

Melbourne Water
October 1996

Flood Mapping
Tooronga Road Main Drain
Catchments

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1. Introduction

Melbourne Water has commissioned Sinclair Knight Merz to undertake this flood mapping project for the catchment of Tooronga Road Main Drain. The Melbourne Water Main Drain's (MD) including in this catchment are:

1. Lara Street MD
 2. Tooronga Road MD
 3. Creswick Street MD
 4. Rix Street MD
 5. Hedgely Dene MD
 6. Darling Road MD, and
 7. Dunlop Street MD
- SUPERCEDED BY GHQ REPORT "TOORONGA RD & CRESWICK ST M.D.'S - POST MITIGATION FLOOD MAPPING REPORT OCT 2016"*
— WBM 2D SHAPE ON Q DEC 04
— SUPERCEDED BY Fmqm FLOOD MAPPING MAY 2007.

The main purpose of this project is to estimate flood levels and the extent of flooding along Melbourne Water Main Drains and to identify the properties with potential flooding risk. This project includes;

- Areal Photography, undertaken by sub-consultant (QASCO)
- Field survey (Control points and floor levels) undertaken by sub-consultant (Neil Webster & Associates)
- Estimation of flood discharge for 20, 50 and 100 year ARI events along all Melbourne Water Main Drains
- Determination of the capacities of all existing main drains
- Calculation of flood levels along the main drains for all design events
- Providing Flood maps for the 100 year ARI event along all Melbourne Water Main Drains, showing; flood contours, flood depth and floor levels of affected properties.
- Tabulation of properties with flood risk and the characteristics of flood flows at critical areas.

2. Data and Methodology

2.1 Data

The data used this study was obtained and developed as follows;

- Digital Map base of the entire catchment was obtained from Data Flow in DGN format. These plans were used for catchment modelling.
- Low level aerial photography along the Melbourne Water Main Drains and large part of the catchment was undertaken by sub-consultant (QASCO). Field Survey including control points for the aerial photography and building floor levels of properties likely to be flooded in a 100 year ARI event was undertaken by sub-consultant (Neil Webster & Associates). The output of these survey are;
 1. Coloured aerial photographs of Melbourne Water Main Drains and the majority of the catchment areas.
 2. 3D digital terrain model covering the expected overland flow path area including spot levels and some relevant features.
 3. Floor levels of buildings likely to be flooded by or adjacent to the 100 year ARI flood levels.
- Reduced Yarra 2500 series plans, drainage design plans and a digital copies of Melbourne Water drainage layout were obtained from Melbourne Water for all catchments.

2.2 Methodology

The general methodology adopted in this study are;

*Table showing
calculated capacities?*

- Catchment boundaries were determine for each drain using plans from Data Flow information.
- The capacity of the existing Melbourne Water piped drainage system was calculated based on pipe-on-grade method, using information's from the design plans.
- RORB routing model was used to calculate the design flows (100, 50 and 20 year ARI) for the combined catchments of Tooronga Road and Creswick Road drains (see section 3). The flows for rest of drains in this study were calculated using the Rational Formula in combined with RORB results from Tooronga Catchment.
- Flood levels of all design events and for all drains were calculated using HEC-2 model. Cross sections for this model were determine during the site visits and generated digitally from the 3D terrain model (see section 4). Hydraulic structures along overland flow path (culvert, weir, etc) were incorporated into the HEC-2 model

-
- Flood levels obtained from HEC-2 modelling were plotted on the three 3D model produced by the aerial survey.
 - Flood contours and cross sections, floor levels, pipe alignments, were plotted as separate layers on the base plan from Data-Flow.
 - Preliminary list of affected properties was generated by Melbourne Water and further information were added to provide the required property flood risk report.

3. Hydrology

3.1 RORB Modeling

Due to the relatively large size and the potential storage effects in Toroonga-Creswick catchment, RORB network model was developed for this catchment including the main features (slope, % impervious, storage's, reach type, areas.. etc). Network of the RORB model is attached in **Appendix A**.

