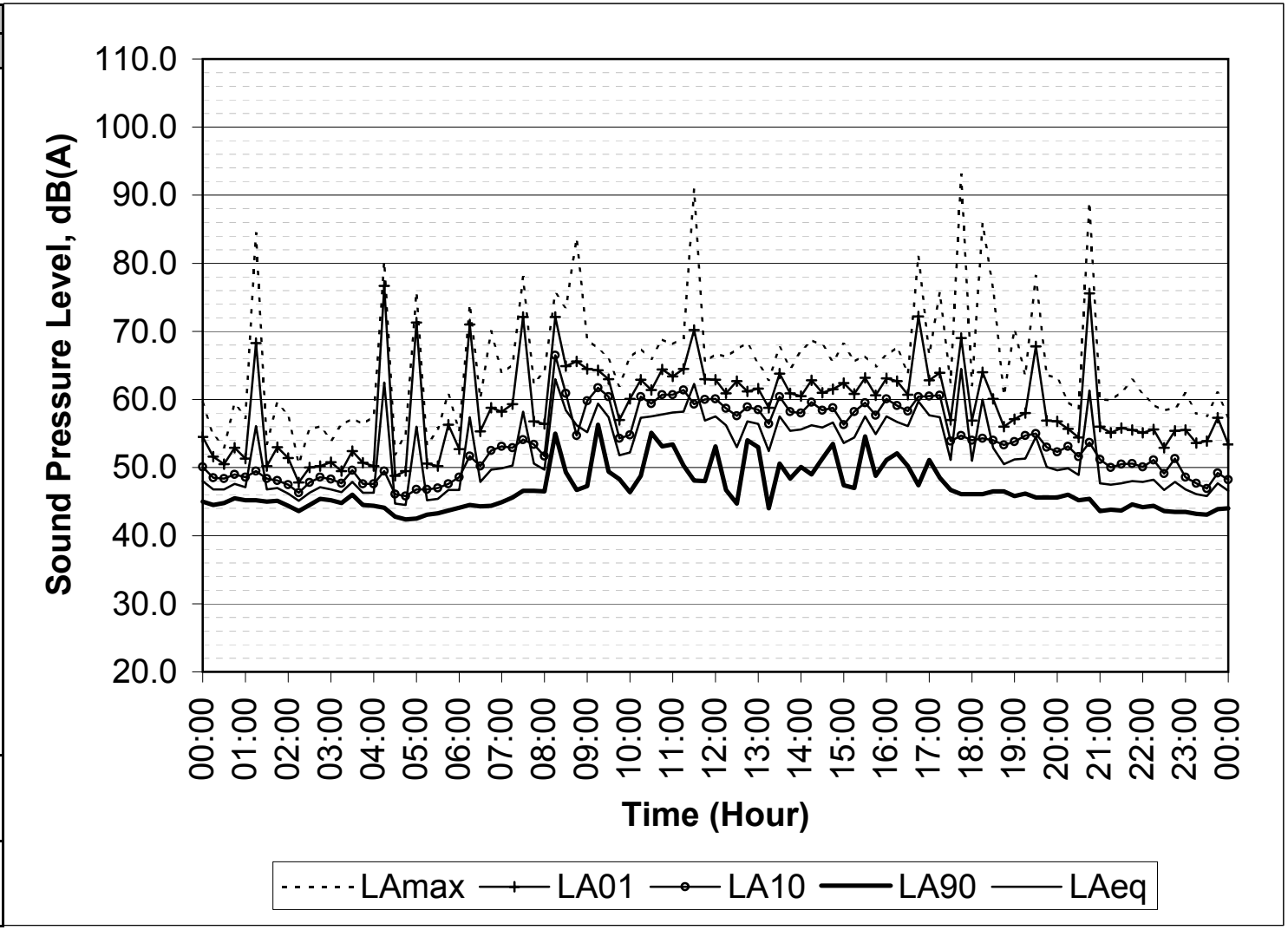
Measurement Location Refer to Figure 3 of 100138-02R-DD
Vale Road, Bathurst

