5 Conclusion

Calibre Pty Ltd has prepared this Flood Investigation and Concept Stormwater Quantity Management Plan Report for the proposed Ellida, Parkhurst residential development.

The outcomes of this investigation are as follows:

- Hydrological analysis undertaken for regional catchments contributing to Ramsay Creek demonstrates that the proposed development results in negligible increases in peak flow downstream of the site and isn't envisaged to create any adverse flood conditions when compared to the existing scenario.

- Hydrological analysis undertaken for the local catchments contributing to and from the development site can be catered for safely and efficiently through the site via the proposed mitigation measures;

- Hydraulic analysis has determined the configuration of overland flow and piped drainage infrastructure to convey peak 1% AEP flows through and from the Stage 1 to 3 site.

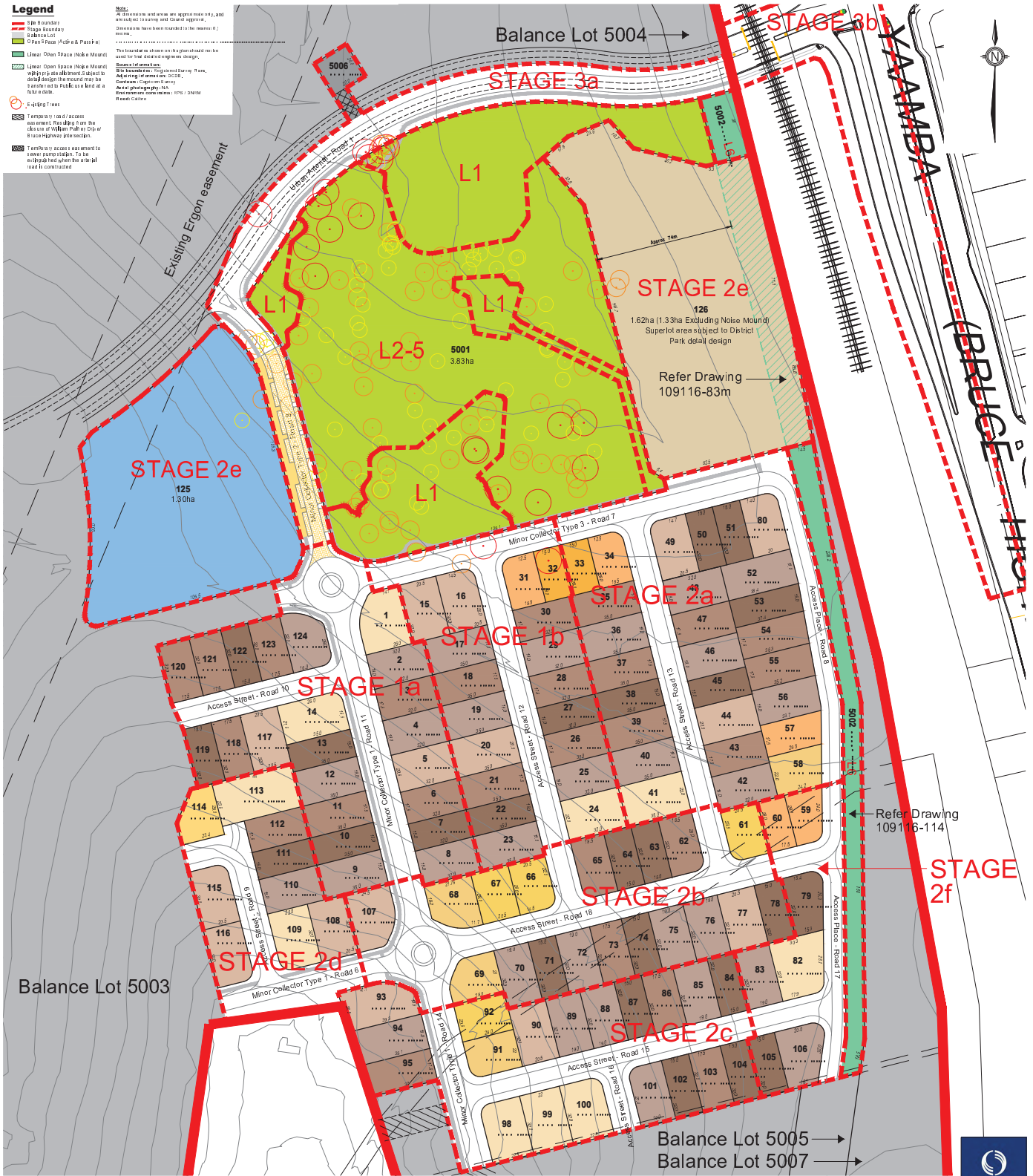
6 Recommendations

We recommend that the stormwater management strategy proposed in the report are approved and incorporated in to detailed design for the development. While the concept stormwater management strategy may change as a result of detailed design, the outcomes will be consistent with those determined in this report.

FLOOD INVESTIGATION & CONCEPT STORMWATER QUANTITY MANAGEMENT PLAN

Appendix A Development Area Plan

STOCKLANDS DEVELOPMENT PTY LTD



ALLOTMENT TYPE	DIMENSIONS		STAGE									OVERALL	TOTAL %
25m Deep Lots	Typical Lot	Area	1A	1B	2A	2B	2C	2D	2E	2F			
Courtyard Allotment	15.0 x 25m	- - - -	- -	1	1	- -	- -	- -	- -	- -	2	1.8%
Premium Courtyard Allotment	17.5 x 25m	- - - -	- -	- -	2	- -	- -	- -	- -	- -	2	4.1%
Traditional Allotment	19.0 x 25m	- - - -	- -	- -	- -	- -	- -	1	- -	- -	1	0.8%
Premium Traditional Allotment	20.5 x 25m	- - - -	- -	- -	- -	3	1	- -	- -	- -	4	3.3%
Lifestyle Allotment	22.0 x 25m	- - - -	- -	- -	1	2	1	- -	- -	- -	4	3.3%
Sub Total			- -	2	4	5	2	1	- -	2	16	13.0%
32m Deep Lots	Typical Lot	Area											
Premium Villa	12.5 x 32m	- - - -	- -	- -	- -	- -	- -	- -	- -	- -	0	0.0%
Courtyard Allotment	15.0 x 32m	- - - -	5	2	5	5	4	1	- -	2	24	19.5%
Premium Courtyard Allotment	17.5 x 32m	- - - -	7	5	7	3	3	1	- -	- -	26	21.1%
Traditional Allotment	19.0 x 32m	- - - -	6	5	7	4	5	1	- -	2	30	24.4%
Premium Traditional Allotment	20.5 x 32m	- - - -	2	3	3	2	2	3	- -	- -	15	12.2%
Lifestyle Allotment	22.0 x 32m	- - - -	2	1	1	- -	3	2	- -	- -	9	7.3%
Sub Total			22	16	23	14	17	8	- -	5	105	85.4%
Super Lot		1.624 ha	- -	- -	- -	- -	- -	- -	1	- -	1	0.8%
Mixed Use		1.394 ha	- -	- -	- -	- -	- -	- -	1	- -	1	0.8%
Total Dwellings			22	16	27	19	19	9	2	7	123	100.0%
Balance Lots											4	

	STAGE												OVERALL	TOTAL %
	1A	1B	2A	2B	2C	2D	2E	2F	3A	3B	L1-4	L5		
Total Predirect Area	1.85 ha	1.47 ha	2.27 ha	1.85 ha	1.59 ha	0.81 ha	2.03 ha	0.79 ha	1.16 ha	0.75 ha	3.26 ha	0.43 ha	19.59 ha	100.0%
Total Saleable Area	1.30 ha	1.07 ha	1.61 ha	1.33 ha	1.16 ha	0.59 ha	2.04 ha	0.41 ha	- -	- -	- -	- -	9.55 ha	50.3%
Open Space														
Active & Passive Open Space	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	3.63 ha	- -	3.63 ha	84.2%
Linear Open Space	- -	- -	- -	- -	- -	- -	0.29 ha	- -	- -	- -	- -	0.43 ha	0.72 ha	15.8%
Total Open Space	- -	- -	- -	- -	- -	- -	0.29 ha	- -	- -	- -	3.63 ha	0.43 ha	4.35 ha	100.0%
Road Type														
Total Length of New Road	331 m	265 m	450 m	376 m	288 m	198 m	- -	217 m	452 m	- -	- -	- -	2589 m	
Driveway	- -	- -	- -	- -	- -	- -	17 m	- -	- -	- -	- -	- -	17 m	
Access Place	- -	- -	172 m	- -	- -	- -	- -	186 m	- -	- -	- -	- -	343 m	
Access Street	97 m	164 m	183 m	272 m	261 m	183 m	- -	71 m	- -	- -	- -	- -	1197 m	
Minor Collector Type 1	214 m	- -	- -	124 m	75 m	75 m	- -	- -	- -	- -	- -	- -	491 m	
Minor Collector Type 2 Main Street	- -	- -	- -	- -	- -	- -	- -	- -	137 m	- -	- -	- -	137 m	
Minor Collector Type 3 Park	20 m	104 m	110 m	- -	- -	- -	- -	- -	- -	- -	- -	- -	234 m	
Urban Arterial (Half Constructed)	- -	- -	- -	- -	- -	- -	- -	- -	315 m	- -	- -	- -	315 m	

REVISION
F - Revise balance lot numbers and statistics
F - Revise lot layout stages 1-3 including statistics
G - Revise lot layout Stage 1-3 including statistics
H - Revise Stage 1-3 boundaries including statistics
I - O/R Resumption. Various plan changes. New Clive Street 4 Way Intersection

Level Datum		Date	19th FEBRUARY 2018
Origin		Comp By	MJB
		DWG Name.	109116-90i ROL
		Local Authority	ROCKHAMPTON REGIONAL COUNCIL
Scale	1:1000	Locality	ROCKHAMPTON
Sheet	A1	Job Reference	109116

CLIENT
STOCKLAND

PROPOSED SUBDIVISION
STAGES 1-3
ALLOTMENT LAYOUT

PROJECT
ELLIDA

Plan Ref
109116-90

Rev
I

RPS
RPS Australia East Pty Ltd
ACN 140 292 762
ABN 44 140 292 762
Urban Design
Suite 1, Ground Floor
Central Plaza
370 Flinders Mall (PO Box 977)
Townsville QLD Australia 4810
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FLOOD INVESTIGATION & CONCEPT STORMWATER QUANTITY MANAGEMENT PLAN

Appendix B Hydraulic Calculations

STOCKLANDS DEVELOPMENT PTY LTD

Overland Flow Path Calculations

SITE ADDRESS Eliida Parkhurst **JOB:** 17-002720

SWALE DESCRIPTION Swale leading to Inlet Structure 1/MM

1% AEP Flows = 3.675

Swale total width = 6m

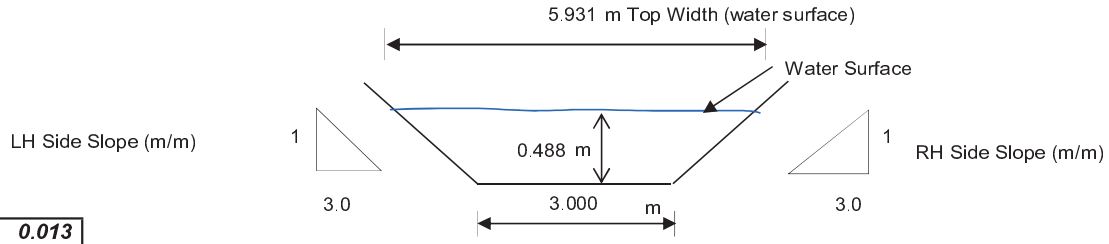
Hydraulics (Manning's Equation)

Design Q (m^3/s)	3.675	GS (to value)
Manning's n	0.033	
Long. Slope (m/m)	0.012	
Base Width (m)	3.000	
LH Side Slope (m/m)	0.333	
RH Side Slope (m/m)	0.333	
IL SL	0.000	
Depth (m)	0.5	

Inputs

Channel Flow Conditions

Depth (m)	0.488	GS (by changing cell)
Area (m^2)	2.179	
Wet Perimeter (m)	6.089	
Hydraulic Radius (m)	0.358	
Top Width (m)	5.931	
Velocity (m/s)	1.687	
Flow (m^3/s)	3.676	Goal seek (set cell) (MACRC
VD Product (m^2/s)	0.823	
Velocity Head	0.145	
Froude Number	0.339	



Manning's n	**Concrete**	***n = 0.013***
	Asphalt	*n = 0.015*
	Sprayed Seal	*n = 0.018*
	Grass	*n = 0.045*

Velocity =	*1.687*	*m/s*
Velocity Depth Product =	*0.823*	*m^2/s*
Long. Slope	*1.22*	*%*
Total Depth	*0.488*	*m*
LH Batter Horiz. Length =	*1.47*	*m*
RH Batter Horiz. Length =	*1.47*	*m*
Total Width =	*5.93*	*m*

Overland Flow Path Calculations

SITE ADDRESS Eliida Parkhurst [1] [1] **JOB**: 17-002720

SWALE DESCRIPTION Swale leading to Inlet Structure 2/MM from North Swale total width = 2m

1% AEP Flows = 0.2 m3/s

Hydraulics (Manning's Equation)

Design Q (m^3/s)	0.200
Manning's n	0.033
Long. Slope (m/m)	0.012
Base Width (m)	0.000
LH Side Slope (m/m)	0.333
RH Side Slope (m/m)	0.333
IL SL	0.000

GS (to value)

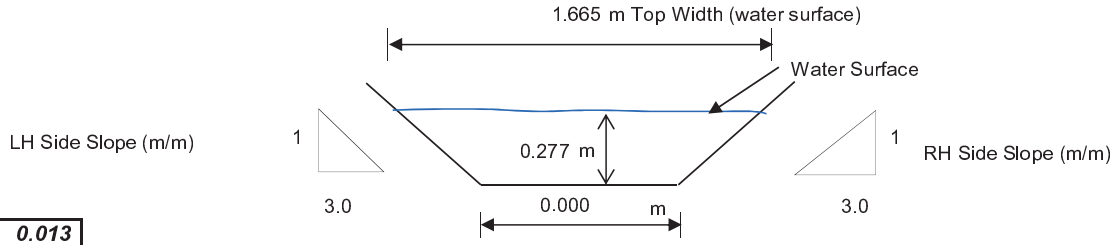
Inputs

Channel Flow Conditions

Depth (m)	0.277
Area (m^2)	0.231
Wet Perimeter (m)	1.755
Hydraulic Radius (m)	0.132
Top Width (m)	1.665
Velocity (m/s)	0.866
Flow (m^3/s)	0.200
VD Product (m^2/s)	0.240
Velocity Head	0.038
Froude Number	0.145

GS (by changing cell)

Goal seek (set cell) (MACRO



Manning's n		
	Concrete	***n = 0.013***
	Asphalt	*n = 0.015*
	Sprayed Seal	*n = 0.018*
	Grass	*n = 0.045*

Velocity =	*0.866*	*m/s*
Velocity Depth Product =	*0.240*	*m^2/s*
Long. Slope	*1.22*	*%*
Total Depth	*0.277*	*m*
LH Batter Horiz. Length =	*0.83*	*m*
RH Batter Horiz. Length =	*0.83*	*m*
Total Width =	*1.66*	*m*

16/02/2018

HYDRAULIC GRADE LINE & MANNING'S CALCULATIONS

Filename: H:\17\002720 - Ellida, Parkhurst\6_Model\SF\XP\RAFTS\XP MODEL Working\[HGL_180215.xls]CulvetN1
Date: 16/02/2018
By: BP

CULVERT MM HGL CALCULATIONS

		Pit 1/MM	Pipe	Pit 2/MM	Pipe	Pit 3/MM	Pipe	Pit OUT/MM
Input Reach Length	Length (m)		69.54		29.28		3.66	
Input D/S Invert Level	IL D/S	28.150		27.852		27.715		NA
Calculate D/S Obvert Level	OL D/S	29.050		28.752		28.615		
Input U/S Invert Level	IL U/S	0.725		27.872		27.735		27.700
Calculate Pipe Grade	Grade (%)		0.40%		0.40%		0.41%	
Input Reach Flow	Qo (m^3/s)	3.84		3.84		3.84		3.84
Input Cell Width	Width (mm)		2400		2400		2400	
Input Cell Depth	Height (mm)		900		900		900	
Input No. Barrels	No. Cells		1		1		1	
Calculate Flow Area	A (m^2)		2.16		2.16		2.16	
Calculate Flow Velocity	V (m/s)		1.78		1.78		1.78	
Calculate Flow Velocity Head	$V^2/2g$ (m)		0.161		0.161		0.161	
Calulate Resistance Factor	f		0.016		0.016		0.016	
Calulate Friction Slope	Sf		0.001		0.001		0.001	
Calulate Friction Loss	Hf		0.073		0.031		0.004	
	Do/Du	1.00		1.00		1.00		
	Qu/Qo	1.00		1.00		1.00		
Input Pit Loss Coefficient	Kpit	1.2		1.2		1.2		NA
Calculate Pit Loss	Hpit	0.193		0.193		0.193		
HGL at Previous Pit		28.945		28.600		28.600		
Calculate D/S HGL in Pit		29.019		28.604		28.604		
Adopt D/S HGL based on D/S Obvert	HGL D/S	29.050		28.752		28.615		
Calculate U/S HGL in Pit based on Pit Loss	HGL U/S	29.243		28.945		28.808		28.600
		-0.310		-0.306		-1.439		28.600
Surface Level	SL	29.553		29.251		30.247		
MANNING'S CALCULATION CHECK	Q(m3/s)		4.97		4.97		5.03	

ONGRADE INLET CAPACITY CALCULATION

Filename: H:\17\002720 - Ellida, Parkhurst\6_Model\SF\Calculation Spreadsheets\[17-002720 - Eliida Parkhurst -Mannings & Culvert Crossing Calcs.xls]1MM Ongrade Inlet Capacity
Date 16/02/2018
By: BP

1 1

South Inlet

1. Worksheet Calculating an Elevation-Discharge Relationship for a Series of Weirs

This can be used to model a number of rectangular weirs at different levels.

FOLLOW THE PROCEDURES BELOW, ENTERING VALUES IN THE YELLOW BOXES.

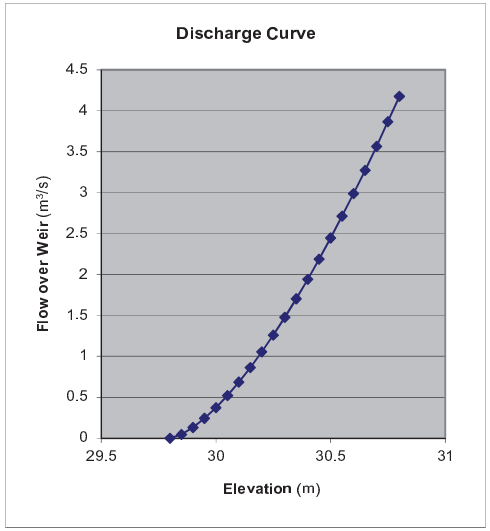
1. Enter Parameters for 1 to 10 weirs.

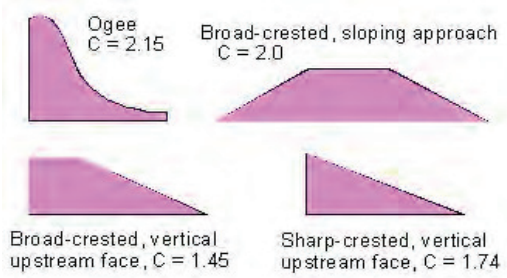
Weir No.	1	2	3	4	5	6	7	8	9	10
Crest Elevation (m AHD)	29.553									
Weir Width (m)	18									
Weir Coefficient	1.45									

The lowest weir should be placed first.

2. Fill in the Required Depths in the yellow column in the table below.

Depth (m)	Elevation (m AHD)	Discharge (m^3/s)
0	29.553	0
0.05	29.603	0.291807
0.1	29.653	0.825354
0.15	29.703	1.516273
0.2	29.753	2.334455
0.25	29.803	3.2625
0.27	**29.82367**	**3.675313**
0.35	29.903	5.404339
0.4	29.953	6.602836
0.450	30.003	7.878786
0.5	30.053	9.227743





SAG INLET CAPACITY CALCULATION

Filename: H:\17\002720 - Ellida, Parkhurst\6_Model\SF\Calculation Spreadsheets\[17-002720 - Eliida Parkhurst -Mannings & Culvert Crossing Calcs.xls]2MM Sag Inlet Capacity
Date 16/02/2018
By: BP

1 1

North Inlet

1. Worksheet Calculating an Elevation-Discharge Relationship for a Series of Weirs

This can be used to model a number of rectangular weirs at different levels.

FOLLOW THE PROCEDURES BELOW, ENTERING VALUES IN THE YELLOW BOXES.