Historical flow data is not available for model calibration. Peak discharges for 100, 50 and 20 years ARI events at various locations were calculated initially using the Rational Formula method based on the guidelines provided by AR&R 1987. The results from the rational formula were used for preliminary comparison with RORB model which only include simple piped network system.

In order to best model the existing physical condition of the catchment, Three storage's were incorporate into this model, also some reach types were considered as excavated but unlined in the areas of heavy urban housing or floodway reserve.

The adopted RORB parameters were as follows:

Storm data	=	St.Kilda
Catchment area	=	3.9 km ²
Critical storm	=	varies from 20 to 60 minutes
Initial loss	=	15 mm
Fraction impervious	=	varies from 0.45 to 0.5
Reach type	=	varies (2 or 3)
Runoff Coefficient	=	0.45, 0.39 and 0.30 for 100, 50 and 20 year ARI events respectively
m	=	0.8
k _c	=	3

- Critical storm duration; Critical storm duration varied from 20 to 60 minutes depending on the location of point of discharge and the ARI events under analyses.
- Initial losses; initial losses for a catchment and a storm event varies significantly depending on the initial soil moisture conditions at the start of the critical storm. However, the adopted design value of 15 mm for the pervious area in this catchment was based on;
 - (i) Estimated median values for urban catchments of 10 to 25 mm
 - (ii) Lynwood Parade catchment (Doncaster) RORB calibration which resulted in an initial loss of 10 mm. The Lynwood Parade catchment is smaller and steeper than Tooronga catchment.

□ Run-off coefficient; the selected volumetric pervious area run-off coefficient of 0.45 for 100 year ARI events was based on the comparison between the Rational Formula results and the RORB results with simple piped system. Run-off coefficient of 0.39 and 0.30 for 50 and 20 years ARI event were selected similar to the rainfall depth ratio of these events and the 100 year ARI event.

□ k_c ; the selected value of $k_c = 3$, was based on;

- (i) $k_c = 1.53 A^{0.55}$ (DVA calibration)
- (ii) $k_c = 1.19 A^{0.56}$ (MMBW calibration)

The RORB results were found to vary far more with reach type than with k_c or storage's effects for this catchment. This is likely to be due to the fact that most flow paths are asphalt roads which have high velocities and low flood storage.

The peak flows obtained using RORB are generally lower than the results from the Rational Formula method. This is to be expected as results of incorporating some unlined reaches and storage's into RORB model.

The RORB results for peak discharge at various location are summarised in **Table 3.1**. The input and output files are attached in **Appendix A**. Copies of all RORB input and output files are provided in digital format.

Table 3.1- RORB results for Tooronga-Creswick catchment (peak discharge in m³/s)

Location	Area (km ²)	Peak discharge in m ³ /sec		
		100 year ARI	50 year ARI	20 year ARI
Wheatland Road	0.83	9.8	7.4	4.7
Tooronga Rd at Wilson St.	1.78	18.6	14.3	10.9
Young Street	1.95	6.7	3.9	1.5
High Street	2.53	10.7	7.3	4.6
Malvern Road	3.70	35.1	30.1	24.5
Outlet (SEF)	3.94	39.7	32.6	25.5

* 10 m³/sec was subtracted from the total overland flow as pipe flow in Tooronga Road drain

As requested by Melbourne Water, additional RORB runs were undertaken using Runoff Coefficient for 100 year ARI of 0.6 and K_c of 4.2 (as recommended by RORB program). The results of this runs were less than 5% different from the above values, due to higher runoff coefficient in conjunction with higher K_c value. Therefore the above results from the previous run were adopted.

3.2 Rational Formula

Due to the small size of the catchment and the low storage's effect, the Rational Formula and the RORB results for Tooronga-Creswick catchment were used to estimate peak discharge for the catchment of; Rix St MD, Lara St MD, Hedgely Dene MD, Dunlop St MD and Darling Rd MD. The Guidelines in AR&R 1987 were used in this analysis.