Measurement Date Thursday, 28 October 2010

Project Title Bathurst Bike Park
Vale Road, Bathurst

Notes
1. Tabulated L_{Aeq} are logarithically averaged
2. Tabulated L_{A01} and L_{A10} are arithmetically averaged
3. Tabulated L_{A90} are the lowest 10-percentile levels

Time	Average Noise Level			
	L_{Aeq}	L_{A01}	L_{A10}	L_{A90}
00:00-01:00	47.1	51.6	48.6	44.6
01:00-02:00	51.4	55.7	48.4	44.6
02:00-03:00	46.4	49.7	47.8	43.9
03:00-04:00	46.8	50.7	48.1	44.4
04:00-05:00	57.5	61.6	47.1	42.4
05:00-06:00	46.1	52.5	47.5	43.2
06:00-07:00	53.0	60.8	51.9	44.3
07:00-08:00	53.9	61.2	53.0	45.9
08:00-09:00	59.3	66.8	60.5	46.9
09:00-10:00	56.4	61.1	57.8	47.0
10:00-11:00	57.7	63.0	60.3	50.1
11:00-12:00	59.3	65.2	60.2	48.0
12:00-13:00	55.8	61.6	58.4	45.3
13:00-14:00	55.6	61.0	58.3	45.3
14:00-15:00	55.7	61.9	58.3	47.9
15:00-16:00	56.3	61.9	58.9	47.5
16:00-17:00	57.8	64.6	59.6	48.2
17:00-18:00	59.6	61.7	55.8	46.1
18:00-19:00	55.6	59.3	53.9	45.9
19:00-20:00	51.8	59.9	53.8	45.6
20:00-21:00	56.0	60.4	52.4	44.1
21:00-22:00	47.8	55.4	50.3	43.7
22:00-23:00	47.5	54.9	50.0	43.5
23:00-24:00	46.6	54.6	48.0	43.1
Day	57.4	62.8	58.3	46.2
Evening	53.9	58.9	52.8	43.8
Night	50.0	53.9	48.7	42.5
LAeq,15hr		56.7		
LAeq,9hr		50.0		
LAeq,24hr		55.5		