1. Enter Parameters for 1 to 10 weirs.

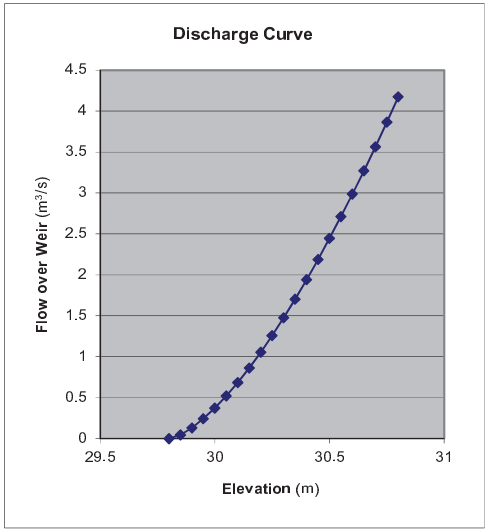
Weir No.	1	2	3	4	5	6	7	8	9	10
Crest Elevation (m AHD)	29.251									
Weir Width (m)	0.9									
Weir Coefficient	1.45									

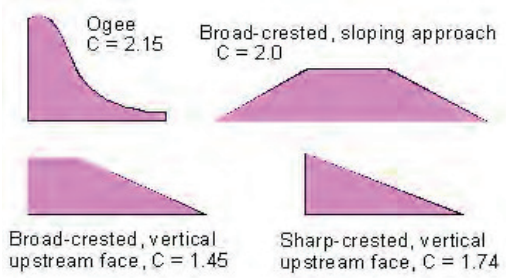
The lowest weir should be placed first.

2. Fill in the Required Depths in the yellow column in the table below.

Contributing Flow 0.2

Depth (m)	Elevation (m AHD)	Discharge (m^3/s)
0	29.251	0
0.039	29.28988	0.010004
0.065	29.31575	0.021503
0.15	29.401	0.075814
0.2	29.451	0.116723
0.25	29.501	0.163125
0.29	**29.53766**	**0.200286**
0.35	29.601	0.270217
0.4	29.651	0.330142
0.45	29.701	0.393939
0.5	29.751	0.461387





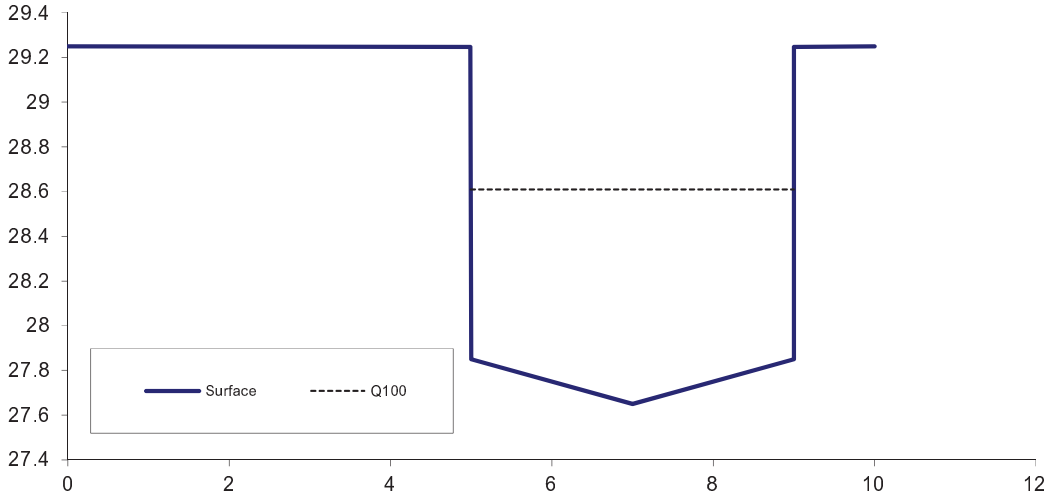
MANNING'S WATER SURFACE EXTENT CALCULATION

Filename: H:\17\002720 - Ellida, Parkhurst\6_Model\SF\Calculation Spreadsheets\[Manning's Calcs_180216.xls]A
Date: 16/02/2018
By: BP

Manning's calculation as per Equation 4.2.3 of Australian Rainfall and Runoff (1987)

SECTION A

CROSS SECTION DETAILS				Q100					
POINT	CH	Z	n	wA	wP	n x wA	wA	wP	n x wA
1	0	29.25	0.045						
2	4.99	29.247	0.045						
3	5	27.85	0.045	0.00	0.76	0.00			
4	7	27.65	0.045	1.72	2.01	0.08			
5	9	27.85	0.045	1.72	2.01	0.08			
6	9.001	29.247	0.045	0.00	0.76	0.00			
7	10	29.25	0.045						
8									
9									
10									
				wA	wP	n x wA	wA	wP	n x wA
			TOTAL	3.442274	5.53997	0.154902	0	0	0
	S (m/m)								
	0.0048			R	n	Q	R	n	Q
				0.621352	0.045	**3.86**	#DIV/0!	#DIV/0!	#DIV/0!
			Design Flow		3.86				
			WSL		28.61				
			Calculated by Manning's Equation		3.86			#DIV/0!	
			Vel (m/s)		1.12			#DIV/0!	



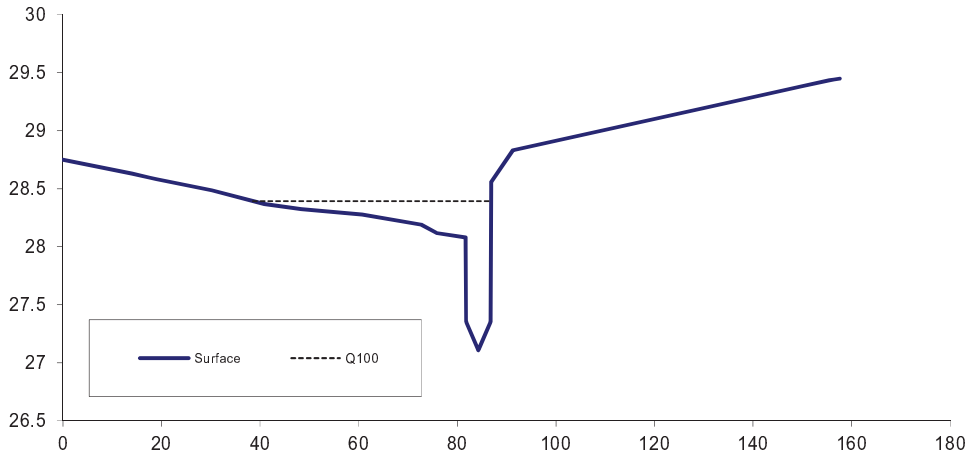
MANNING'S WATER SURFACE EXTENT CALCULATION

Filename: H:\17\002720 - Ellida, Parkhurst\6_Model\SF\Calculation Spreadsheets\[Manning's Calcs_180216.xls]B
Date: 16/02/2018
By: BP

Manning's calculation as per Equation 4.2.3 of Australian Rainfall and Runoff (1987)

SECTION B

CROSS SECTION DETAILS				Q100					
POINT	CH	Z	n	wA	wP	n x wA	wA	wP	n x wA
1	0	28.75	0.045						
2	14.02	28.629	0.045						
3	17.598	28.596	0.045						
4	18.954	28.582	0.045						
5	30.21	28.486	0.045						
6	40.85	28.368	0.045	0.03	2.30	0.00			
7	48.347	28.324	0.045	0.36	7.50	0.02			
8	60.712	28.279	0.045	1.14	12.37	0.05			
9	72.645	28.191	0.045	1.89	11.93	0.09			
10	75.819	28.118	0.045	0.76	3.17	0.03			
11	81.697	28.08	0.045	1.73	5.88	0.08			
12	81.697	28.08	0.045	0.00	0.00	0.00			
13	81.703	28.023	0.045	0.00	0.06	0.00			
14	81.769	27.359	0.045	0.05	0.67	0.00			
15	81.938	27.342	0.045	0.18	0.17	0.01			
16	84.272	27.108	0.045	2.73	2.35	0.12			
17	84.291	27.11	0.045	0.02	0.02	0.00			
18	84.579	27.139	0.045	0.37	0.29	0.02			
19	86.644	27.344	0.045	2.38	2.08	0.11			
20	86.776	27.358	0.045	0.14	0.13	0.01			
21	86.87	28.487	0.045	0.04	1.04	0.00			
22	86.876	28.558	0.045						
23	87.005	28.565	0.045						
24	91.281	28.831	0.045						
25	131.906	29.213	0.045						
26	149.704	29.381	0.045						
27	155.46	29.435	0.045						
28	156.418	29.441	0.045						
29	157.592	29.449	0.045						
30									
				wA	wP	n x wA	wA	wP	n x wA
			TOTAL	11.80709	49.94379	0.531319	0	0	0
	S (m/m)								
	0.0048			R	n	Q	R	n	Q
				0.236408	0.045	**6.95**	#DIV/0!	#DIV/0!	#DIV/0!
			Design Flow		6.95				
			WSL		28.39				
			Calculated by Manning's Equation		6.95			#DIV/0!	
			Vel (m/s)		0.59			#DIV/0!	



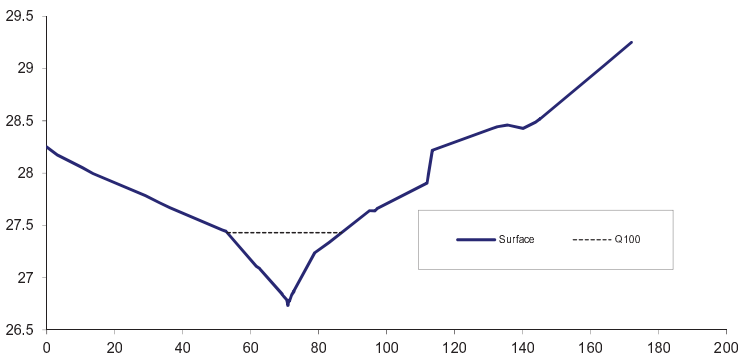
MANNING'S WATER SURFACE EXTENT CALCULATION

Filename: H:\17\002720 - Ellida, Parkhurst\6_Model\SF\Calculation Spreadsheets\[Manning's Calcs_180216.xls]C
Date: 16/02/2018
By: BP

Manning's calculation as per Equation 4.2.3 of Australian Rainfall and Runoff (1987)

SECTION CH

CROSS SECTION DETAILS				Q100					
POINT	CH	Z	n	wA	wP	n x wA	wA	wP	n x wA
1	0	28.25	0.045						
2	3.135	28.173	0.045						
3	10.451	28.052	0.045						
4	13.612	27.995	0.045						
5	29.046	27.785	0.045						
6	33.139	27.717	0.045						
7	36.25	27.67	0.045						
8	51.663	27.455	0.045						
9	52.757	27.443	0.045						
10	61.66	27.108	0.045	1.38	8.58	0.06			
11	62.667	27.085	0.045	0.34	1.01	0.02			
12	69.257	26.841	0.045	3.08	6.59	0.14			
13	69.257	26.838	0.045	0.00	0.00	0.00			
14	69.458	26.83	0.045	0.12	0.20	0.01			
15	69.738	26.819	0.045	0.17	0.28	0.01			
16	70.569	26.79	0.045	0.52	0.83	0.02			
17	70.864	26.743	0.045	0.20	0.30	0.01			
18	70.929	26.733	0.045	0.05	0.07	0.00			
19	70.964	26.739	0.045	0.02	0.04	0.00			
20	71.137	26.767	0.045	0.12	0.18	0.01			
21	71.328	26.782	0.045	0.13	0.19	0.01			
22	71.349	26.782	0.045	0.01	0.02	0.00			
23	71.371	26.783	0.045	0.01	0.02	0.00			
24	71.391	26.783	0.045	0.01	0.02	0.00			
25	71.391	26.775	0.045	0.00	0.01	0.00			
26	72.048	26.833	0.045	0.41	0.66	0.02			
27	72.644	26.868	0.045	0.35	0.60	0.02			
28	72.644	26.864	0.045	0.00	0.00	0.00			
29	72.762	26.867	0.045	0.07	0.12	0.00			
30	72.762	26.875	0.045	0.00	0.01	0.00			
31	78.863	27.24	0.045	2.28	6.11	0.10			
32	83.073	27.336	0.045	0.60	4.21	0.03			
33	94.98	27.641	0.045	0.17	3.69	0.01			
34	96.597	27.639	0.045						
35	97.31	27.664	0.045						
36	111.908	27.905	0.045						
37	111.908	27.905	0.045						
38	112.352	27.991	0.045						
39	113.492	28.22	0.045						
40	121.323	28.312	0.045						
41	131.016	28.425	0.045						
42	132.602	28.444	0.045						
43	135.515	28.46	0.045						
44	135.823	28.458	0.045						
45	140.144	28.428	0.045						
46	140.423	28.432	0.045						
47	143.803	28.487	0.045						
48	145.124	28.52	0.045						
49	145.124	28.519	0.045						
50	163.941	29.029	0.045						
51	172.028	29.25	0.045						
52									
				wA	wP	n x wA	wA	wP	n x wA
			TOTAL	10.02999	33.72971	0.45135	0	0	0
	S (m/m)								
	0.0049			R	n	Q	R	n	Q
				0.297364	0.045	**6.95**	#DIV/0!	#DIV/0!	#DIV/0!
			Design Flow		6.95				
			WSL		27.43				
			Calculated by Manning's Equation		6.95			#DIV/0!	
			Vel (m/s)		0.69			#DIV/0!	



MANNING'S WATER SURFACE EXTENT CALCULATION

Filename: H:\17\002720 - Ellida, Parkhurst\6 Model\SF\Calculation Spreadsheets\[Manning's Calcs 180216.xls]E
Date: 16/02/2018
By: BP

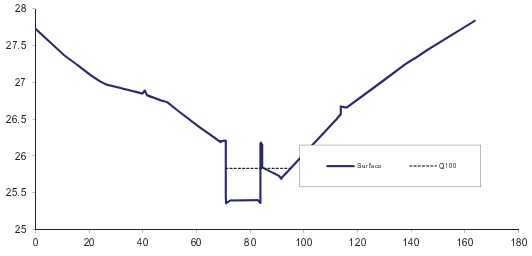
Manning's calculation as per Equation 4.2.3 of Australian Rainfall and Runoff (1987)

SECTION E

CROSS SECTION DETAILS				Q100					
POINT	CH	Z	n	wA	wP	n x wA	wA	wP	n x wA
1	0	27.724							
2	10.737	27.366	0.045						
3	15.006	27.25	0.045						
4	15.523	27.236	0.045						
5	20.524	27.097	0.045						
6	20.524	27.097	0.045						
7	20.867	27.089	0.045						
8	20.869	27.089	0.045						
9	22.86	27.041	0.045						
10	22.877	27.04	0.045						
11	24.26	27.007	0.045						
12	24.859	26.996	0.045						
13	24.887	26.995	0.045						
14	26.299	26.969	0.045						
15	26.299	26.969	0.045						
16	31.97	26.918	0.045						
17	31.97	26.917	0.045						
18	32.205	26.916	0.045						
19	32.609	26.913	0.045						
20	32.609	26.913	0.045						
21	34.565	26.895	0.045						
22	38.574	26.858	0.045						
23	38.574	26.858	0.045						
24	39.831	26.846	0.045						
25	40.609	26.879	0.045						
26	40.732	26.884	0.045						
27	41.373	26.837	0.045						
28	41.581	26.825	0.045						
29	42.61	26.805	0.045						
30	42.61	26.81	0.045						
31	46.843	26.751	0.045						
32	49.118	26.728	0.045						
33	53.374	26.605	0.045						
34	61.156	26.389	0.045						
35	66.762	26.249	0.045						
36	68.098	26.209	0.045						
37	68.992	26.187	0.045						
38	68.992	26.201	0.045						
39	70.69	26.208	0.045						
40	70.883	26.206	0.045						
41	70.927	25.442	0.045	0.00	0.39	0.00			
42	71.033	25.356	0.045	0.05	0.14	0.00			
43	71.136	25.359	0.045	0.05	0.10	0.00			
44	72.644	25.396	0.045	0.68	1.51	0.03			
45	73.76	25.396	0.045	0.48	1.12	0.02			
46	82.93	25.398	0.045	3.97	9.17	0.18			
47	82.949	25.397	0.045	0.01	0.02	0.00			
48	83.781	25.362	0.045	0.38	0.83	0.02			
49	83.82	25.361	0.045	0.02	0.04	0.00			
50	83.869	26.163	0.045	0.01	0.47	0.00			
51	83.985	26.182	0.045						
52	84.062	26.175	0.045						
53	84.109	26.164	0.045						
54	84.238	26.16	0.045						
55	84.455	26.152	0.045						
56	84.455	25.842	0.045						
57	90.783	25.726	0.045	0.30	5.70	0.01			
58	91.634	25.689	0.045	0.10	0.85	0.00			
59	91.96	25.714	0.045	0.04	0.33	0.00			
60	92.238	25.722	0.045	0.03	0.28	0.00			
61	93.238	25.759	0.045	0.09	1.00	0.00			
62	99.089	25.987	0.045	0.07	1.84	0.00			
63	105.773	26.248	0.045						
64	112.232	26.498	0.045						
65	113.599	26.559	0.045						
66	113.724	26.565	0.045						
67	113.724	26.565	0.045						
68	113.724	26.672	0.045						
69	114.456	26.666	0.045						
70	115.543	26.658	0.045						
71	115.942	26.656	0.045						
72	115.942	26.656	0.045						
73	128.795	27	0.045						
74	137.521	27.237	0.045						
75	140.417	27.303	0.045						
76	140.417	27.303	0.045						
77	140.639	27.308	0.045						
78	140.844	27.313	0.045						
79	140.846	27.313	0.045						
80	141.069	27.318	0.045						
81	141.294	27.323	0.045						
82	141.303	27.323	0.045						
83	141.353	27.324	0.045						
84	141.52	27.328	0.045						
85	141.52	27.328	0.045						
86	141.658	27.331	0.045						
87	145.801	27.432	0.045						
88	163.737	27.834	0.045						
89									
90									
				wA	wP	n x wA	wA	wP	n x wA
			TOTAL	6.281082	23.77654	0.282649	0	0	0
S (m/m)									
0.0166				R	n	Q	R	n	Q
				0.264171	0.045	**7.40**	#DIV/0!	#DIV/0!	#DIV/0!

Design Flow	7.40	
WSL	25.83	
Calculated by Manning's Equation	7.40	#DIV/0!
Vel (m/s)	1.18	#DIV/0!

Note: WSL determined is lower that calculated over downstrean section (F). Result not valid.