- The values of Runoff coefficients used in this formula are 0.6, 0.57 and 0.52 for the 100, 50 and 20 year ARI events respectively.
- The time of concentration was calculated for each location using the velocity of the overland flows which was estimated based on (AR&R 1987)

Table 3.2 Summarise the calculated peak discharge for each drain at various locations.

Table 3.2 : Estimated Peak Total Discharge Along MWMD For the Design Events (m3/s)

Design Events (m/s)				
Location	Area (km ²)	Peak discharge in m ³ /sec		
		100 year ARI	50 year ARI	20 year ARI
Hedgeley Dene Main Drain				
Manning Rd	0.90	14.7	11.7	8.1
Brunel St	1.16	17.1	13.7	9.5
Malvern Rd	1.65	19.3	15.4	10.7
Outlet (SEF)	1.95	21.1	16.8	11.7
Rix Street Main Drain				
Burke Rd	0.63	12.7	10.2	7.0
Rix St	0.86	15.5	12.3	8.5
Parkin St (outlet)	0.90	15.8	12.6	8.8
Lara Street MD				
Elizabeth St	0.38	7.9	6.3	4.3
Milton Pde	0.57	10.5	8.4	5.8
Outlet (railway)	0.66	11.6	9.3	6.4
Darling Road MD				
Paxton St	0.72	11.2	9.0	6.2
Malvern Rd	0.84	12.7	10.1	7.0
Clynden Ave	0.90	12.9	10.3	7.1
Dunlop Street MD				
Oliver St	0.52	11.7	9.4	6.5
Cr Dent St & Albion Rd	0.91	19.1	15.3	10.5
Laver Reserve (outlet)	1.05	19.4	15.6	10.7

4.7/3.3

4. Hydraulic

Overland flows were estimated by subtracting the pipe flow from the total flow calculated at various locations. The capacity of the existing pipes (where applicable) were estimated using pipe on grade method. Dimension and grades of existing underground drains were obtained from Melbourne Water as-constructed plans.

The HEC-2 model was used to calculate flood levels for all drains and for all design events. The location of cross sections were determined during site visits and data was generated in HEC-2 format digitally from the 3D terrain model.

Split flow analysis was undertaken on number of drains using HEC-2 model. The top water levels at the split sections were matched by trial and error in order to determine the split discharge for each flow path.

The Manning "n" values in HEC-2 was adopted based on the values recommended Melbourne Water as follow:

Channel and Floodplain	"n" values
Roadway	0.020
Grassed reserve	0.035
Light bush / trees, rocky, medium vegetation	0.050
Heavy bush / trees	0.070
Heavy industry / urban housing	0.150

Copies of all HEC-2 input and output files are provided in digital format.

5. Mapping and Plans

A1 flood mapping plans were produced by adding the field and aerial survey to the digital map base and incorporating flood information in 3D format. These plans shows:

- The 100 year ARI flood contours along the main drains.
- HEC-2 cross sections and flood levels
- Floor levels of all properties which may be effected by the 100 year ARI flood event.
- Alignments of the existing pipe drains
- Flood depth at the road intersections

The information on these plans was discussed with Melbourne Water and preliminary copies of these plans were issued for review and comments were incorporated. Hard and digital copies of the final flood mapping plans were provided to Melbourne Water.