Measurement Location Refer to Figure 3 of 100138-02R-DD
Vale Road, Bathurst

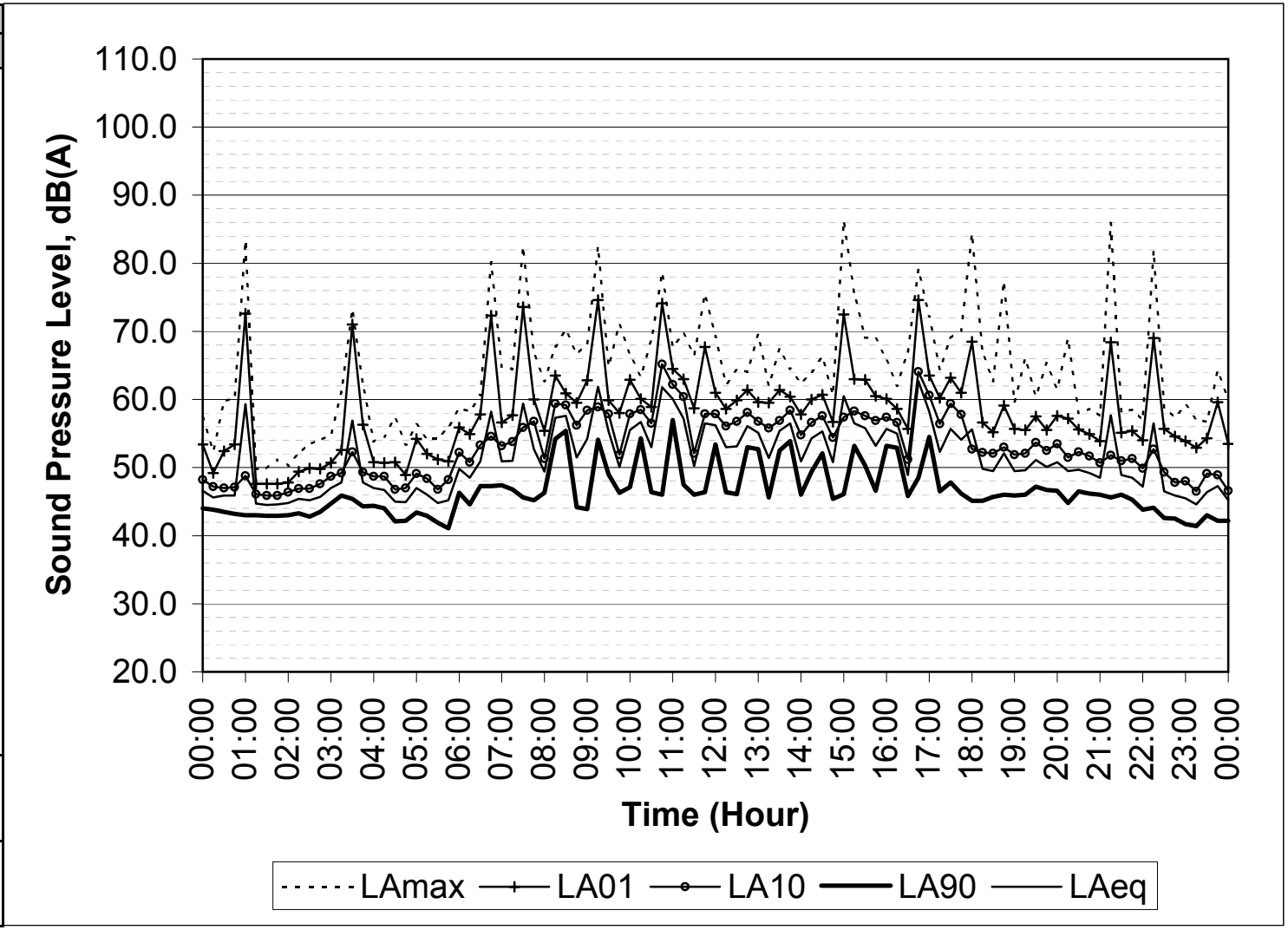
Measurement Date Friday, 29 October 2010

Project Title Bathurst Bike Park
Vale Road, Bathurst

Notes

1. Tabulated L_{Aeq} are logarithically averaged
2. Tabulated L_{A01} and L_{A10} are arithmetically averaged
3. Tabulated L_{A90} are the lowest 10-percentile levels

Time	Average Noise Level			
	L_{Aeq}	L_{A01}	L_{A10}	L_{A90}
00:00-01:00	53.8	56.9	47.5	43.1
01:00-02:00	44.7	47.7	46.1	42.9
02:00-03:00	45.9	50.0	47.5	43.0
03:00-04:00	52.2	57.7	49.9	44.3
04:00-05:00	46.0	51.2	47.9	42.1
05:00-06:00	47.0	52.5	48.9	41.3
06:00-07:00	53.9	60.4	53.0	45.4
07:00-08:00	55.0	61.7	54.5	45.3
08:00-09:00	55.8	61.7	58.3	44.0
09:00-10:00	57.7	63.9	56.7	46.5
10:00-11:00	59.0	64.4	60.6	46.1
11:00-12:00	55.7	62.6	57.1	46.1
12:00-13:00	54.5	59.9	57.0	46.2
13:00-14:00	54.2	59.8	56.5	45.7
14:00-15:00	56.7	62.5	56.5	45.6
15:00-16:00	55.5	61.6	57.6	47.7
16:00-17:00	58.6	63.1	58.1	46.6
17:00-18:00	54.6	63.2	56.6	45.4
18:00-19:00	50.4	56.7	52.3	45.3
19:00-20:00	50.4	56.5	53.0	46.2
20:00-21:00	49.2	55.4	51.6	45.2
21:00-22:00	53.0	58.2	51.0	44.3
22:00-23:00	51.5	58.3	49.5	41.9
23:00-24:00	46.0	55.1	47.8	41.6
Day	56.4	61.9	57.2	45.6
Evening	51.6	57.6	52.1	45.1
Night	49.9	52.3	46.1	35.0
LAeq,15hr		55.5		
LAeq,9hr		49.9		
LAeq,24hr		54.4		