WEIR, PIPE & BOX FLOW CALCULATIONS

Filename: W:\Resource Library\Spreadsheets\Hydraulics\[Boundary Pipe Box Weir Calcs.xls]Sections A & F (2)
Date: 16/02/2018
By: MS

SECTION F - District Access Road Crossing

100 Y ARI

WSL (m)	25.91

Pipe Details

U/S WSL (m)	25.91
TW (m)	
H (m)	25.905345
L (m)	
No. Cells	
Dia (m)	
A (m2)	0.000
U/S IL	
D/S IL	
n	
ke	
g (m/s2)	
Q Inlet (m3/s)	
Q Outlet (m3/s)	
Pipe Flow (m3/s)	**0.00**

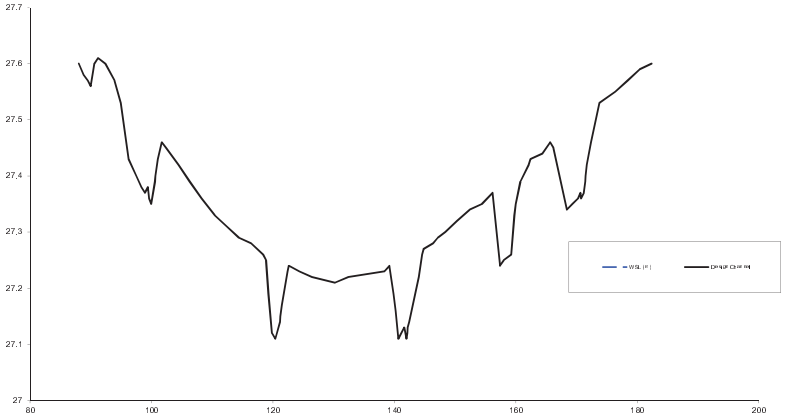
Box Details

L (m)	23.4
TW (m)	0.75
Width	2.1
Height (m)	0.75
No.	5
Area (m^2)	1.575
K	1
Invert Level (R.L)	25.35
Inflow Level (R.L)	25.35
Box Inlet Flow (m3/s)	**7.40**
Box Outlet Flow (m3/s)	**146.24**
Box Flow (m3/s)	**7.40**
Weir Flow (m3/s)	**0.00**

Results	
Total Flow (m3/s)	**7.40**
Actual Flow (m3/s)	0.00
% Difference	

Weir Details — Weir Coefficient 1.67

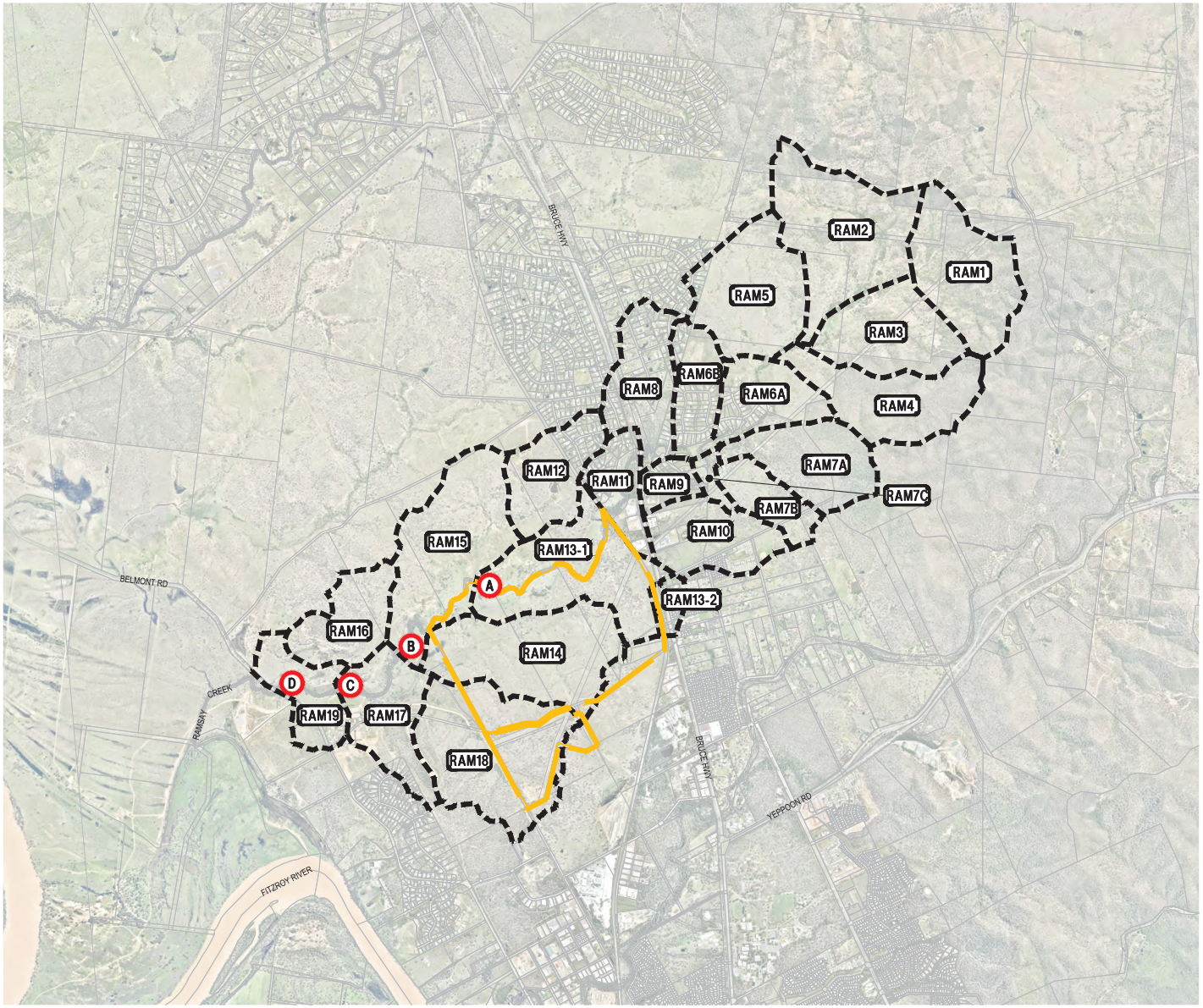
	Chainage	RL (m)	P (m)	D (m)	Q (m3/s)	wA (m2)	V (m/s)	V.D (m2/s)
1	88.046	27.6						
2	88.831	27.58						
3	89.536	27.57						
4	90.01	27.56						
5	90.444	27.59						
6	90.608	27.6						
7	91.211	27.61						
8	92.434	27.6						
9	93.931	27.57						
10	94.948	27.53						
11	96.243	27.43						
12	97.509	27.4						
13	98.345	27.38						
14	98.938	27.37						
15	99.417	27.38						
16	99.632	27.36						
17	99.972	27.35						
18	100.581	27.39						
19	100.662	27.4						
20	101.04	27.43						
21	101.732	27.46						
22	102.408	27.45						
23	104.434	27.42						
24	106.303	27.39						
25	108.274	27.36						
26	110.428	27.33						
27	112.425	27.31						
28	114.423	27.29						
29	116.421	27.28						
30	118.421	27.26						
31	118.878	27.25						
32	119.278	27.19						
33	119.857	27.12						
34	120.413	27.11						
35	121.182	27.14						
36	121.236	27.15						
37	121.479	27.17						
38	122.424	27.23						
39	122.633	27.24						
40	124.365	27.23						
41	126.423	27.22						
42	130.263	27.21						
43	132.416	27.22						
44	138.38	27.23						
45	139.189	27.24						
46	139.881	27.19						
47	140.208	27.16						
48	140.661	27.11						
49	141.631	27.13						
50	141.98	27.11						
51	142.14	27.12						
52	142.207	27.13						
53	142.414	27.14						
54	144.035	27.22						
55	144.575	27.26						
56	144.795	27.27						
57	146.378	27.28						
58	147.157	27.29						
59	148.372	27.3						
60	150.337	27.32						
61	152.409	27.34						
62	154.408	27.35						
63	156.181	27.37						
64	157.401	27.24						
65	158.032	27.25						
66	159.236	27.26						
67	159.773	27.33						
68	159.979	27.35						
69	160.754	27.39						
70	162.115	27.42						
71	162.407	27.43						
72	164.398	27.44						
73	165.651	27.46						
74	166.203	27.45						
75	168.398	27.34						
76	169.297	27.35						
77	170.259	27.36						
78	170.642	27.37						
79	170.737	27.36						
80	171.215	27.37						
81	171.432	27.39						
82	171.48	27.4						
83	171.592	27.42						
84	172.406	27.46						
85	173.777	27.53						
86	176.358	27.55						
87	178.403	27.57						
88	180.402	27.59						
89	182.367	27.6						



FLOOD INVESTIGATION & CONCEPT STORMWATER QUANTITY MANAGEMENT PLAN

Appendix C Concept Plans & Details

STOCKLANDS DEVELOPMENT PTY LTD



N

CATCHMENT DATA TABLE

CATCHMENT NAME	AREA (ha)	FRACTION IMPERVIOUS (%)
RAM13-1	132.938	4.0
RAM13-2	13.690	27.7
TOTAL	146.628	

NOTE: ALL OTHER CATCHMENTS ARE AS PER COUNCIL ISSUED XP-RAFTS MODEL.

LEGEND:

- SITE BOUNDARY
- EXISTING CADASTRE
- A — EXISTING CATCHMENT LABEL
- EXISTING CATCHMENT BOUNDARY
- A — ANALYSIS POINT

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE LATEST VERSION OF CALIBRE REPORT No. 17-002720.WER02.
2. ALL INFORMATION PRESENTED ON THIS DRAWING IS CONCEPT ONLY AND TO BE CONFIRMED FOR SUBSEQUENT DETAILED DESIGN.

REVISION	DATE	ISSUE DETAILS	DRAWN	DESIGN
A	16.02.18	INITIAL ISSUE	RH	BP
B				
C				
D				
E				
F				
G				
H				

DRAWN

DESIGN

STATUS: **PRELIMINARY** NOT FOR CONSTRUCTION

SCALE: 1:20000 200 0 200 400 600 800 1000 A1 / 1:40000 A3

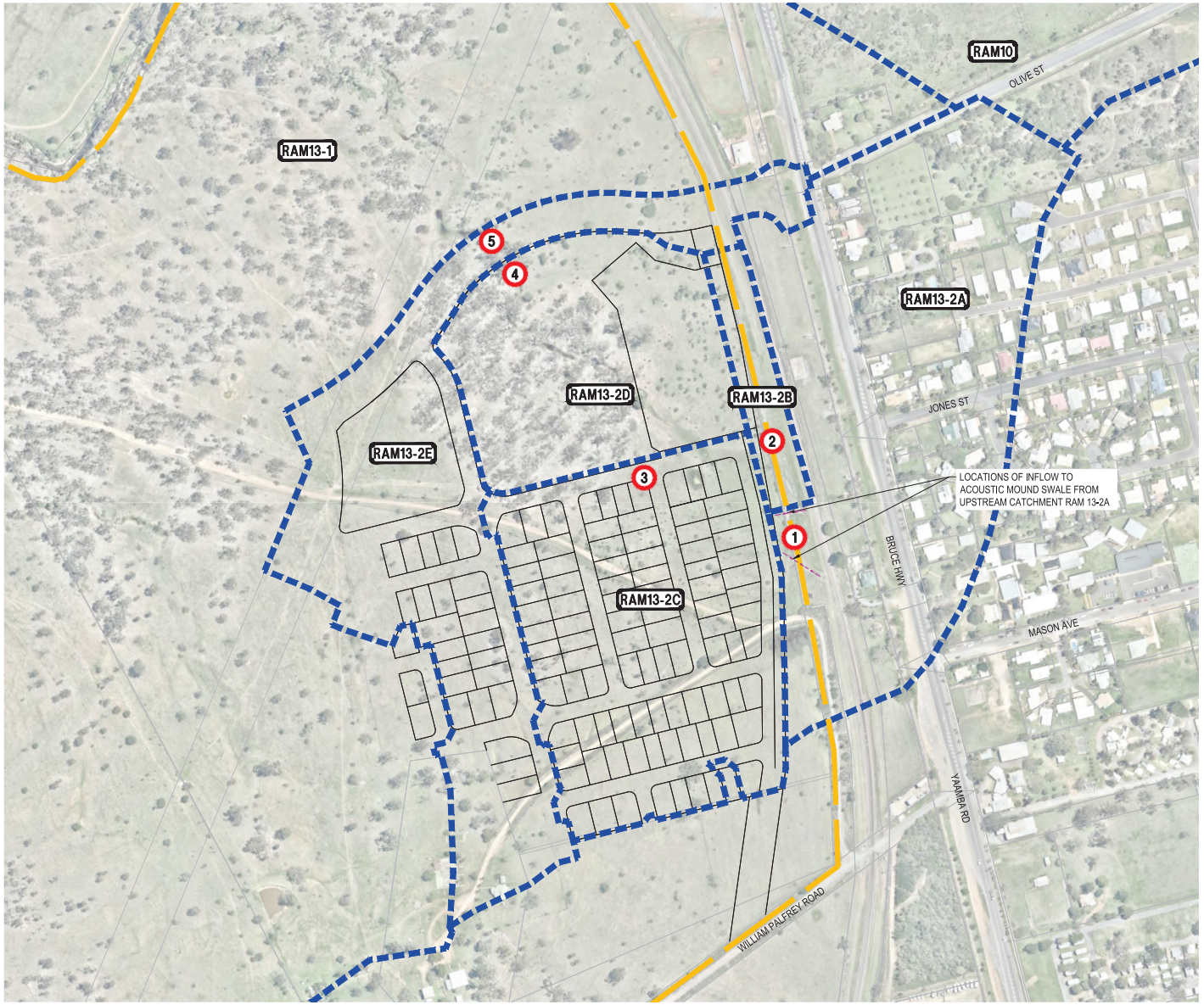
CLIENT: **STOCKLAND PTY LTD**

PROJECT: **ELLIDA PARKHURST STAGE 1 TO 3**

DISCLAIMER: ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY. DO NOT SCALE.

DRAWING TITLE: **EXISTING CATCHMENT PLAN**

PROJECT No.	DRAWING No.	REVISION
17-002720	SK01	A



CATCHMENT DATA TABLE

CATCHMENT NAME	AREA (ha)	FRACTION IMPERVIOUS (%)
RAM13-1	114.082	4.7
RAM13-2A	12.931	29.9
RAM13-2B	0.975	0.0
RAM13-2C	7.891	80.0
RAM13-2D	5.179	0.5
RAM13-2E	8.331	80.0

LEGEND:

- SITE BOUNDARY
- LOT BOUNDARY
- EXISTING CADASTRE
- A — DEVELOPED CATCHMENT LABEL
- DEVELOPED CATCHMENT BOUNDARY
- 1 — ANALYSIS POINT

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE LATEST VERSION OF CALIBRE REPORT No. 17-002720.WER02.
2. ALL INFORMATION PRESENTED ON THIS DRAWING IS CONCEPT ONLY AND TO BE CONFIRMED FOR SUBSEQUENT DETAILED DESIGN.

REVISION	DATE	ISSUE DETAILS	DRAWN	DESIGN
A	16.02.18	INITIAL ISSUE	RH	BP
B				
C				
D				
E				
F				
G				
H				

DRAWN

DESIGN

STATUS: **PRELIMINARY** NOT FOR CONSTRUCTION

SCALE: 1:2000 / 1:4000 — 20 0 20 40 60 80 100 — A1 / A3

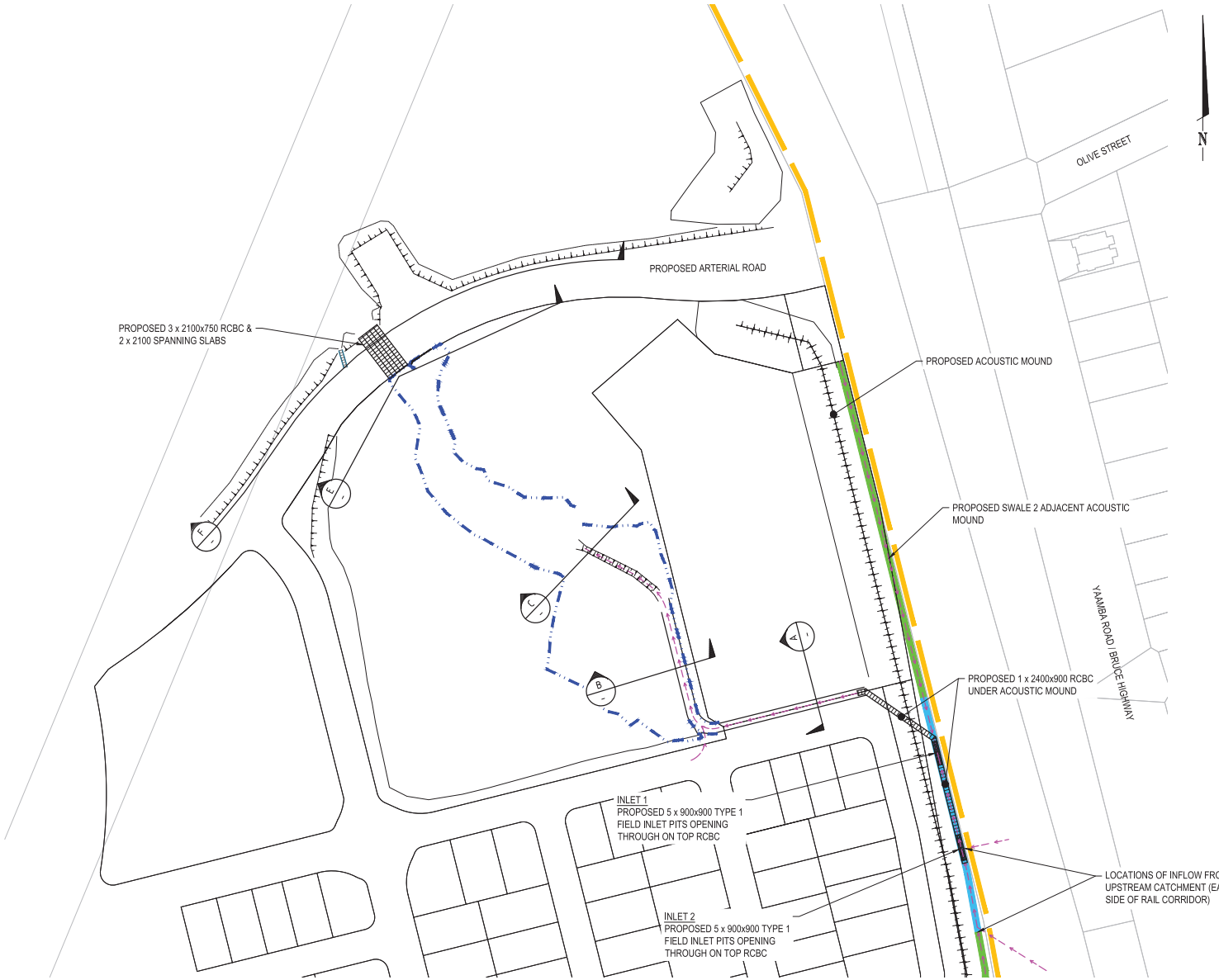
CLIENT: **STOCKLAND PTY LTD**

PROJECT: **ELLIDA PARKHURST STAGE 1 TO 3**

DISCLAIMER: ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY. DO NOT SCALE.

DRAWING TITLE: **DEVELOPED CATCHMENT PLAN**

PROJECT No.	DRAWING No.	REVISION
17-002720	SK02	A



LEGEND:

- SITE BOUNDARY
- EXISTING CADASTRE
- PROPOSED LOTS
- PROPOSED BATTER
- PROPOSED STORMWATER PIPE
- ACOUSTIC BUND SWALE (TYPE 1)
- ACOUSTIC BUND SWALE (TYPE 2)
- CHANNELLED FLOW PATH
- FLOOD EXTENT (1% AEP)
- INLET PIT
- MANNINGS SECTION

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE LATEST VERSION OF CALIBRE REPORT No. 17-002720.WER02.
2. ALL INFORMATION PRESENTED ON THIS DRAWING IS CONCEPT ONLY AND TO BE CONFIRMED FOR SUBSEQUENT DETAILED DESIGN.
3. REFER TO DRAWING No.17-002720-SK05 FOR DETAILS OF ACOUSTIC BUND SWALE CONFIGURATIONS.

REVISION	DATE	ISSUE DETAILS	DRAWN	DESIGN
A	16.02.18	INITIAL ISSUE	RH	BP
B				
C				
D				
E				
F				
G				
H				

DRAWN

DESIGN

STATUS: **PRELIMINARY**
NOT FOR CONSTRUCTION

SCALE: 1:1000 / 1:2000 — 10 0 10 20 30 40 50 — A1 / A3

CLIENT: **STOCKLAND PTY LTD**

PROJECT: **ELLIDA PARKHURST STAGE 1 TO 3**

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.

DRAWING TITLE: **PROPOSED STORMWATER MANAGEMENT PLAN (1 OF 2)**

PROJECT No.	DRAWING No.	REVISION
17-002720	SK03	A

LEGEND:

- SITE BOUNDARY
- EXISTING CADASTRE
- PROPOSED LOTS
- PROPOSED BATTER
- PROPOSED STORMWATER PIPE
- ACOUSTIC BUND SWALE (TYPE 1)
- ACOUSTIC BUND SWALE (TYPE 2)
- CHANNELLED FLOW PATH
- INLET PIT
- MANNINGS SECTION

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE LATEST VERSION OF CALIBRE REPORT No. 17-002720.WER02.
2. ALL INFORMATION PRESENTED ON THIS DRAWING IS CONCEPT ONLY AND TO BE CONFIRMED FOR SUBSEQUENT DETAILED DESIGN.
3. REFER TO DRAWING No.17-002720-SK05 FOR DETAILS OF ACOUSTIC BUND SWALE CONFIGURATIONS.

REVISION	DATE	ISSUE DETAILS	DRAWN	DESIGN
A	16.02.18	INITIAL ISSUE	RH	BP
B				
C				
D				
E				
F				
G				
H				

DRAWN

DESIGN

STATUS: **PRELIMINARY** NOT FOR CONSTRUCTION

SCALE: 1:1000 / 1:2000 — 10 0 10 20 30 40 50 — A1 / A3

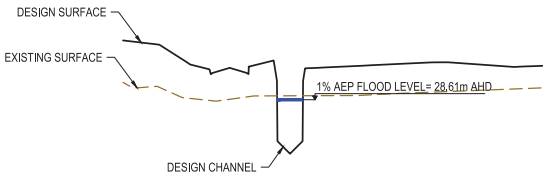
CLIENT: **STOCKLAND PTY LTD**

PROJECT: **ELLIDA PARKHURST STAGE 1 TO 3**

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.

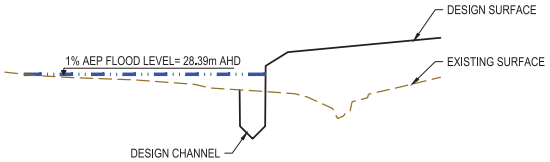
DRAWING TITLE: **PROPOSED STORMWATER MANAGEMENT PLAN (2 OF 2)**

PROJECT No.	DRAWING No.	REVISION
17-002720	SK04	A



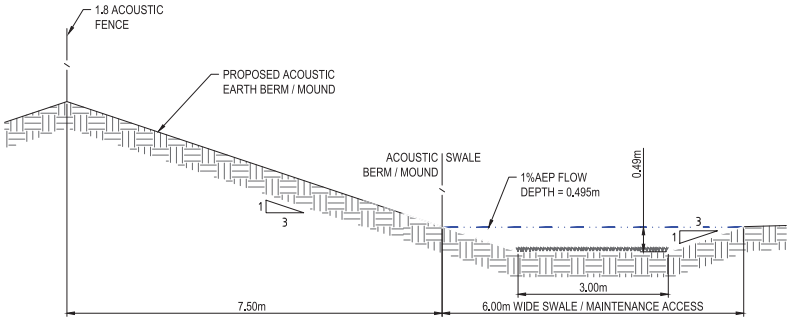
MANNINGS SECTIONS A

HORIZONTAL = SCALE 1:500 (A1), 1:1000 (A3)
VERTICAL = SCALE 1:50 (A1), 1:100 (A3)



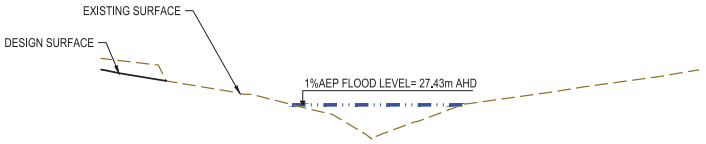
MANNINGS SECTIONS B

HORIZONTAL = SCALE 1:500 (A1), 1:1000 (A3)
VERTICAL = SCALE 1:50 (A1), 1:100 (A3)



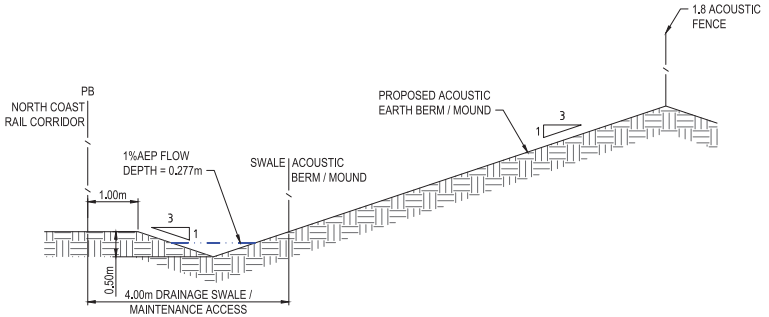
TYPICAL ACOUSTIC BERM & DRAINAGE SWALE 1 DETAIL

SCALE 1:50 (A1)
SCALE 1:100 (A3)



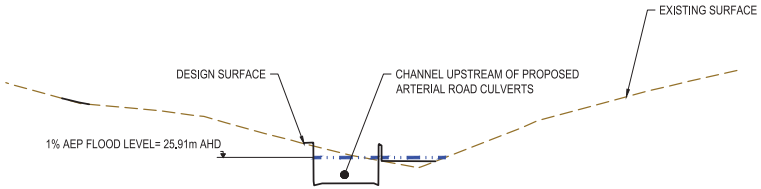
MANNINGS SECTIONS C

HORIZONTAL = SCALE 1:500 (A1), 1:1000 (A3)
VERTICAL = SCALE 1:50 (A1), 1:100 (A3)



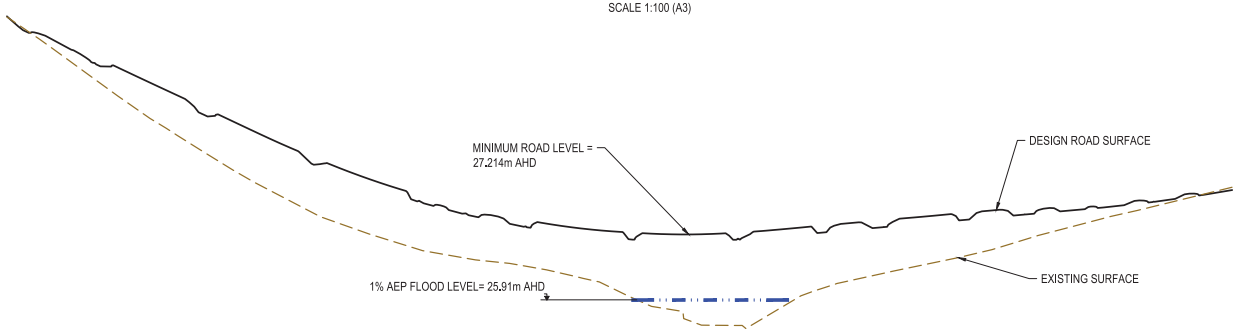
TYPICAL ACOUSTIC BERM & DRAINAGE SWALE 2 DETAIL

SCALE 1:50 (A1)
SCALE 1:100 (A3)



MANNINGS SECTIONS E

HORIZONTAL = SCALE 1:500 (A1), 1:1000 (A3)
VERTICAL = SCALE 1:50 (A1), 1:100 (A3)



MANNINGS SECTIONS F - PROPOSED ARTERIAL ROAD

HORIZONTAL = SCALE 1:500 (A1), 1:1000 (A3)
VERTICAL = SCALE 1:50 (A1), 1:100 (A3)

REVISION	DATE	ISSUE DETAILS	DRAWN	DESIGN
A	16.02.18	INITIAL ISSUE	RH	BP
B				
C				
D				
E				
F				
G				
H				

DRAWN
DESIGN

STATUS
PRELIMINARY
NOT FOR CONSTRUCTION

SCALE
1:500 10 5 0 10 20 A1
1:1000 A3
HORIZONTAL
1:50 1 0.5 0 1 2 A1
1:100 A3
VERTICAL

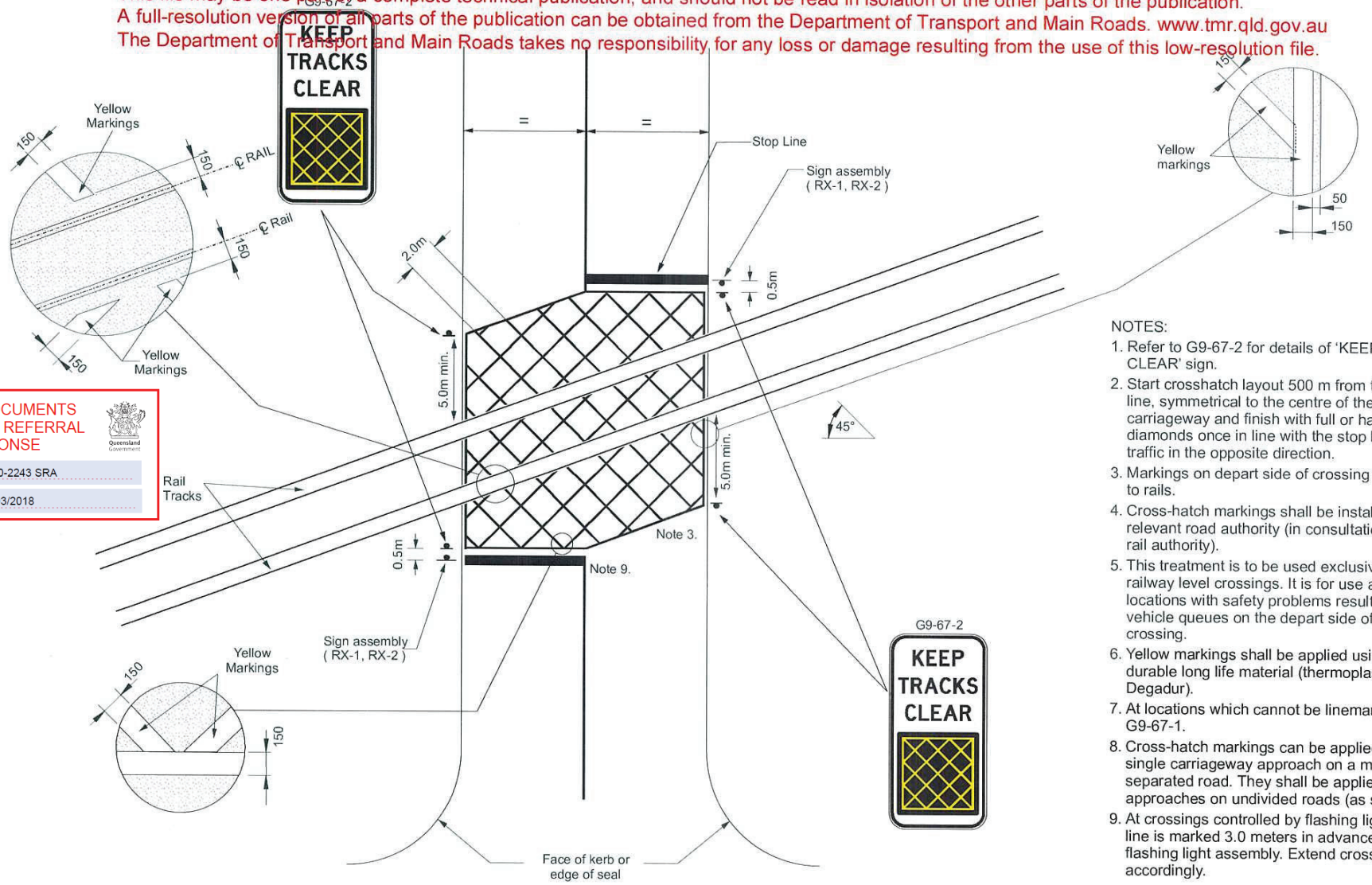
CLIENT
STOCKLAND PTY LTD

PROJECT
ELLIDA PARKHURST STAGE 1 TO 3

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.

DRAWING TITLE
STORMWATER SECTION DETAILS

PROJECT No.	DRAWING No.	REVISION
17-002720	SK05	A



NOTES:

1. Refer to G9-67-2 for details of 'KEEP TRACKS CLEAR' sign.
2. Start crosshatch layout 500 m from the stop line, symmetrical to the centre of the carriageway and finish with full or half diamonds once in line with the stop line for traffic in the opposite direction.
3. Markings on depart side of crossing are parallel to rails.
4. Cross-hatch markings shall be installed by the relevant road authority (in consultation with the rail authority).
5. This treatment is to be used exclusively at railway level crossings. It is for use at those locations with safety problems resulting from vehicle queues on the depart side of the crossing.
6. Yellow markings shall be applied using a durable long life material (thermoplastic or Degadur).
7. At locations which cannot be linemarked, utilise G9-67-1.
8. Cross-hatch markings can be applied to a single carriageway approach on a median separated road. They shall be applied to both approaches on undivided roads (as shown).
9. At crossings controlled by flashing lights, stop line is marked 3.0 meters in advance of flashing light assembly. Extend crosshatch area accordingly.

Queensland Government
Road Safety and Systems Management Division
Road Safety Unit

Designed	Checked	Scale
RH 08/00	JD 12/05	Not to Scale

APPROVED AS OFFICIAL TRAFFIC SIGN

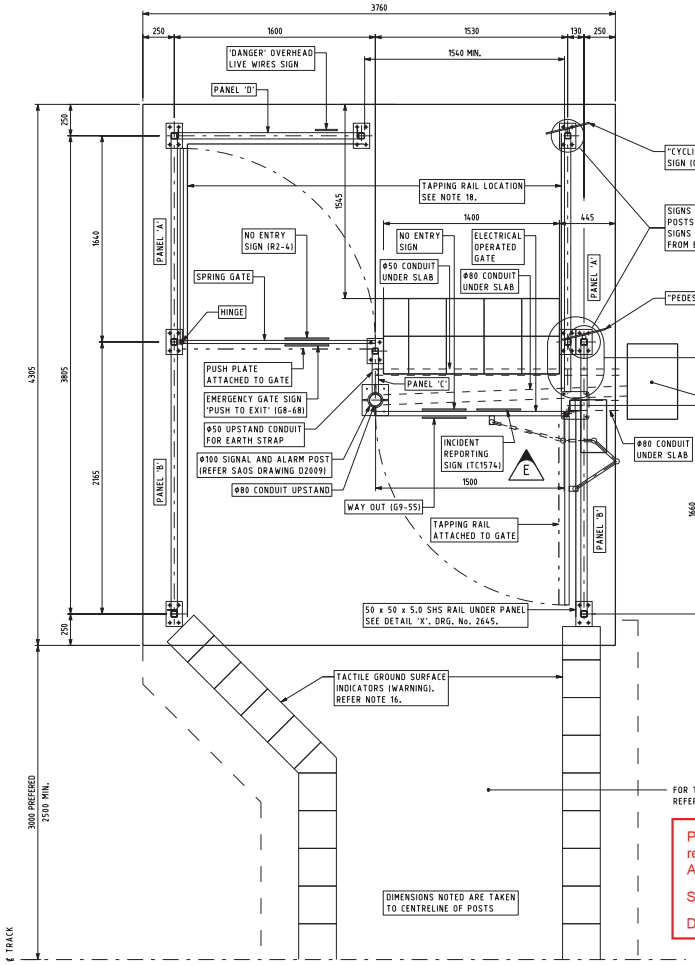
PRINCIPAL ENGINEER (Traffic Engineering)

13/10/09
Date

LAYOUT OF YELLOW CROSS HATCH MARKINGS AND KEEP CLEAR SIGNS AT RAILWAY LEVEL CROSSINGS

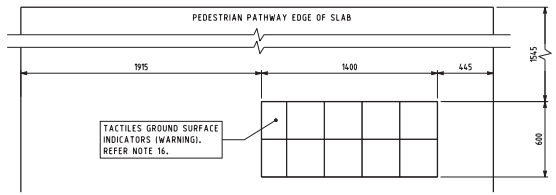
TC1248

C D E F G



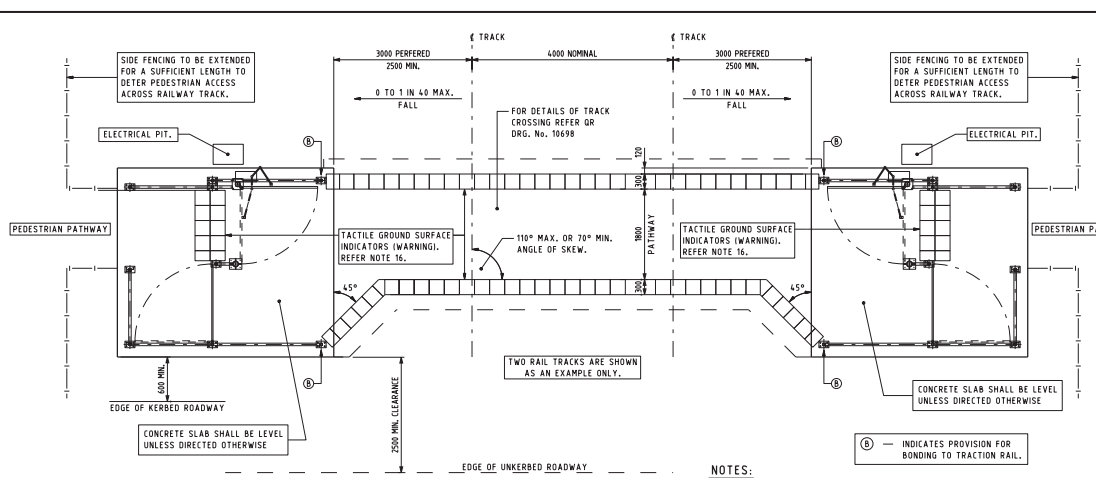
HALF PLAN OF ENCLOSURE SHOWING CONCRETE SLAB ARRANGEMENT

SCALE 1:20



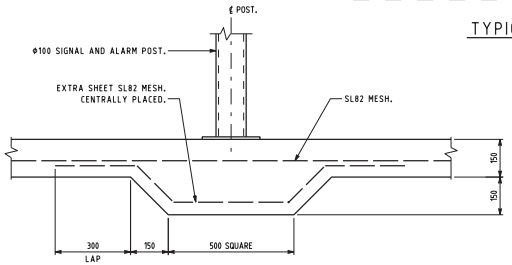
TACTILE LAYOUT

SCALE 1:20



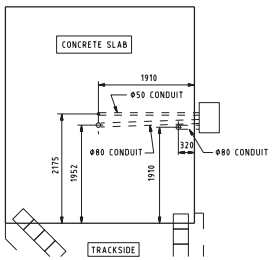
TYPICAL PLAN - ENCLOSURE LAYOUT

SCALE 1 : 50



BASE SLAB THICKENING AT 100 DIA. POST AND 100 x 100 SHS POST

SCALE 1:10



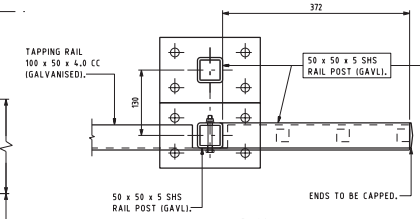
CONDUIT PLAN

SCALE 1:50

PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE

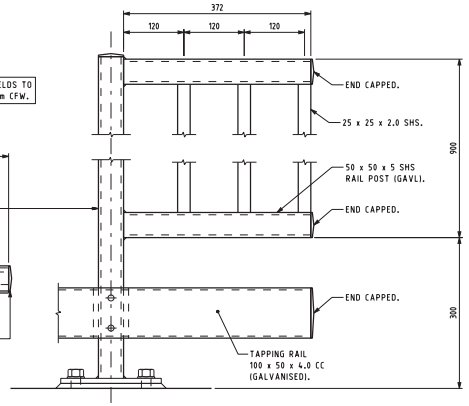
SARA ref: 1710-2243 SRA

Date: 21/03/2018



PLAN DOUBLE POST AND BASE PLATE

ALL WELDS TO BE 3 mm CFW.



ELEVATION INFILL PANEL

ENCLOSURES ARE TO BE POSITIONED SO THAT THE SIGHT DISTANCE AVAILABLE TO APPROACHING TRAINS IS IN ACCORDANCE WITH QR REGULATIONS. CONTACT THE CIVIL MANAGER FOR ADVICE.

DETAIL A

SCALE 1:5

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL POSTS ARE TO BE 50 x 50 x 5.0 mm SHS.
3. ALL SHS SHALL BE GRADE 350 IN ACCORDANCE WITH AS 1163.
4. ALL WELDING SHALL BE IN ACCORDANCE WITH AS 1554 PART 1. ALL WELDING SHALL BE GP (GENERAL PURPOSE), UNLESS NOTED OTHERWISE.
5. ALL FILLET WELDS ARE TO BE 3 mm CONTINUOUS, UNLESS NOTED OTHERWISE.
6. REMOVE ALL BURRS, SHARP CORNERS, WELD SCALE, RUST, DIRT, GREASE, ETC. BEFORE GALVANISING.
7. ALL STEELWORK SHALL BE HOT DIP GALVANISED AFTER FABRICATION. VENT HOLES SHALL BE PROVIDED BY THE CONTRACTOR AT LOCATIONS SUBMITTED BY THE GALVANISER AND APPROVED BY THE CIVIL MANAGER. EXTERNAL VENT HOLES SHALL BE PLUGGED AFTER GALVANISING.
8. AREAS WHERE GALVANISING COATING HAS BEEN REMOVED BY WELDING OR ABRASIONS SHALL BE CLEANED OF FOREIGN MATTER INCLUDING WELDING SLAG AND PAINTED WITH TWO COATS OF AN APPROVED ORGANIC ZINC-RICH PAINT TO PROVIDE A MINIMUM DRY FILM THICKNESS OF 0.10 mm. COLOUR MATCHING SHALL BE ACHIEVED WHERE DIRECTED BY THE INSPECTOR.
9. FABRICATION NOTE FOR GALVANISING PROCESS:
   2/Φ20 HOLES OR DXY BLOW HOLES TO SUIT TUBE SIZE, TO BE MADE AT ALL WELDED TUBE AND PLATE JOINTS TO ALLOW FOR INTERNAL VENTING OF FLUIDS DURING THE GALVANISING PROCESS.
10. ALL FABRICATED SECTIONS TO BE POWER COATED (POLYESTER) IN 'VIVID WHITE' COLOUR IN ACCORDANCE WITH AS/NZS 4506: 'METAL FINISHING - THERMOSET POWER COATING'.
11. INSPECTION BY QR WILL BE REQUIRED PRIOR TO POWER COATING.
12. CONCRETE IN SLAB TO BE GRADE N25.
13. ENCLOSURE FENCE TO BE ATTACHED WITH 4/M12 8.8 BOLTS WITH HILTI HSL-TZ GALVANISED ANCHORS PER POST. MINIMUM EDGE DISTANCE FROM OUTER ANCHOR TO CONCRETE EDGE IS TO BE 130 mm.
14. HORIZONTAL CLEARANCE TO TRACK IS BASED ON INFORMATION CONTAINED IN QR DRAWING No. 2461.
15. INSTALL SIGNS AS PER RAIL SYSTEM SERVICES DRAWING No. D2389.
16. TACTILE GROUND SURFACE INDICATORS SHOULD BE MADE FROM CORK RUBBER COMPOSITION TACTILE TILE "COMCORK FLOORING TACTILES" OR APPROVED EQUIVALENT .
17. TACTILE GROUND SURFACE INDICATORS SHALL BE INSTALLED. USING POLYURETHANE ADHESIVE. IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATION INCLUDING :
    a. ALL SURFACES TO BE BONDED SHALL BE CLEAN, SMOOTH, NON GREASY AREAS.
    b. CONCRETE AND BITUMEN/ASPHALTIC SURFACES SHALL BE DRY MOISTURE FREE AND BE AT LEAST 28 DAYS OLD.
    c. INSTALL TILES IN THE COOLEST PART OF THE DAY. SHADE TILES BEFORE AND AFTER INSTALLATION.
    d. TILES SHALL NOT BE WALKED ON FOR AT LEAST 12 HOURS AFTER LAYING.
18. TAPPING RAIL SHALL BE FIXED TO THE SHS POSTS ON THE INSIDE OF THE ENCLOSURE AREAS SHOWN.
19. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING No. 2645.
20. ENCLOSURE LIGHTING IN ACCORDANCE WITH WEBB REPORT, AND ALL LIGHTING POLES SHALL BE EXTERNAL TO ENCLOSURE.