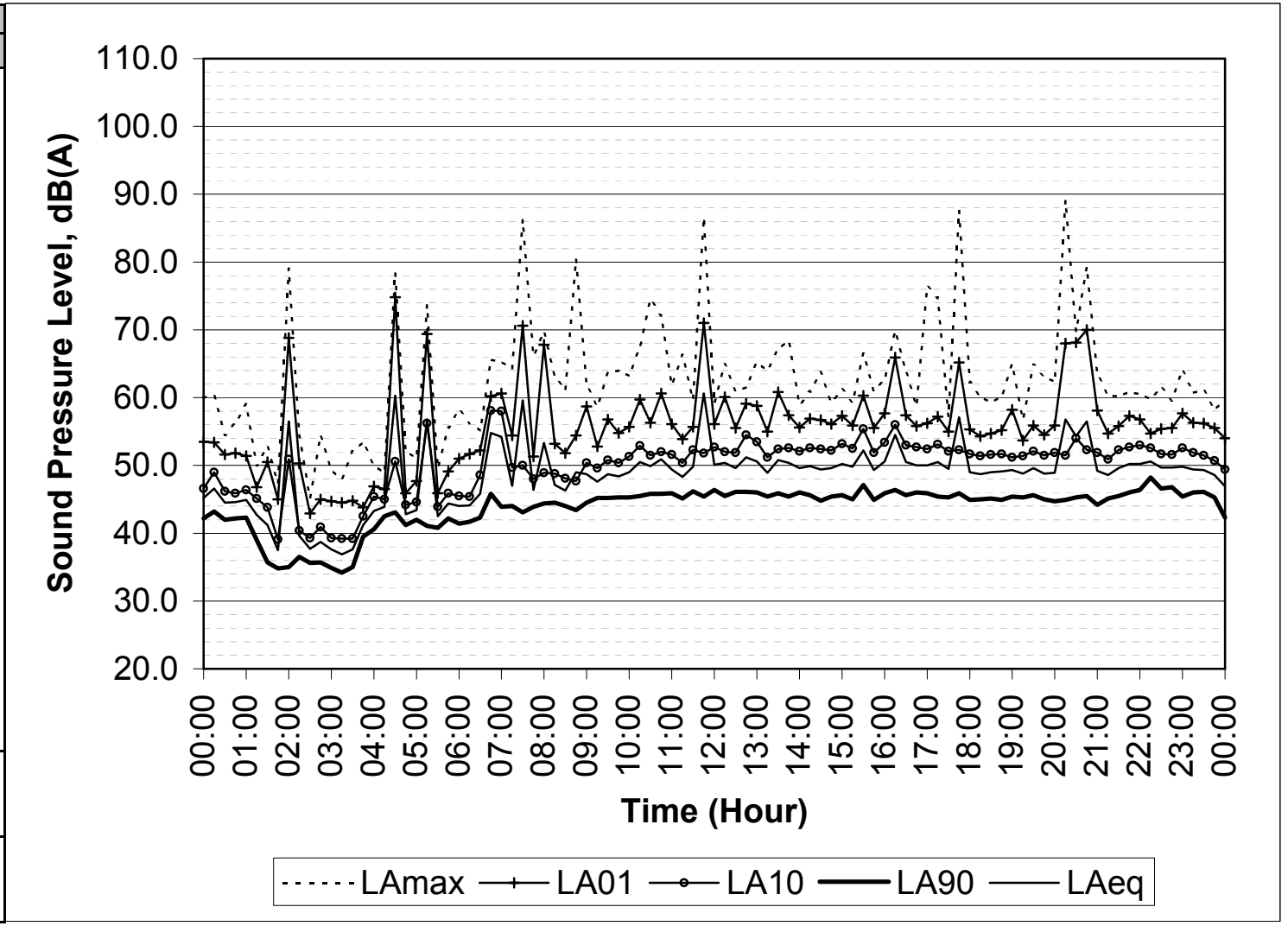
Measurement Location Refer to Figure 3 of 100138-02R-DD
Vale Road, Bathurst