1:5 (0, 100, 200mm) 1:20 (0, 400, 800mm) 1:50 (0, 1000, 2000mm)

FILE No. CT-20117.14

DRAWING NUMBER 2644 ISSUE E

SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING

ALTERATIONS

A	LAYOUT OF TACTILE GROUND SURFACE INDICATORS AMENDED	AGP	18.10.06
B	80 DIA CONDUIT AND CONDUIT PLAN ADDED	AGP	16.11.06
C	BASE PLATES AND NOTES AMENDED	WST	19.01.07
D	BASE PLATES AND NOTES AMENDED	AGP	5.3.08
E	INCIDENT REPORTING SIGN ADDED	AGP	14.3.09

DESIGNED			APPROVED
CHECKED			I. R. LESTANI — 19/04/06 PRINCIPAL ENGINEER DATE
DRAWN	H.H.	JAN 06	RPEQ No. — 881 — ISSUE AUTHORISED
CHECKED	A.J.H.	FEB 06	
	G.K.B.	APR 06	
PASSED	R.M.	APR 06	B. R. HAGAMAN — 20/04/06 MGR CIVIL ENGINEERING SERVICES DATE

QUEENSLAND RAIL - CIVIL ENGINEERING

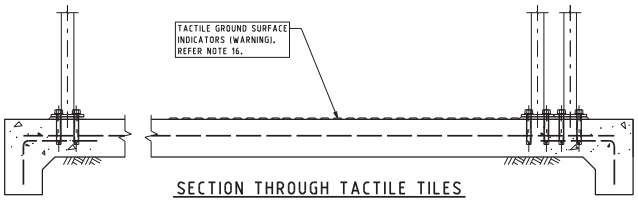
STANDARD

PEDESTRIAN TRACK CROSSING

ACTIVE GATED ENCLOSURES (ELECTRICALLY OPERATED)

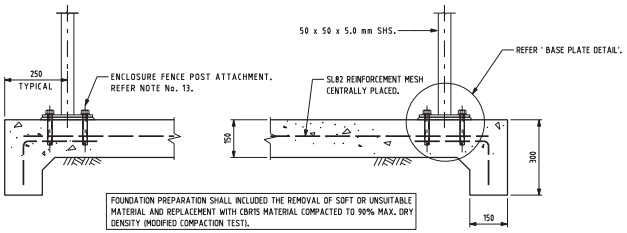
LAYOUT DETAILS (SHEET 1 OF 2)

DRAWING NUMBER 2644 ISSUE E



SECTION THROUGH TACTILE TILES

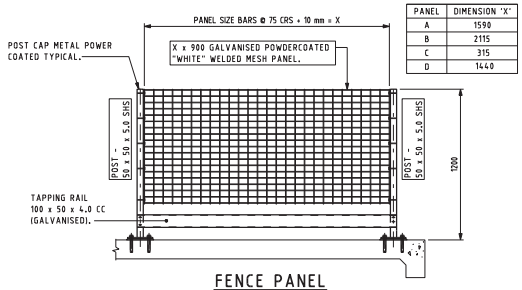
SCALE 1 : 10



FOUNDATION PREPARATION SHALL INCLUDED THE REMOVAL OF SOFT OR UNSUITABLE MATERIAL AND REPLACEMENT WITH CBR15 MATERIAL COMPACTED TO 90% MAX. DRY DENSITY (MODIFIED COMPACTION TEST).

SECTION THROUGH BASE SLAB

SCALE 1 : 10

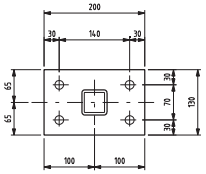


PANEL	DIMENSION 'X'
A	1590
B	2115
C	315
D	1440

FENCE PANEL

SCALE 1 : 20

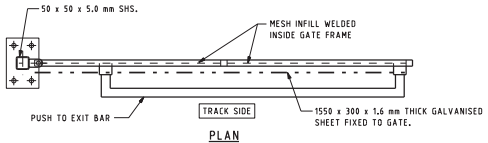
ENCLOSURES ARE TO BE POSITIONED SO THAT THE SIGHT DISTANCE AVAILABLE TO APPROACHING TRAINS IS IN ACCORDANCE WITH QR REGULATIONS. CONTACT THE MANAGER CIVIL ENGINEERING SERVICES FOR ADVICE.



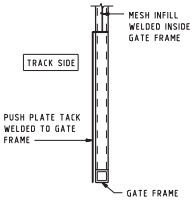
PLAN - BASE PLATE

BASE PLATE DETAILS

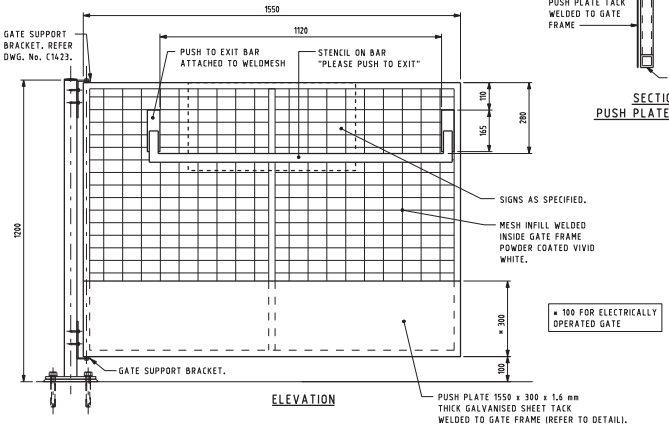
SCALE 1:5



PLAN



SECTION
PUSH PLATE DETAIL

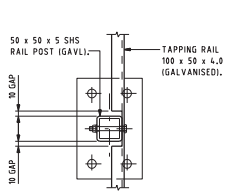


* 100 FOR ELECTRICALLY OPERATED GATE

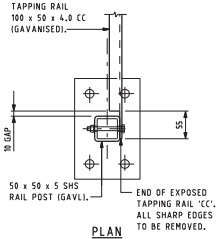
ELEVATION

SPRING GATE DETAIL

SCALE 1:10

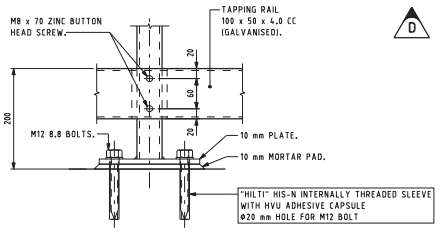


PLAN
ONE RAIL FIXING



PLAN
END RAIL FIXING

D

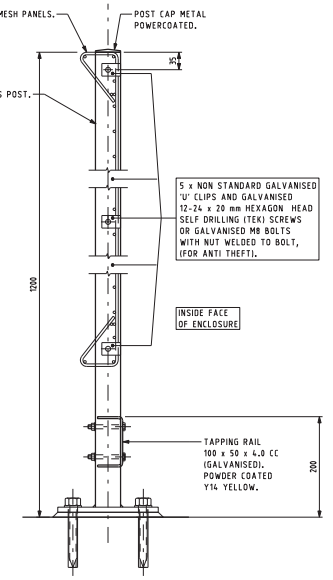


ELEVATION

TAPPING RAIL FIXING TO POST

SCALE 1 : 5

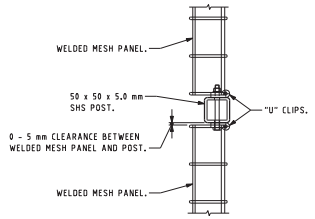
FOR ELECTRICAL OPERATED GATE DETAILS REFER TO DRAWING No. F370



ELEVATION

WELDED MESH PANEL

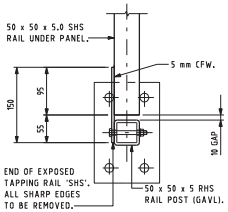
X x 900 GALVANISED POWERCOATED, WHITE, WELDED MESH PANEL CUT FROM 'ARC ACACIA' FENCING PANEL. (2400 x 900 x 5 mm WIRE DIAMETER).



PLAN

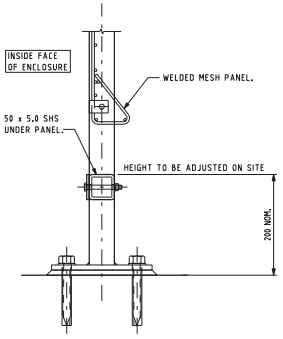
SECTION THROUGH ENCLOSURE

SCALE 1 : 5



PLAN

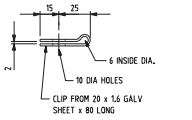
D



ELEVATION

DETAIL 'X'

SCALE 1 : 5



NON-STANDARD 'U' CLIP

SCALE 1 : 2

PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE

Queensland Government

SARA ref: 1710-2243 SRA

Date: 21/03/2018

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. FOR NOTES REFER DRAWING No. 2644.

1:2 0 40 80mm 1:10 0 200 400mm

1:5 0 100 200mm 1:20 0 400 800mm

FILE No. CT-20117.14

DRAWING NUMBER 2645 ISSUE D

SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING

ALTERATIONS

A	LAYOUT OF TACTILE GROUND SURFACE INDICATORS AMENDED	AGP	19.10.06
B	SPRING GATE LENGTH AMENDED	AGP	19.11.06
C	SPRING GATE, BASE PLATE, HD BOLTS AMENDED	WST	19.01.07
D	BASE PLATES AMENDED	AGP	5.3.08

DESIGNED			APPROVED
CHECKED			J. R. LESTANI 19/04/06 PRINCIPAL ENGINEER DATE
DRAWN	H.H.	JAN 06	RPEQ No. 881
CHECKED	A.J.H.	FEB 06	ISSUE AUTHORISED
	G.K.B.	APR 06	
PASSED	R.M.	APR 06	B. R. HAGAMAN 20/04/06 MGR CIVIL ENGINEERING SERVICES DATE

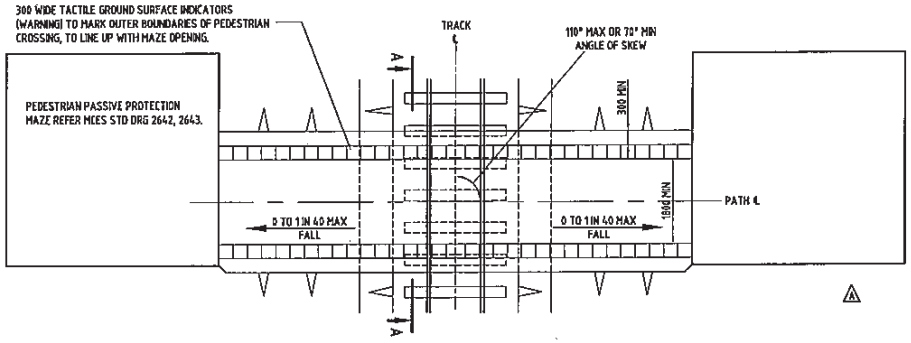
QUEENSLAND RAIL - CIVIL ENGINEERING

PEDESTRIAN TRACK CROSSING

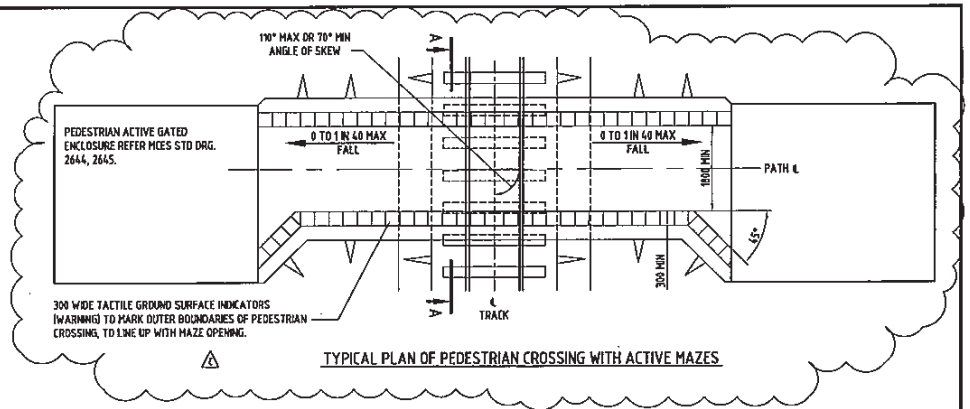
ACTIVE GATED ENCLOSURES (ELECTRICALLY OPERATED)
TYPICAL DETAILS (SHEET 2 OF 2)

DRAWING NUMBER 2645 ISSUE D

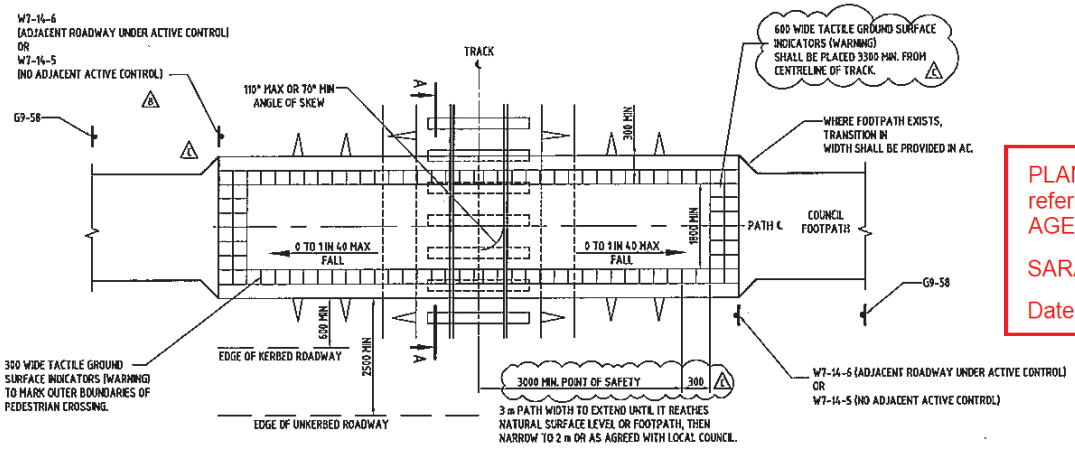
8.07.16



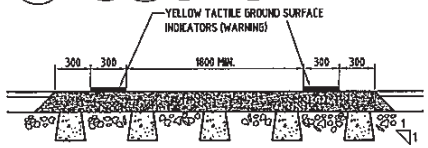
TYPICAL PLAN OF PEDESTRIAN CROSSING WITH PASSIVE MAZES



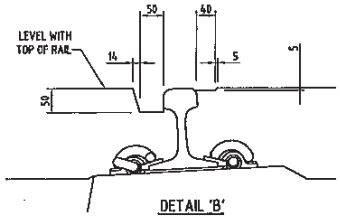
TYPICAL PLAN OF PEDESTRIAN CROSSING WITH ACTIVE MAZES



TYPICAL PLAN OF PEDESTRIAN CROSSING WITHOUT MAZES / GATED ENCLOSURES



SECTION A - A



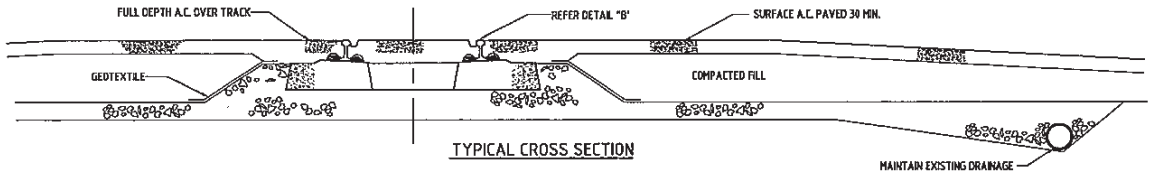
DETAIL 'B'

PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE

Queensland Government

SARA ref: 1710-2243 SRA

Date: 21/03/2018



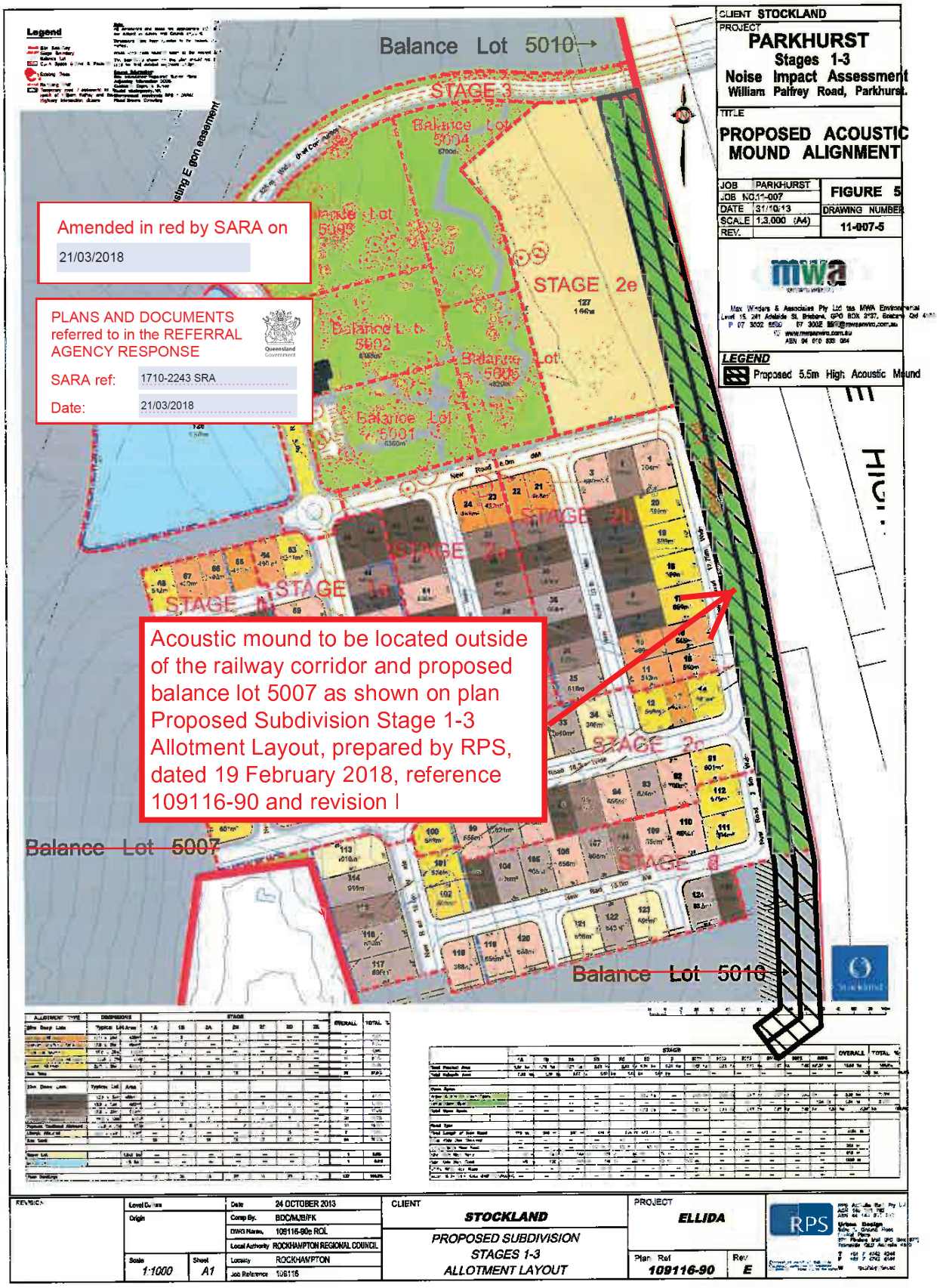
TYPICAL CROSS SECTION

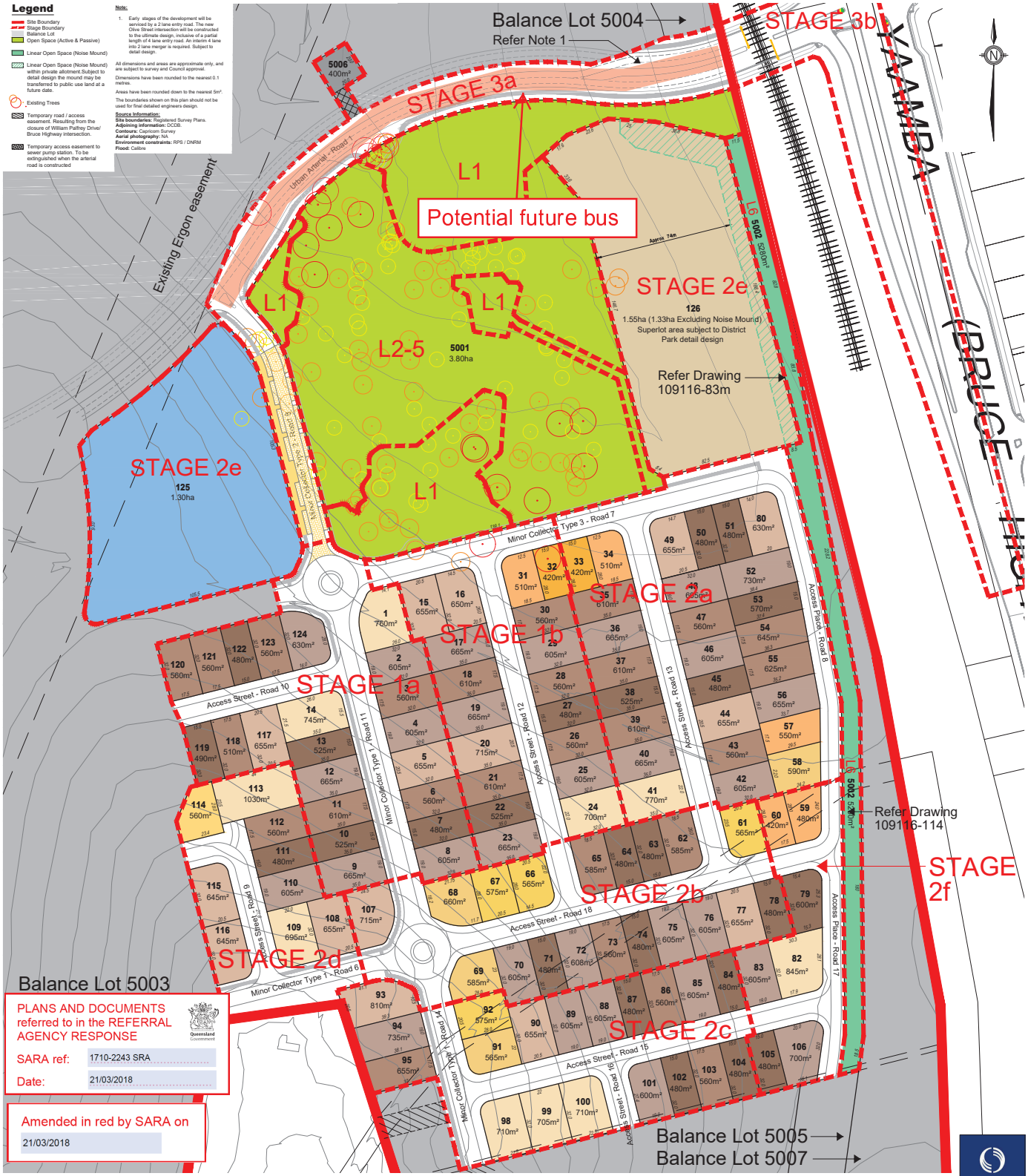
NOTES

1. TRACK SHALL BE RECONDITIONED AS REQUIRED BY THE INFRASTRUCTURE MAINTAINER PRIOR TO INSTALLING OR REINSTATING CROSSING.
2. TIMBER OR STEEL SLEEPERS TO BE REPLACED WITH CONCRETE SLEEPERS THROUGH CROSSING WHERE PRACTICABLE.
3. SLEEPERS WITH GALVANIZED SHOULDERS (SAP No. 65026597) AND CLIPS (SAP No. 65026596) ARE PREFERRED THROUGHOUT LEVEL CROSSINGS. ALTERNATIVELY RAIL FASTENERS SHALL BE COATED WITH CORROSION INHIBITOR PRIOR TO PLACING A.C.
4. A.C. SHALL BE PLACED TO TOP OF RAIL, ROLLER COMPACTED, TOPPED UP AND FINISHED WITH ROLLER OR VIBRATING PLATE COMPACTOR LEVEL WITH TOP OF RAIL.
5. PATHWAY SURFACE SHALL BE FIRM, EVEN AND SMOOTH.
6. THE PREFERRED GRADE OF PATHWAY IS LEVEL OR FALLING AWAY FROM THE TRACK AT NO MORE THAN 1 IN 40. (MAX CROSSFALL NO MORE THEN 1 IN 40)
7. LEVELS NOT TO EXCEED ±10 mm IN 1 m FROM THE DESIGN PLANE, STEPS TO BE LESS THAN 5 mm.
8. TACTILE GROUND SURFACE INDICATORS SHOULD BE MADE FROM CORK RUBBER COMPOSITION TACTILE TILE "COMCORK FLOORING TACTILES" OR APPROVED EQUIVALENT.
9. TACTILE GROUND SURFACE INDICATORS SHALL BE INSTALLED USING POLYURETHANE ADHESIVE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION INCLUDING :
   a. ALL SURFACES TO BE BONDED SHALL BE CLEAN, SMOOTH, NON GREASY AREAS.
   b. CONCRETE AND BITUMEN/ASPHALTIC SURFACES SHALL BE DRY AND AT LEAST 49 DAYS OLD.
   c. TILES SHALL NOT BE WALKED ON FOR AT LEAST 24 HOURS AFTER LAYING.

FILE No.		SCALE N.T.S. UNLESS SHOWN OTHERWISE		ALTERATIONS					CALCS. & DRAWN	S.B.	5/03/2004	APPROVED E. MCCOMBE PRINCIPAL ENGINEER 5/03/04 DATE	QR Limited - Civil Engineering	DRAWING NUMBER
DRAWING NUMBER	ISSUE	ORIGINAL DRAWING SIZE A1		ISSUE	DESCRIPTION	CK'D	APP'D	DATE		CHECKED	W.B.	5/03/2004		PEDESTRIAN LEVEL CROSSINGS ASPHALTIC CONCRETE (A.C.) PATHWAY	10698 C
10698	C			A	CROSSING TYPES CLARIFIED. TACTILES AND POSTS ADDED	P.H.	E.M.	9/11/04		RECOMM.	G.B.	5/03/2004	ISSUE AUTHORISED B. HAGAMAN MGR CIVIL ENGINEERING SERVICES 5/03/04 DATE		SHEET 1 OF 1
SHEET 1 OF 1					NOTES ALTERED					SIGNATURES ENTERED					
				B	CROSSING TYPES CLARIFIED. TACTILES AND POSTS ADDED	G.B.	M.B.	6/06/06							
					NOTES ALTERED										
				C	ACTIVE AND PASSIVE LAYOUTS DEFINED & BOLLARDS REMOVED	M.B.	E.M.	22/06/07							

8.07.16


Balance Lot 5010
STAGE 3
Balance Lot 5004
STAGE 2e
Balance Lot 5002
Balance Lot 5005
Balance Lot 5001
Balance Lot 5007
Balance Lot 5010
Amended in red by SARA on
21/03/2018
PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE
SARA ref: 1710-2243 SRA
Date: 21/03/2018
Acoustic mound to be located outside of the railway corridor and proposed balance lot 5007 as shown on plan Proposed Subdivision Stage 1-3 Allotment Layout, prepared by RPS, dated 19 February 2018, reference 109116-90 and revision I
CLIENT STOCKLAND
PROJECT
PARKHURST
Stages 1-3
Noise Impact Assessment
William Palfrey Road, Parkhurst.
TITLE
PROPOSED ACOUSTIC MOUND ALIGNMENT
JOB PARKHURST
JOB NO 11-007
DATE 31/10/13
SCALE 1:3,000 (A4)
REV.
FIGURE 5
DRAWING NUMBER
11-007-5
LEGEND
Proposed 5.5m High Acoustic Mound
CLIENT STOCKLAND
PROJECT ELLIDA
PROPOSED SUBDIVISION STAGES 1-3 ALLOTMENT LAYOUT
Date 24 OCTOBER 2013
Comp By. BDC/MJB/FK
DWG Name. 109116-90e ROL
Local Authority ROCKHAMPTON REGIONAL COUNCIL
Locality ROCKHAMPTON
Job Reference 109116
Scale 1:1000
Sheet A1
Plan Ref 109116-90
Rev E



PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE

Queensland Government

SARA ref: 1710-2243 SRA

Date: 21/03/2018

Amended in red by SARA on 21/03/2018

ALLOTMENT TYPE	DIMENSIONS		STAGE									OVERALL	TOTAL %
28m Deep Lots	Typical Lot	Area	1A	1B	2A	2B	2C	2D	2E	2F			
Courtyard Allotment	15.0 x 28m	420m²	—	1	1	—	—	—	—	—		2	1.6%
Premium Courtyard Allotment	17.5 x 28m	490m²	—	1	2	—	—	—	—	2		5	4.1%
Traditional Allotment	19.0 x 28m	532m²	—	—	—	—	—	1	—	—		1	0.8%
Premium Traditional Allotment	20.5 x 28m	574m²	—	—	—	3	1	—	—	—		4	3.3%
Lifestyle Allotment	22.0 x 28m	616m²	—	—	1	2	1	—	—	—		4	3.3%
Sub Total			—	2	4	5	2	1	—	2		16	13.0%
32m Deep Lots	Typical Lot	Area											
Premium Villa	12.5 x 32m	400m²	—	—	—	—	—	—	—	—		0	0.0%
Courtyard Allotment	15.0 x 32m	480m²	5	2	5	5	4	1	—	2		24	19.5%
Premium Courtyard Allotment	17.5 x 32m	560m²	7	5	7	3	3	1	—	—		26	21.1%
Traditional Allotment	19.0 x 32m	608m²	6	5	7	4	5	1	—	2		30	24.4%
Premium Traditional Allotment	20.5 x 32m	656m²	2	3	3	2	2	3	—	—		15	12.2%
Lifestyle Allotment	22.0 x 32m	704m²	2	1	1	—	3	2	—	1		10	8.1%
Sub Total			22	16	23	14	17	8	—	5		105	85.4%
Super Lot		1.555 ha	—	—	—	—	—	—	1	—		1	0.8%
Mixed Use		1.304 ha	—	—	—	—	—	—	1	—		1	0.8%
Total Dwellings			22	16	23	14	17	8	2	5		123	100.0%
Balance Lots												4	

	STAGE												OVERALL	TOTAL %
	1A	1B	2A	2B	2C	2D	2E	2F	3A	3B	L1-5	L6		
Total Precinct Area	1.85 ha	1.47 ha	2.27 ha	1.66 ha	1.60 ha	0.91 ha	2.86 ha	0.70 ha	1.03 ha	1.29 ha	3.80 ha	0.53 ha	19.97 ha	100.0%
Total Saleable Area	1.30 ha	1.07 ha	1.61 ha	1.09 ha	1.16 ha	0.59 ha	2.64 ha	0.41 ha	—	—	—	—	9.87 ha	49.4%
Open Space														
Active & Passive Open Space	—	—	—	—	—	—	—	—	—	—	3.80 ha	—	3.80 ha	83.5%
Linear Open Space	—	—	—	—	—	—	0.22 ha	—	—	—	—	0.53 ha	0.75 ha	16.5%
Total Open Space	—	—	—	—	—	—	0.22 ha	—	—	—	3.80 ha	0.53 ha	4.55 ha	100.0%
Road Type														
Total Length of New Road	331 m	268 m	450 m	376 m	288 m	198 m	—	237 m	452 m	—	—	—	2599 m	
Driveway	—	—	—	—	—	17 m	—	—	—	—	—	—	17 m	
Access Place	—	—	177 m	—	—	—	—	166 m	—	—	—	—	343 m	
Access Street	97 m	164 m	163 m	272 m	201 m	103 m	—	71 m	—	—	—	—	1071 m	
Minor Collector Type 1	214 m	—	—	124 m	75 m	78 m	—	—	—	—	—	—	491 m	
Minor Collector Type 2 Main Street	—	—	—	—	—	—	—	—	137 m	—	—	—	137 m	
Minor Collector Type 3 Park	20 m	104 m	110 m	—	—	—	—	—	—	—	—	—	234 m	
Urban Arterial (Half Constructed)	—	—	—	—	—	—	—	—	315 m	—	—	—	315 m	

REVISION					
F - Revise balance lot numbers and statistics F - Revise lot layout stages 1-3 including statistics G - Revise lot layout Stage 1-3 including statistics H - Revise Stage 1-3 boundaries including statistics I - QR Resumption. Various plan changes. New Olive Street 4 Way Intersection	Level Datum		Date	19th FEBRUARY 2018	
	Origin		Comp By.	MJB	
			DWG Name.	109116-90i ROL	
			Local Authority	ROCKHAMPTON REGIONAL COUNCIL	
	Scale	Sheet	Locality	ROCKHAMPTON	
	1:1000	A1	Job Reference	109116	

CLIENT
STOCKLAND

PROJECT
ELLIDA

PROPOSED SUBDIVISION
STAGES 1-3
ALLOTMENT LAYOUT

Plan Ref **109116-90** | Rev **I**

RPS Australia East Pty Ltd
ACN 140 292 762
ABN 44 140 292 762
Urban Design
Suite 1, Ground Floor,
Central Plaza
370 Flinders Mall (PO Box 977)
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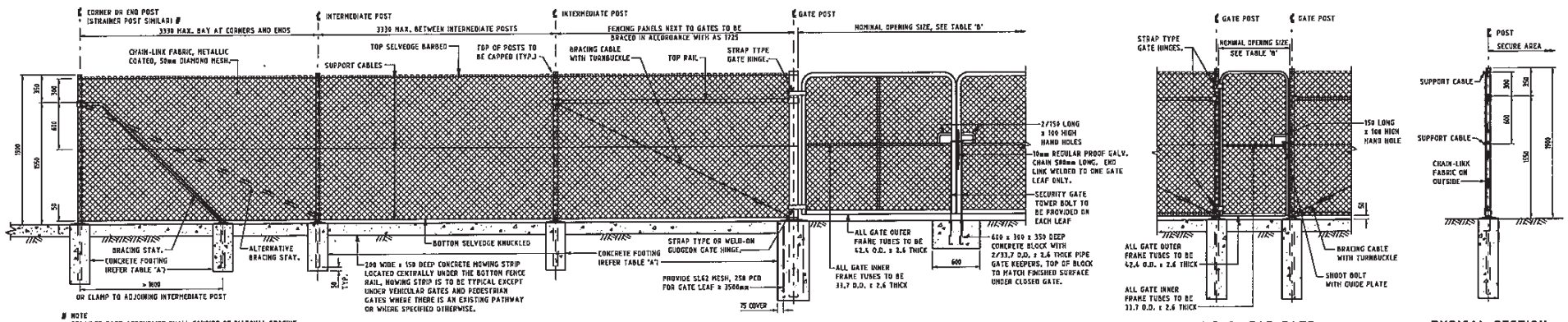


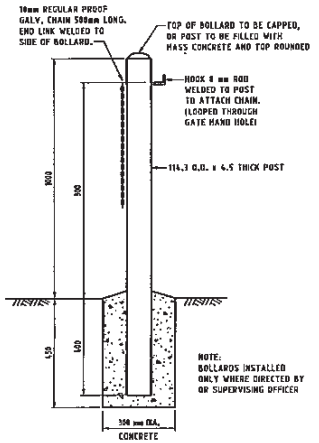
TYPICAL ELEVATION
SCALE 1 : 25

DOUBLE LEAF GATE
SCALE 1 : 25

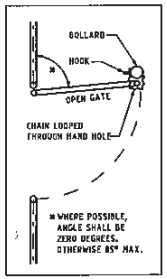
SINGLE LEAF GATE
SCALE 1 : 25

TYPICAL SECTION
SCALE 1 : 25

NOTE
STRAINER POST ASSEMBLIES SHALL CONSIST OF DIAGONAL BRACING STAYS EACH SIDE OF POST AS SHOWN ON CORNER POST DETAIL. STRAINER POSTS SHALL BE INSTALLED AT 150m MAXIMUM INTERVALS ON STRAIGHT LENGTHS AND AT ANY SIGNIFICANT CHANGES IN DIRECTION IN ACCORDANCE WITH AS 1725.



BOLLARD DETAIL
SCALE 1 : 10



BOLLARD LOCATION RELATIVE TO GATE
N.T.S.

ORDERING CONSIDERATIONS:

MOWING STRIP	ALWAYS INSTALLED UNLESS SPECIFIED OTHERWISE BY QUEENSLAND RAIL. SIZE OF MOWING STRIP CAN BE MODIFIED TO SUIT SITE SPECIFIC REQUIREMENTS.
PLASTIC COATING	NOT PROVIDED UNLESS SPECIFIED BY QUEENSLAND RAIL INFRASTRUCTURE OWNER. COST SHARING OPTIONS MAY BE NEGOTIATED WHERE ADJOINING OWNERS MAKE SPECIFIC REQUEST FOR PROVISION OF PLASTIC COATED CHAIN-LINK FABRIC. COATING COLOUR PREFERENCE (BLACK OR GREEN) TO BE CONFIRMED WITH QUEENSLAND RAIL INFRASTRUCTURE OWNER AND ADJOINING OWNER.
"LIGHT DUTY" (2.5mm) CHAIN LINK FABRIC	"HEAVY DUTY" (3.15mm) FABRIC MAY BE REPLACED WITH "LIGHT DUTY" (2.5mm) FABRIC ONLY WHERE SPECIFIED BY QUEENSLAND RAIL INFRASTRUCTURE OWNER. NOTE: "LIGHT DUTY" CHAIN-LINK FABRIC PROVIDES FOR ONLY APPROX. 61% OF THE LOAD BEARING CAPACITY OF "HEAVY DUTY" CHAIN-LINK FABRIC.

TABLE 'A'

FENCE MEMBERS AND FOOTINGS SIZES

TYPE OF MEMBER	TUBE SIZE	CONCRETE FOOTING
END, CORNER AND STRAINER POSTS	60.3 O.D. x 3.6 THICK	Φ250 x 750 DEEP
INTERMEDIATE POSTS	48.3 O.D. x 3.2 THICK	Φ250 x 600 DEEP
TOP RAIL	42.4 O.D. x 3.2 THICK	-
BRACING STAY	42.4 O.D. x 3.2 THICK	Φ250 x 600 DEEP
GATE POSTS FOR GATE LEAF SHOWN		
1800mm AND UNDER	60.3 O.D. x 3.6 THICK	Φ250 x 900 DEEP
2000 UP TO AND INCLUDING 3000mm	88.9 O.D. x 4.8 THICK	Φ300 x 1000 DEEP
3500 UP TO AND INCLUDING 4000mm	114.3 O.D. x 4.5 THICK	Φ400 x 1100 DEEP

TABLE 'B'

GATE TABLE

LOCATION	NOMINAL OPENING SIZE	LEAF TYPE (NOMINAL SIZE)
PEDESTRIAN - PUBLIC ACCESS	1000	SINGLE 1000 OR DOUBLE 900
PEDESTRIAN - QUEENSLAND RAIL STAFF ONLY	1200	SINGLE 1200
VEHICULAR	3000 MIN. 4000 MAX.	DOUBLE 1500 (MIN.) DOUBLE 2000 (MAX.)

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS NOTED OTHERWISE.
2. ALL STEEL PLATES SHALL BE GRADE 250 MIN. IN ACCORDANCE WITH AS/NZS 1670.
3. ALL WELDS SHALL BE 5mm CONTINUOUS FILLET WELDS UNLESS NOTED.
4. ALL WELDS SHALL BE IN ACCORDANCE WITH AS 1554.1 WITH ELECTRODES GRADE E4XX48 TO AS 1553 UNLESS NOTED OTHERWISE.
5. ALL BOLTS, NUTS SHALL BE HOT DIP GALVANISED IN ACCORDANCE WITH AS/NZS 1214 AND WASHERS TO AS 4680.
6. AREAS WHERE GALVANISING (OR PLASTIC COATING) HAS BEEN REMOVED BY WELDING OR ABRASIONS SHALL BE CLEANED OF FOREIGN MATTER INCLUDING WELDING SLAG AND PAINTED WITH TWO COATS OF AN APPROVED ORGANIC ZINC-RICH PAINT TO PROVIDE A MIN. DRY FILM THICKNESS OF 0.10mm. COLOUR MATCHING SHALL BE ACHIEVED WHERE DIRECTED BY THE INSPECTOR.
7. CONCRETE SHALL BE GRADE N25 (MIN.).
8. "SL" DENOTES GRADE D500N REINFORCING MESH IN ACCORDANCE WITH AS/NZS 4671.

GATE NOTES:

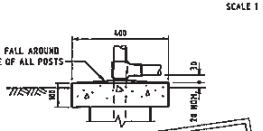
1. GATE FRAME CONFIGURATION, FABRICATION AND INSTALLATION SHALL BE IN ACCORDANCE WITH AS 1725.
2. WHERE STRAP TYPE HINGES ARE USED AT BOTH TOP AND BOTTOM OF GATE, A COLLAR SHALL BE WELDED TO THE GATE FRAME TO PROVIDE A BEARING SURFACE FOR EITHER TOP OR BOTTOM HINGE. BOTH STRAP TYPE AND GUDGEON GATE HINGES SHALL BE WELDED TO GATE POSTS.
3. SINGLE GATES SHALL BE FITTED WITH SHOOT BOLT, DOUBLE GATES SHALL BE FITTED WITH FLAG PIN DROP BOLT AS SHOWN ON THE DRAWING.
4. ALL GATE FRAMES SHALL BE WELDED. FRAMES SHALL BE HOT DIP GALVANISED AFTER FABRICATION IN ACCORDANCE WITH AS/NZS 4680.
5. GATES SHALL BE INSTALLED FOR QUEENSLAND RAIL PURPOSES ONLY. GATES SHALL NOT BE INSTALLED FOR DOMESTIC USE.