Measurement Date Saturday, 30 October 2010

Project Title Bathurst Bike Park
Vale Road, Bathurst

Notes
1. Tabulated L_{Aeq} are logarithically averaged
2. Tabulated L_{A01} and L_{A10} are arithmetically averaged
3. Tabulated L_{A90} are the lowest 10-percentile levels

Time	Average Noise Level			
	L_{Aeq}	L_{A01}	L_{A10}	L_{A90}
00:00-01:00	45.2	52.1	46.9	42.1
01:00-02:00	50.8	52.8	44.7	34.9
02:00-03:00	38.5	45.7	40.0	35.1
03:00-04:00	40.5	45.0	41.6	34.4
04:00-05:00	54.5	53.7	46.1	41.4
05:00-06:00	51.4	53.9	47.9	40.9
06:00-07:00	52.0	56.2	52.5	41.9
07:00-08:00	54.8	61.0	49.2	43.3
08:00-09:00	47.9	54.5	48.8	43.6
09:00-10:00	48.5	55.0	50.5	45.2
10:00-11:00	50.2	58.2	52.0	45.6
11:00-12:00	55.5	59.2	51.8	45.2
12:00-13:00	50.5	58.4	53.0	45.7
13:00-14:00	50.0	57.2	52.1	45.4
14:00-15:00	49.8	56.8	52.6	45.0
15:00-16:00	50.6	57.4	53.3	44.9
16:00-17:00	51.7	58.8	53.5	45.7
17:00-18:00	53.0	58.2	52.3	45.0
18:00-19:00	49.0	55.6	51.5	44.9
19:00-20:00	49.0	55.0	51.7	44.8
20:00-21:00	55.0	66.1	52.4	44.4
21:00-22:00	49.7	56.2	52.2	45.2
22:00-23:00	50.0	55.8	52.1	45.8
23:00-24:00	48.7	55.5	50.9	43.2
Day	51.9	57.8	51.9	44.0
Evening	51.5	58.1	51.9	44.8
Night				
LAeq,15hr	51.8			
LAeq,9hr				
LAeq,24hr	51.3			



Measurement Location Refer to Figure 3 of 100138-02R-DD
Vale Road, Bathurst

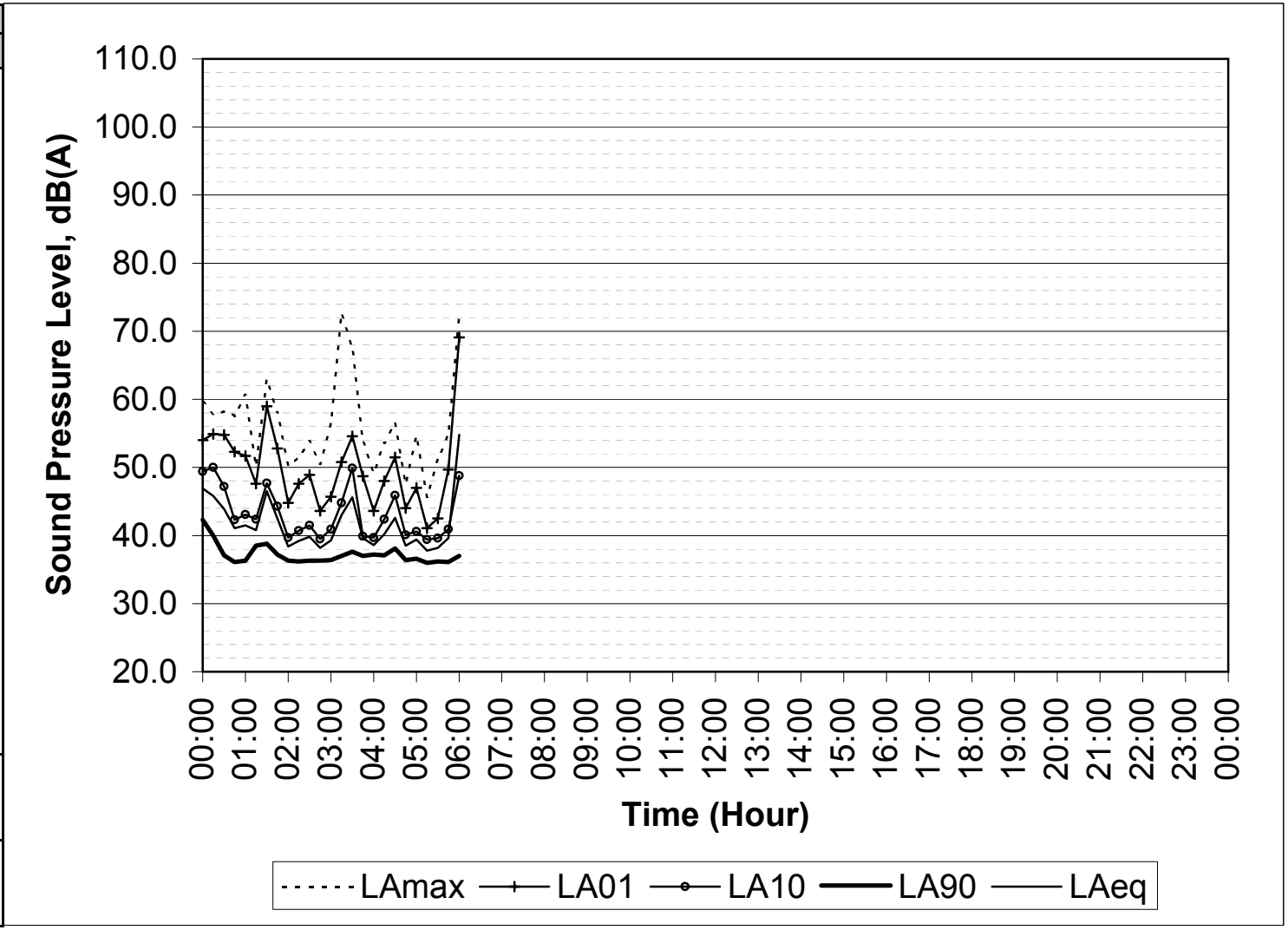
Measurement Date Sunday, 31 October 2010

Project Title Bathurst Bike Park
Vale Road, Bathurst

Notes

1. Tabulated L_{Aeq} are logarithically averaged
2. Tabulated L_{A01} and L_{A10} are arithmetically averaged
3. Tabulated L_{A90} are the lowest 10-percentile levels

Time	Average Noise Level			
	L_{Aeq}	L_{A01}	L_{A10}	L_{A90}
00:00-01:00	43.5	53.4	45.7	36.2
01:00-02:00	43.1	51.1	43.5	36.6
02:00-03:00	39.2	46.5	40.7	36.2
03:00-04:00	42.6	49.4	43.6	37.0
04:00-05:00	40.5	47.6	42.3	36.5
05:00-06:00	49.1	50.6	42.2	36.0
06:00-07:00				
07:00-08:00				
08:00-09:00				
09:00-10:00				
10:00-11:00				
11:00-12:00				
12:00-13:00				
13:00-14:00				
14:00-15:00				
15:00-16:00				
16:00-17:00				
17:00-18:00				
18:00-19:00				
19:00-20:00				
20:00-21:00				
21:00-22:00				
22:00-23:00				
23:00-24:00				
Day Evening Night				
LAeq,15hr LAeq,9hr LAeq,24hr				



SECTION 6 – SERVICE / UTILITY AUTHORITY SUBMISSION

APA GROUP
ROADS AND TRAFFIC AUTHORITY
OFFICE OF ENVIRONMENT AND HERITAGE
AUSTRALIAN RAIL AND TRACK AUTHORITY