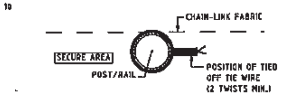
FENCING IN ELECTRIFIED AREAS:

1. IN GENERAL THESE FENCES ARE SELF EARTHING, HOWEVER, WHERE FENCING IS ERECTED CLOSER THAN 3000mm TO ELECTRIFICATION MASTS OR OTHER ELECTRICALLY BONDED STEELWORK, EARTHING OR INSULATED SECTIONS MAY BE REQUIRED IN ACCORDANCE WITH QUEENSLAND RAIL PRINCIPAL ENGINEER, TRACTION DISTRIBUTION.
2. GATES AND BOLLARDS SHALL BE POSITIONED TO PREVENT AN OPEN GATE FROM COMING WITHIN 3.0m OF ELECTRIFICATION WIRING EQUIPMENT SUPPORTS OR ANY METALWORK CONNECTED TO THEM.
3. SUPPORT CABLES SHALL BE GALVANISED ONLY AND PLASTIC COATING).

FENCING NOTES:

1. ALL POSTS AND RAILS SHALL BE STEEL CIRCULAR HOLLOW SECTION (CHS) GRADE C250 IN ACCORDANCE WITH AS/NZS 1163 "STRUCTURAL STEEL HOLLOW SECTIONS".
2. ALL PIPE CLAMP FITTINGS, GATE HINGES, GATE KEEPERS, etc SHALL BE "DOWNEE" OR AN APPROVED EQUIVALENT.
3. EACH RAIL BETWEEN POSTS SHALL BE A CONTINUOUS LENGTH.
4. ALL TUBES, FITTINGS AND FASTENERS SHALL BE HOT DIP GALVANISED AFTER FABRICATION IN ACCORDANCE WITH AS/NZS 4680.
5. FENCING MATERIALS INCLUDING WIRES, BARBED WIRE (WHERE ORDERED) AND CHAIN-LINK FENCING FABRIC SHALL BE MANUFACTURED IN ACCORDANCE WITH AS 2423 "COATED STEEL WIRE FENCING PRODUCTS".
6. ERECTION SHALL BE IN ACCORDANCE WITH AS 1725 "CHAIN-LINK FABRIC SECURITY FENCES AND GATES", UNLESS NOTED OTHERWISE.
7. FENCING WIRE SHALL BE CONTINUOUS FROM GATE POST TO GATE POST AND BE CONSTRUCTED WITH 1800 mm HIGH CHAIN-LINK FABRIC. CHAIN-LINK FABRIC SHALL BE "HEAVY DUTY", MANUFACTURED FROM 3.15 mm DIA. GALV. CORE WIRE, WITH UNIFORM 50mm DIAMOND MESH. THE TOP SELVEDGE SHALL BE BARBED AND THE BOTTOM SELVEDGE SHALL BE KNUCKLED.
8. SUPPORT CABLES SHALL CONSIST OF 2 x 3.15mm DIA. GALV. CABLE WIRE, TWISTED TOGETHER BETWEEN POSTS, OR 1 x 4mm DIA. GALV. HELICOIL CABLE WIRE HELIX SPIRALLED. SUPPORT CABLES SHALL BE INSTALLED IN ACCORDANCE WITH AS 1725.
9. LACING WIRE SHALL BE 2mm DIA. GALV. WIRE INSTALLED IN ACCORDANCE WITH AS 1725.
10. TIE WIRE TO SECURE CHAIN-LINK FABRIC TO POSTS, AND SECURE SUPPORT CABLES TO INTERMEDIATE POSTS, SHALL BE 2 x 1.57mm DIA. GALV. WIRES, OR 1 x 2mm DIA. GALV. WIRE. TIE WIRE TO SECURE CHAIN-LINK FABRIC TO CABLES SHALL BE 1 x 1.57mm DIA. GALV. WIRE TWISTED TWICE AND NEATLY CUT OFF, OR 2mm DIA. GALV. WIRE METTING CLIPS. TIE WIRES SHALL BE AND INSTALLED IN ACCORDANCE WITH AS 1725. (SEE ALSO TIE-OFF DETAIL)
11. BRACING CABLES (WITH TURNBUCKLE) SHALL CONSIST OF 2 x 3.15mm DIA. GALV. CORE WIRES TWISTED TOGETHER AN 12mm TURNBUCKLE. BRACING C IN ACCORDANCE WITH AS 172
12. STRAINER ASSEMBLIES SHALL LENGTHS AND AT SIGNIFICANT PANELS SHALL HAVE BRACIN
13. BOLLARDS SHALL BE INSTALL WHERE DIRECTED BY QUEENSL SEE DETAILS THIS DRAWING.
14. IN CORROSIVE ENVIRONMENTS AND/OR PLASTIC COATED HE

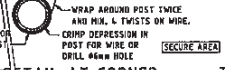




CHAIN-LINK FABRIC TIE-OFF DETAIL
N.T.S.

NOTE: REFER "ORDERING CONSIDERATIONS". MOWING STRIP SHALL NOT BE INSTALLED UNDER GATES.

NOTE MOWING STRIP IS TO THE PURPOSE OF SCALE 1:10 PROVIDE TYPICAL STANDARD DETAILS. THE SUITABILITY OF THIS DRAWING SHALL BE DETERMINED AND CERTIFIED BY A RPEQ ENGINEER FOR THE SPECIFIC PROJECT.



TIE-OFF DETAIL AT CORNER, END OR STRAINER POSTS
N.T.S.

TIE-OFF DETAIL AT INTERMEDIATE POSTS
N.T.S.

THE PURPOSE OF THIS DRAWING IS TO PROVIDE TYPICAL STANDARD DETAILS. THE FITNESS FOR PURPOSE OF THIS DRAWING FOR A SPECIFIC PROJECT SHALL BE DETERMINED AND CERTIFIED BY A RPEQ ENGINEER.

1:10 1:25

PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE
Queensland Government
SARA ref: 1710-2243 SRA
Date: 21/03/2018

FILE No	ALTERATIONS				
13/26948	SSW	DESCRIPTION	NAME	RPEQ	DATE
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING					

WIND LOADS
AS/NZS 1170.2 2011
REGION C
WIND SPEED : V100 = 56 m/s
TERRAIN CATEGORY 1

DESIGNED	BASED ON STD DGN No. 2544	
DES CHK		
DRAWN	A. POWER	20.03.15
DRG CHK	D. GIBB	25.03.15

APPROVED
D. GIBB — 27/08/15
DESIGN ENGINEER — DATE
RPEQ No. 13065
ISSUE AUTHORISED
G. SMITH — 28/08/15
DESIGNING MANAGER TRACK & STRUCTURES — DATE

QueenslandRail
ACN 132 181 090

Network - Civil Engineering

STANDARD - FENCING

1.8m HIGH CHAIN LINK SECURITY FENCE

WITHOUT RAILS USING 50mm DIAMOND MESH

GENERAL ARRANGEMENT

DRAWING NUMBER: QR-C-S3230

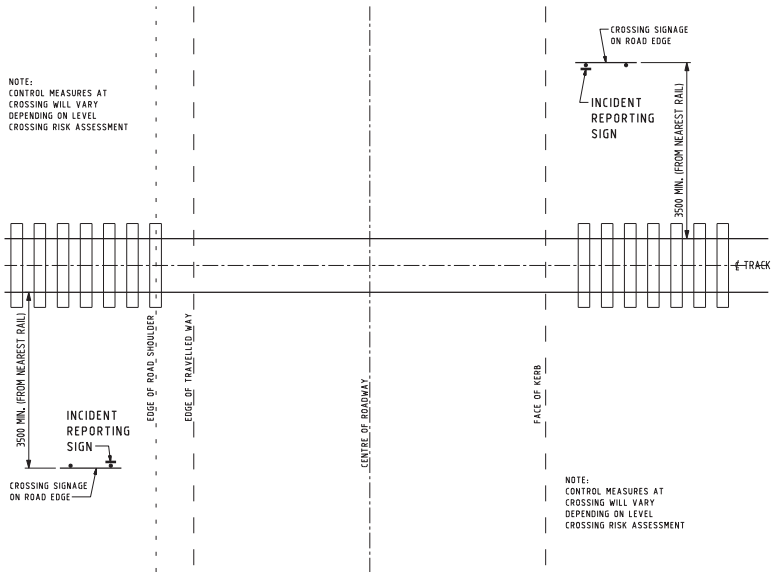
ISSUE

PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE

Queensland Government

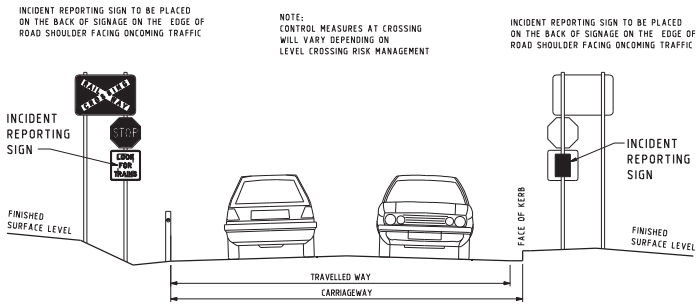
SARA ref: 1710-2243 SRA

Date: 21/03/2018



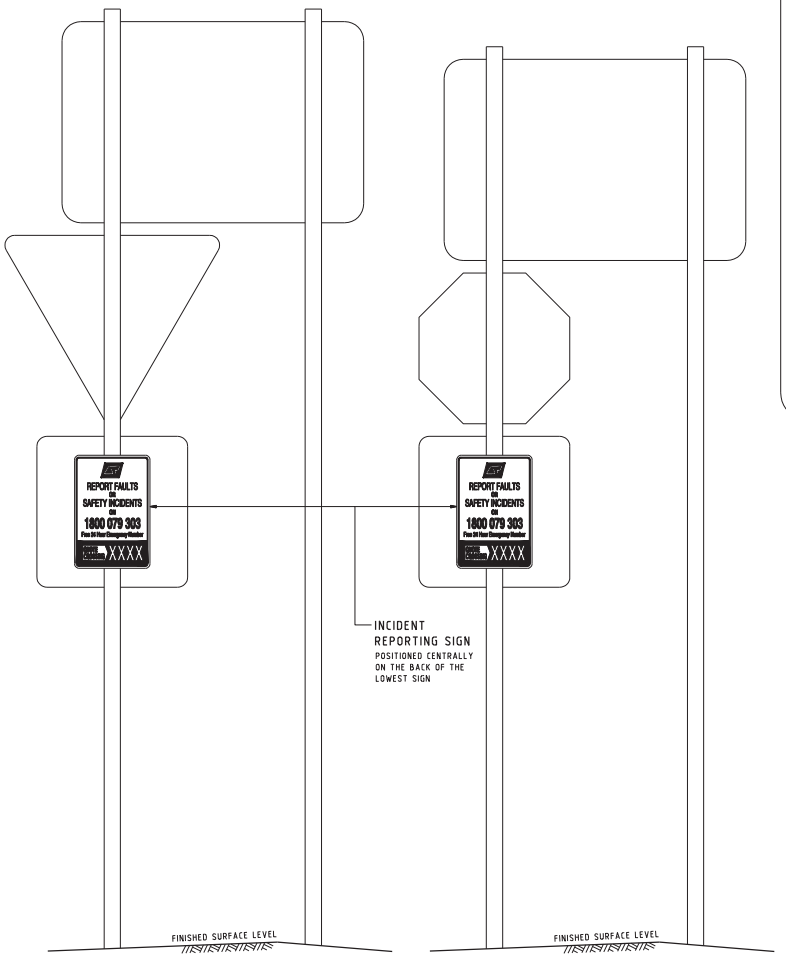
PLAN

SCALE 1 : 50



TYPICAL CROSS SECTION

SCALE 1 : 50



TYPICAL INSTALLATION DETAIL

SCALE 1 : 10

TYPICAL INSTALLATION DETAIL

SCALE 1 : 10

'XXXX' DENOTES UNIQUE CROSSING ID NUMBER. REFER MANAGER CIVIL ENGINEERING SERVICES FOR DETAILS.

INCIDENT REPORTING SIGN DETAIL

SCALE 1 : 2

FOR SIGN DETAILS REFER TO DEPARTMENT MAIN ROADS DRAWING No. TC1574.

GENERAL NOTES :

1. ALL DIMENSIONS ARE IN MILLMETRES, UNLESS NOTED OTHERWISE.
2. CONTACT MANAGER CIVIL ENGINEERING SERVICES FOR ALLOCATION OF UNIQUE CROSSING ID NUMBERS. SELF ADHESIVE NUMERALS SHALL BE AFFIXED TO SIGN AND PROTECTED BY GRAFFITI OVERLAY FILM.
3. WHERE THE LEVEL CROSSING IS CONTROLLED BY ACTIVE PROTECTION, THE SIGN SHALL BE AFFIXED TO THE ADJACENT SIGNAL CONTROL BOX FACING THE ROADWAY.
   REFER TO QR MANAGER RAIL SYSTEMS SERVICES FOR APPROVAL.
4. SIGNS FIXED TO POSTS IN ACCORDANCE WITH MAIN ROADS STANDARD DRAWING Nos 1364 AND 1368.

PASSIVE CROSSINGS

FOR ACTIVE CROSSINGS, REFER TO GENERAL NOTE 3

1:2 (0, 40, 80mm)
1:10 (0, 200, 400mm)
1:50 (0, 1000, 2000mm)

FILE No.	CT-20089.1
DRAWING NUMBER	2622
ISSUE	

SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING

ALTERATIONS

DESIGNED	PCS	JAN 05	APPROVED
CHECKED	GKB	OCT 05	D.G. SANDS 16/02/06 PRINCIPAL ENGINEER DATE
DRAWN	MVE	JAN 05	RPEQ No. 1909
CHECKED	MJM	JUL 05	ISSUE AUTHORISED
	GKB	OCT 05	
PASSED	PN	OCT 05	B.R. HAGAMAN 16/02/06 MGR CIVIL ENGINEERING SERVICES DATE

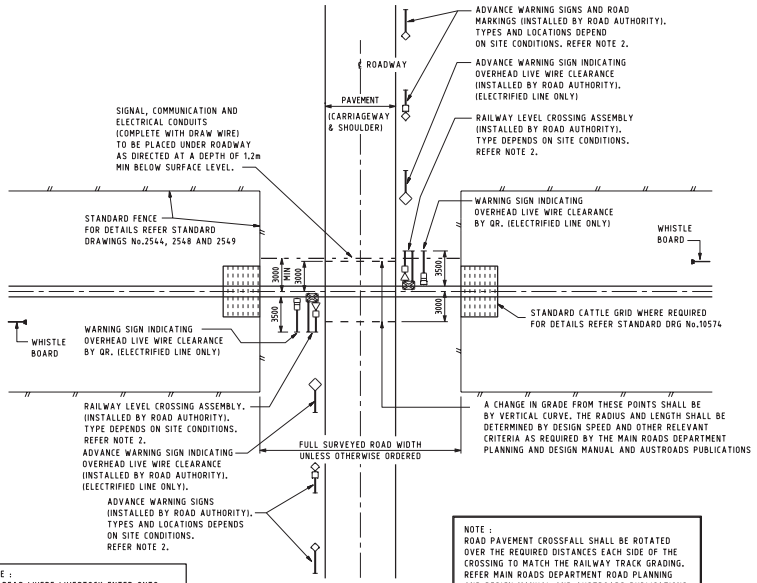
QUEENSLAND RAIL - CIVIL ENGINEERING

STANDARD

LEVEL CROSSINGS

INCIDENT REPORTING SIGN

DRAWING NUMBER	ISSUE
2622	



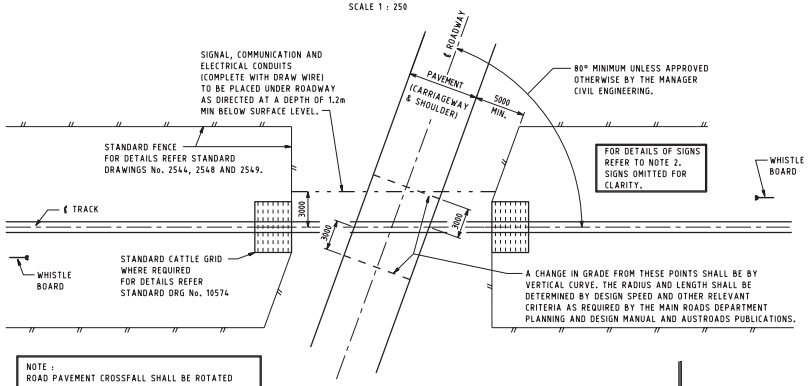
NOTE :
IN AREAS WHERE LIVESTOCK ENTER ONTO ROAD RESERVE , FENCING AND GRIDS TO BE PROVIDED AS REQUIRED BY ROAD AUTHORITY.

NOTE :
ROAD PAVEMENT CROSSFALL SHALL BE ROTATED OVER THE REQUIRED DISTANCES EACH SIDE OF THE CROSSING TO MATCH THE RAILWAY TRACK GRADING. REFER MAIN ROADS DEPARTMENT ROAD PLANNING AND DESIGN MANUAL AND AUSTROADS PUBLICATIONS.

PLAN OF TYPICAL PUBLIC LEVEL CROSSING WITH ROADWAY SQUARE TO TRACK

(MULTI TRACKS SIMILAR)

SCALE 1 : 250



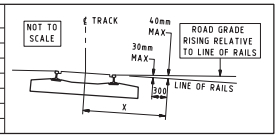
NOTE :
ROAD PAVEMENT CROSSFALL SHALL BE ROTATED OVER THE REQUIRED DISTANCES EACH SIDE OF THE CROSSING TO MATCH THE RAILWAY TRACK GRADING. REFER MAIN ROADS DEPARTMENT ROAD PLANNING AND DESIGN MANUAL AND AUSTROADS PUBLICATIONS.

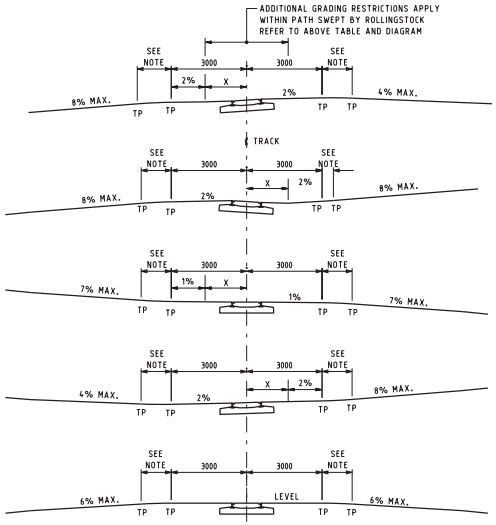
PLAN OF TYPICAL LEVEL CROSSING WITH ROADWAY AT ANGLE TO TRACK

(MULTI TRACKS SIMILAR)

SCALE 1 : 250

TRACK RADIUS (m)	X (mm)
STRAIGHT TRACK	1650
RADIUS > 1200m	1650
R >= 600m & R < 1200m	1700
R >= 300m & R < 600m	1750
R >= 200m & R < 300m	1800
R >= 150m & R < 200m	1850
RADIUS < 150m	1950

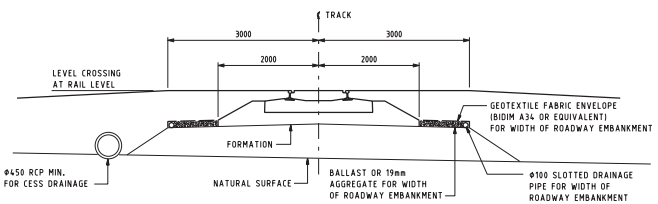




ROAD GRADING LIMITS AT LEVEL CROSSINGS

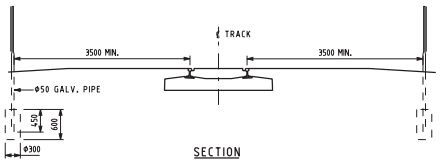
(TO PROVIDE UNDERBODY CLEARANCE FOR ROLLINGSTOCK AND ROAD VEHICLES)

SCALE 1 : 100

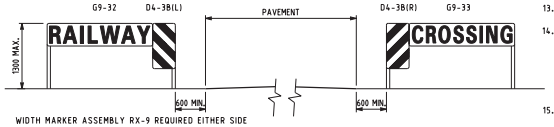


TYPICAL DRAINAGE SECTION

SCALE 1 : 50



SECTION

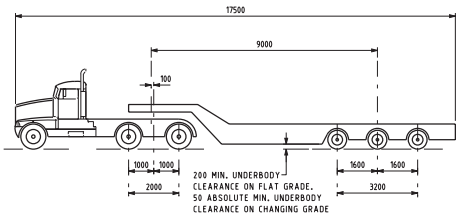


WIDTH MARKER ASSEMBLY RX-9 REQUIRED EITHER SIDE OF CROSSING IN ADDITION TO "RAILWAY CROSSING" SIGNS. REFER MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PART 7, FOR FURTHER DETAILS.

ELEVATION - ROADWAY APPROACH

TYPICAL DETAIL OF SIGN POSTING AT ACTIVELY PROTECTED LEVEL CROSSING

SCALE 1 : 50



DESIGN VEHICLE (ARTICULATED VEHICLE - LOW LOADER)

SCALE 1 : 100

NOTE :
SPECIAL PURPOSE VEHICLE OUTSIDE THESE PARAMETERS SHALL BE SUBMITTED TO THE MANAGER CIVIL ENGINEERING FOR ASSESSMENT

NOTE :
A CHANGE IN GRADE FROM THESE POINTS SHALL BE BY VERTICAL CURVE. THE RADIUS AND LENGTH SHALL BE DETERMINED BY DESIGN SPEED AND OTHER RELEVANT CRITERIA AS REQUIRED BY THE MAIN ROADS DEPARTMENT ROAD PLANNING AND DESIGN MANUAL AND AUSTROADS PUBLICATIONS FOR THE DESIGN VEHICLE (ARTICULATED VEHICLE - LOW LOADER, UNLESS OTHERWISE APPROVED BY MANAGER CIVIL ENGINEERING).

PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE

Queensland Government

SARA ref: 1710-2243 SRA

Date: 21/03/2018

GENERAL NOTES :

1. PROPOSED LEVEL CROSSINGS SHALL BE SUBMITTED TO THE MANAGER CIVIL ENGINEERING FOR APPROVAL.
2. FOR DETAILS OF ALL ROAD SIGNS AND ASSEMBLIES FOR RELEVANT CONDITIONS AND THEIR PLACEMENT, REFER TO AS.1742.7, 'THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PART 7' AND QR. SAFETY MANAGEMENT SYSTEM STANDARD SAF/STD/0044/CIV - 'LEVEL CROSSING SAFETY'.
3. THE INFRASTRUCTURE MAINTAINER SHALL LIAISE WITH AND ADVISE ROAD AUTHORITIES TO KEEP ROADWORKS AT LEVEL CROSSINGS FROM INFRINGING THE ROAD GRADING LIMITS SHOWN.
4. ROAD PAVEMENT TO BE SEALED WITH ASPHALTIC CONCRETE OR A SIMILAR MATERIAL FOR A MINIMUM DISTANCE OF 10.0m ON BOTH SIDES OF THE RAILWAY.
5. ANY RELAXATION OF THE ROAD GRADING LIMITS SHOWN WILL REQUIRE APPROVAL FROM THE MANAGER CIVIL ENGINEERING.
6. WHISTLE BOARDS ARE TO BE PROVIDED AT ALL CROSSINGS (INCLUDING THOSE EQUIPPED WITH ACTIVE PROTECTION) AND ARE TO BE LOCATED AS PER QR. SAFETY MANAGEMENT SYSTEM STANDARD SAF/STD/0044/CIV.
7. ELECTRICAL WARNING DEVICES TO BE PROVIDED AS AND WHERE ORDERED.
8. CONDUIT INSTALLATION SHALL BE IN ACCORDANCE WITH AS4799.
9. DRAINAGE REQUIREMENTS TO BE DETERMINED AT THE SITE BY THE ENGINEER, AND CATCH DRAIN IF REQUIRED, NOT TO BE CONSTRUCTED CLOSER THAN 4.0m TO EDGE OF PAVEMENT.
10. FOR LEVEL CROSSINGS WITH OVERHEAD LIVE WIRES, WARNING SIGNS SHALL BE USED IN ACCORDANCE WITH STANDARD DRAWING No. 2458.
11. WHERE GRIDS ARE REQUIRED, i.e. IN AREAS WHERE STOCK IS PRESENT, STANDARD UNIVERSAL TYPE CATTLE GRIDS AS DETAILED ON STANDARD DRAWING No 10574 SHALL BE USED.
12. THIS DRAWING SUPERSEDES STANDARD DRAWING No. 2457.
13. FOR REMOVAL OF LEVEL CROSSING REFER QR. STD. DRG. 2623.
14. GUARDRAILS TO BE PROVIDED AS NECESSARY WHERE INSUFFICIENT SPACE FOR RX-9 WIDTH MARKER ASSEMBLY OR WHERE REQUIRED FOR ROAD ENVIRONMENT. GUARDRAILS TO BE DESIGNED IN ACCORDANCE WITH MAIN ROADS DEPARTMENT "ROAD PLANNING AND DESIGN MANUAL" AND AS/NZS 3845 "ROAD SAFETY BARRIER SYSTEMS".
15. THIS DRAWING DOES NOT COVER SIGNAL AND OPERATIONAL SYSTEM REQUIREMENTS. ADVICE IS TO BE SOUGHT FROM THE SIGNALLING MANAGER.

1:50 (0, 1000, 2000mm)
1:100 (0, 2000, 4000mm)
1:250 (0, 5, 10m)

FILE No. CT-20089.1

DRAWING NUMBER 2586 ISSUE B

SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING

ALTERATIONS

A	NOTE 14 ALTERED.	P.N.	5.9.05
B	NOTES AMENDED.	A.G.P.	17.3.09

DESIGNED	PCS	JAN 05	APPROVED
CHECKED	GKB	MAY 05	I. STEPHENSEN 24/05/05 CIVIL STANDARDS MANAGER DATE
DRAWN	MVE	JAN 05	SPEC No. 3258
CHECKED	PCS	MAY 05	ISSUE AUTHORISED
	GKB	MAY 05	
PASSED	PN	MAY 05	R. P. HAGAMAN 25/05/05 MANAGER CIVIL ENGINEERING DATE

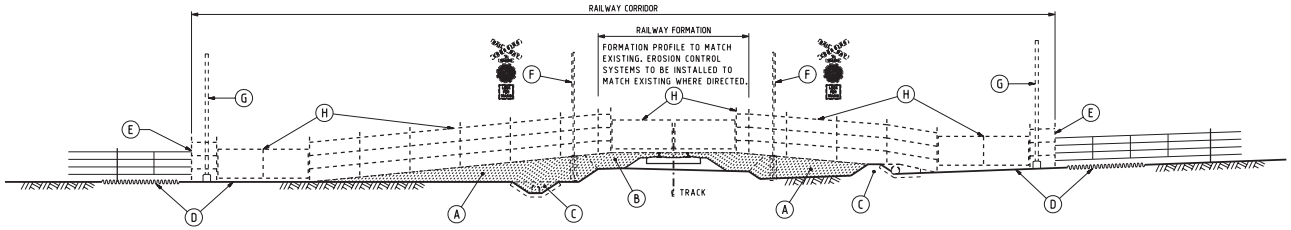
QUEENSLAND RAIL - CIVIL ENGINEERING

STANDARD

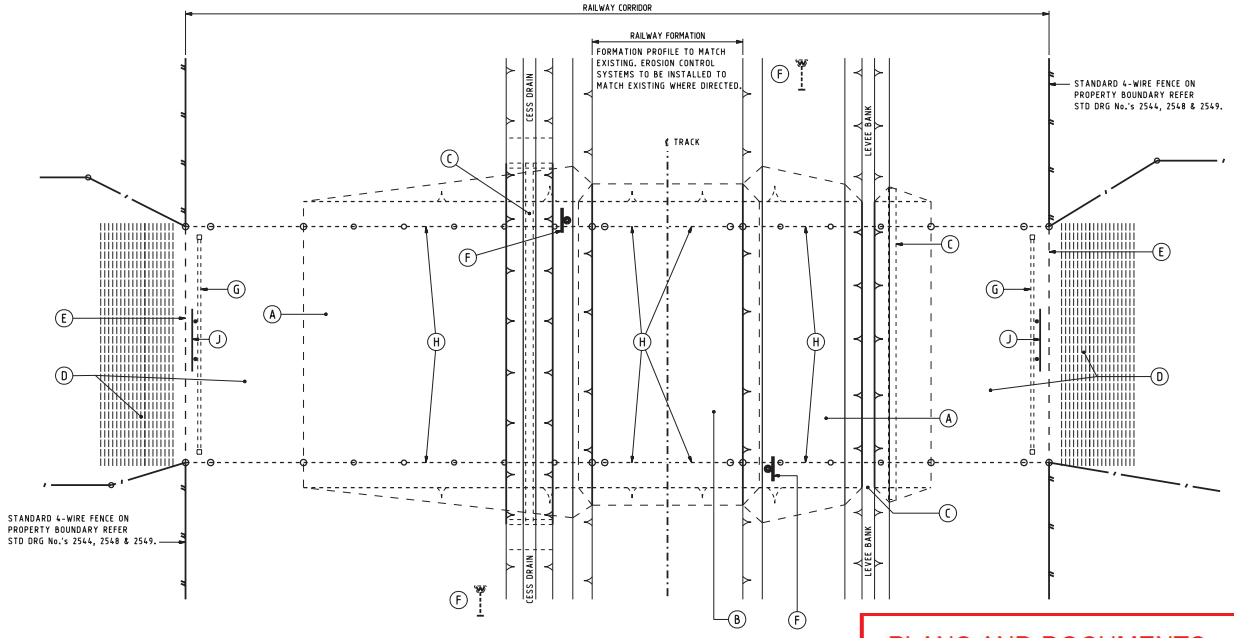
LEVEL CROSSINGS

DETAILS OF PUBLIC ROAD GRADING AND SIGN POSTING

DRAWING NUMBER 2586 ISSUE B



ELEVATION



PLAN

SITE DETAILS

SCALE 1 : 100

GENERAL NOTES

(A) REMOVE ALL ROADWAY BASE GRAVEL AND APPROACH MATERIAL FORMED UP TO THE TRACKS. REINSTATE QR ACCESS ROAD.

(B) REMOVE ROADWAY GRAVEL AND CRIB MATERIAL BETWEEN TRACKS. REINSTATE BALLAST PROFILE TO MATCH INTO EXISTING AT EITHER SIDE OF FORMER CROSSING.

(C) AFTER REMOVAL OF APPROACH MATERIAL REMOVE ANY CULVERTS, INCLUDING SLOPE PROTECTION, AND FORM DRAINAGE. SEE NOTES.

(D) IF PRACTICABLE, TYNE ADJOINING FORMER ACCESS ENTRY TO REMOVE ROADWAY APPEARANCE INCLUDING CATTLE GRIDS (IF APPLICABLE). NO WORK SHALL BE CARRIED OUT OUTSIDE QR PROPERTY BOUNDARY UNLESS PRIOR WRITTEN PERMISSION OBTAINED FROM ADJOINING OWNER.

(E) REMOVE GATE POST AND RURAL GATE FROM ACCESS POINT AND REPLACE WITH STANDARD RURAL FENCING TO MATCH EXISTING. REFER STD DRG No.s 2544, 2548 AND 2549. SEE NOTES.

(F) REMOVE ALL RELATIVE WHISTLE BOARDS AND SIGNAGE IN BOTH DIRECTIONS FROM FORMER CROSSING. SEE NOTE 8.

(G) REMOVE HEIGHT GAUGES (IN ELECTRIFIED AREAS). SEE NOTES. FOUNDATIONS MAY REMAIN WHERE DIRECTED BY LOCAL QR INSPECTOR, BUT SHALL BE MARKED WITH 2 No. STAR PICKETS OR SMILAR MARKER POST.

(H) EXISTING STOCK PROOF FENCE INCLUDING GATES AND POSTS SHALL BE DISMANTLED AND REMOVED INCLUDING POSTS FOUNDATIONS. SEE NOTES.

(J) INSTALL QR STD "ROAD ENDS" SIGN ON QR SIDE OF NEW BOUNDARY FENCE. REFER STD DRG No. 2217.

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS NOTED OTHERWISE.
2. THE OBJECTIVE IS TO REMOVE ALL RELEVANT INDICATIONS THAT A TRACK CROSSING DID EXIST AT THE LOCATION. FORMATION PROFILE SHALL BE MATCHED, AS WELL AS PROFILES AND GRADES OF ANY LEVEE BANKS AND/OR DIVERSION/CESS DRAINS.
3. ANY EXISTING EROSION/FLOOD CONTROL SYSTEM IN PLACE TO EITHER SIDE OF EXISTING CROSSING SHALL BE MATCHED AFTER CROSSING IS REMOVED. TEMPORARY EROSION CONTROL SYSTEM MAY BE REQUIRED TO ALLOW REGROWTH OF NATURAL GRASSES/GROUND COVER AS DIRECTED BY THE LOCAL INSPECTOR.
4. ALL MATERIAL REMAINING AFTER DEMOLITION WORKS (GATE POST FOUNDATIONS, BANK PROTECTION TO PIPE CULVERTS, FENCING WIRE, GEOTEXTILE FABRIC, ETC) SHALL BE REMOVED FROM SITE AND DISPOSED OF IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS.
5. WHERE PRACTICAL, ALL RECYCLABLE MATERIAL (STOCK GATES, FENCE RAILS/POSTS, BULKFILL MATERIAL, ETC) SHALL BE REMOVED TO NEAREST QUEENSLAND RAIL MAINTENANCE DEPOT FOR FUTURE USE.
6. NOTIFICATION OF REMOVAL OF CROSSING SHALL BE FORWARDED TO QR REGIONAL MANAGER NETWORK INFRASTRUCTURE AND OPERATIONAL SECTION, QR MANAGER CIVIL ENGINEERING SERVICES, QR PROPERTY DIVISION AND LOCAL GOVERNMENT AUTHORITY (PUBLIC CROSSING ONLY) FOR UPDATING OF ANY RELEVANT TIMETABLES, OPERATIONS MANUALS OR MAPS.
7. WHERE CROSSING WAS OPEN FOR PRIVATE USE, SIGNAGE SHALL BE PROVIDED TO NOTIFY LOCATION OF NEAREST LEGAL TRACK CROSSING.
8. REGIONAL MANAGER NETWORK INFRASTRUCTURE TO LIAISE WITH THE LOCAL AUTHORITY TO ENSURE REMOVAL AND INSTALLATION OF ROAD SIGNAGE, WHERE CROSSING WAS OPEN FOR PUBLIC USE.
   ANY SIGNAGE RELEVANT TO CROSSING IN SURROUNDING AND APPROACH ROADS SHALL BE REMOVED AND NEW SIGNAGE ERECTED INDICATING "NO THROUGH ROAD".
   WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS.

PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE

Queensland Government

SARA ref: 1710-2243 SRA

Date: 21/03/2018

1:100 (0, 2, 4m)

FILE No.	CT-20089.1
DRAWING NUMBER	ISSUE
2623	

SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING

ALTERATIONS

DESIGNED	PCS	JAN 05	APPROVED
CHECKED	GKB	OCT 05	D.G. SANDS 16/02/06 PRINCIPAL ENGINEER DATE
DRAWN	MVE	JAN 05	RPEQ No. 1909
CHECKED	MJM	JUL 05	ISSUE AUTHORISED
	GKB	OCT 05	B.R. HAGAMAN 16/02/06 MGR CIVIL ENGINEERING SERVICES DATE
PASSED	PN	OCT 05	

QUEENSLAND RAIL - CIVIL ENGINEERING

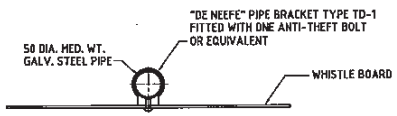
STANDARD

LEVEL CROSSINGS

REMOVAL OF PRIVATE & PUBLIC CROSSINGS

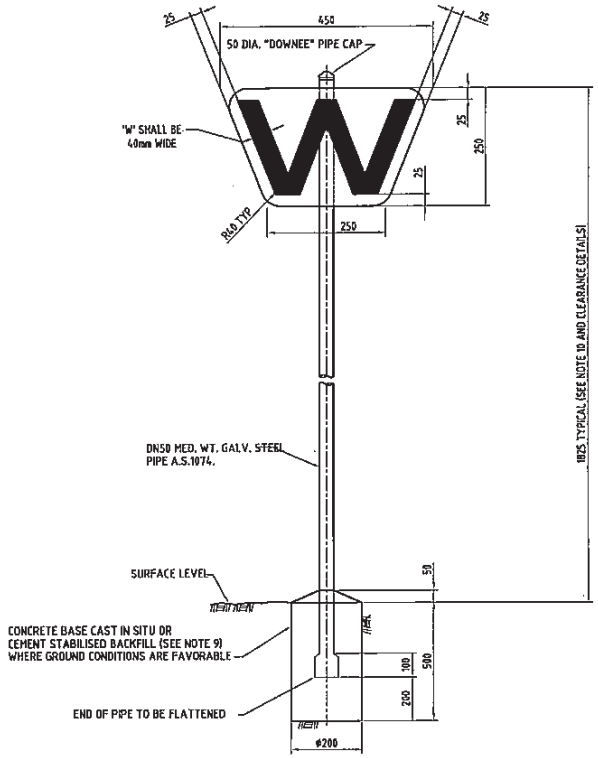
DRAWING NUMBER 2623 ISSUE

21/02/2006 13:36:07 B. Pollock
EXT_1\Documents\cm\Current\Standard Structural Drawing Book\Level Crossings\Normal\02623.dgn

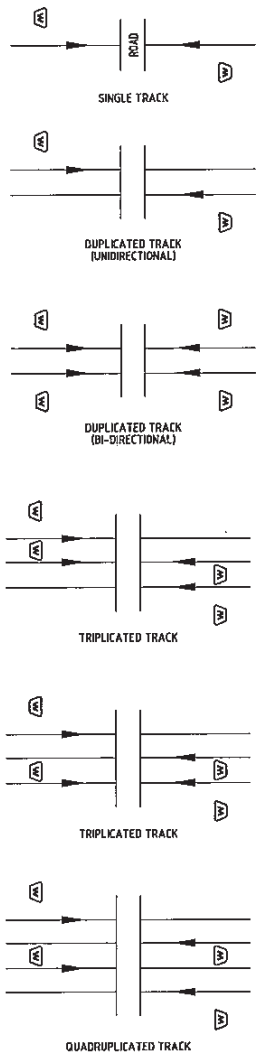


TOP VIEW

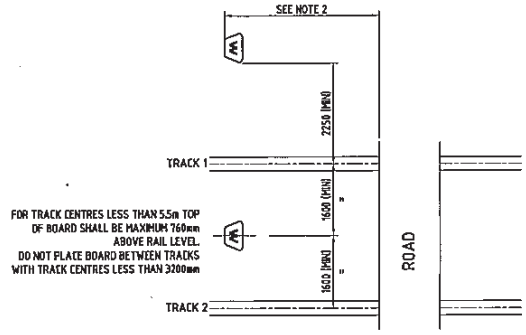
BOARD SHALL BE 2mm THICK ALUMINUM SHEET
WITH BLACK "W" ON WHITE BACKGROUND. SEE NOTES 4 TO 6.



GENERAL ARRANGEMENT OF WHISTLE BOARD AND POST



TYPICAL ARRANGEMENTS



CLEARANCE DETAILS

PLANS AND DOCUMENTS
referred to in the REFERRAL
AGENCY RESPONSE

Queensland Government

SARA ref: 1710-2243 SRA

Date: 21/03/2018

NOTES:

1. FOR TRACK ARRANGEMENTS NOT SHOWN, BOARDS SHALL BE ERECTED ON THE LEFT HAND SIDE IN DIRECTION OF TRAVEL ON THE THE APPROACH SIDE OF THE CROSSING.
2. BOARDS SHALL BE LOCATED FROM THE CROSSING AS PER SAF/STD/0044/CIV – LEVEL CROSSING SAFETY.
3. BOARDS SHALL BE MANUFACTURED GENERALLY IN ACCORDANCE WITH A.S. 1743, UNLESS OTHERWISE INDICATED.
4. FRONT OF BOARDS TO HAVE ENGINEER GRADE CLASS 2 REFLECTIVE "SCOTCHLITE" FACES OR EQUIVALENT.
5. BACK OF BOARDS TO HAVE BLACK "SCOTCHCAL" OR EQUIVALENT.
6. REFLECTIVE BACKGROUND SHEETING SHALL BE RETROFLECTIVE MATERIAL IN ACCORDANCE WITH A.S. 1906, PART 1.
7. NON-REFLECTIVE COLOURS SHALL BE IN ACCORDANCE WITH A.S. 2700.
8. CONCRETE BASES TO HAVE MINIMUM COMPRESSIVE STRENGTH OF 20 MPa AT 28 DAYS.
9. 10% BY VOLUME OF DRY CEMENT POWDER TO BE ADDED TO AND MIXED WITH BACKFILL MATERIAL PRIOR TO BACKFILLING. ALL BACKFILL TO BE THROUGHLY COMPACTED.
10. MAXIMUM HEIGHT IN ELECTRIFICATION AREAS 2.7m ABOVE RAIL LEVEL.

SAP DETAILS	
SAP SHORT TEXT	MATERIAL No.
BOARD WHISTLE	6500621

THIS DRAWING SUPERCEDES WHISTLE BOARD DETAILS 10099

FILE No.		SCALE		ALTERATIONS			
DRAWING NUMBER		NOT TO SCALE		ISSUE	DESCRIPTION	CHKD	APPRD	DATE
10732	ISSUE	UNLESS SHOWN OTHERWISE						
SHEET 1 OF 1		C.A.D.D. DRAWING DO NOT AMEND MANUALLY						

CALCS. & DRAWN	S.B.	22/05/97	
CHECKED	M.B.	22/05/97	
RECOMM.	G.B.	22/05/97	
SIGNATURES ENTERED			

APPROVED
J. POWELL
PRINCIPAL ENGINEER
22/05/97 — 4131
DATE — RPEQ No.

ISSUE AUTHORISED
B. HAGAMAN
SENIOR CIVIL ENGINEERING SERVICES
23/05/97
DATE

QUEENSLAND RAIL CIVIL ENGINEERING

WHISTLE BOARD
GENERAL ARRANGEMENT & LOCATING DETAILS

DRAWING NUMBER 10732 ISSUE
SHEET 1 OF 1