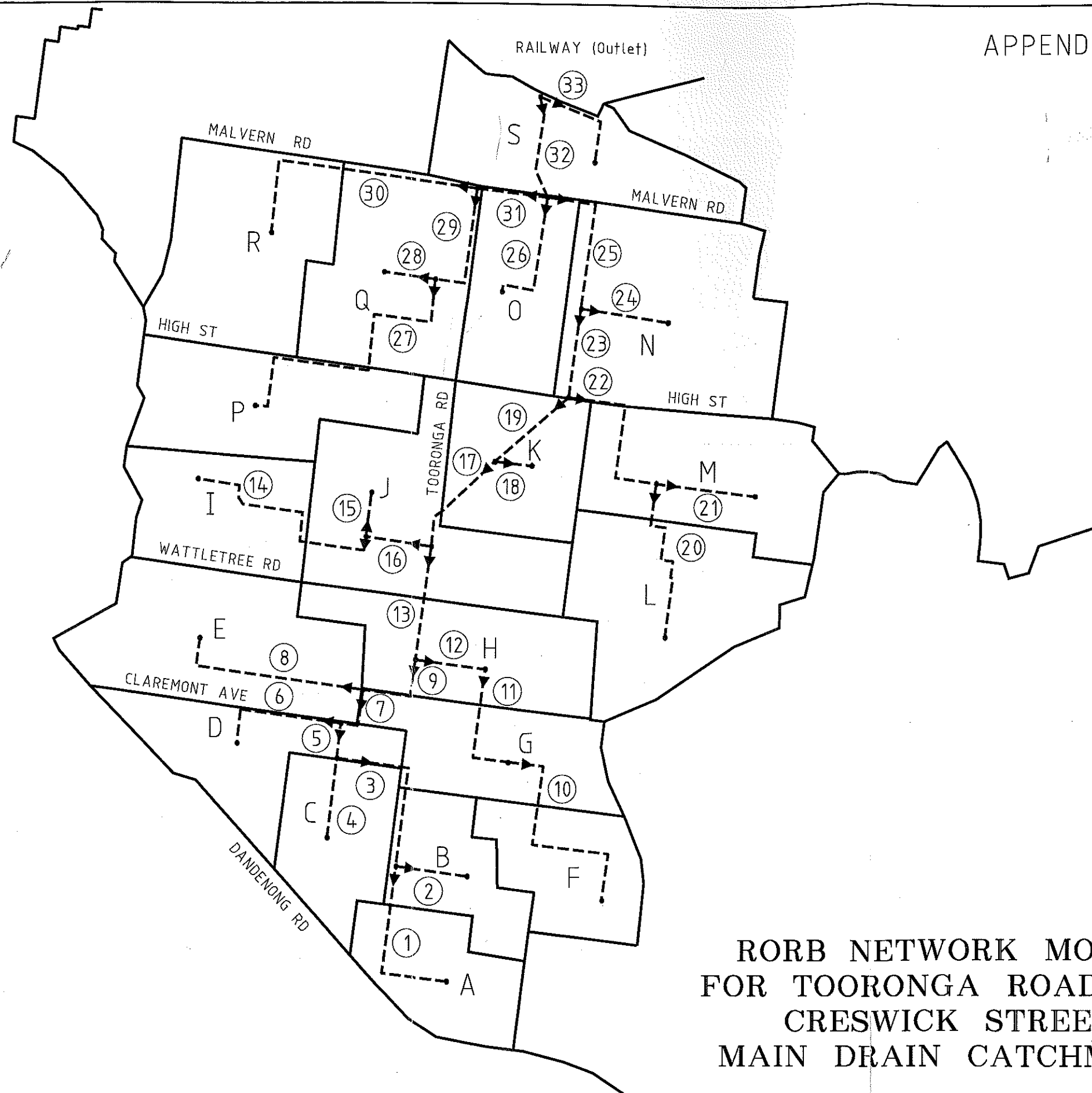
6. Property Flood Risk Reports

A flood risk report for all properties that are flood prone by up to 100 year ARI event, is attached in **Appendix B**. The report includes the following information:

1. Drain No
2. Street No
3. Street Name
4. Suburb
5. Property use
6. Floor level
7. Flood levels for the 100, 50 and 20 year ARI events
8. Depth to property floor from the 100, 50 and 20 year ARI flood levels
9. Flood Risk Category (1, 2, and 3)
10. Floodway Risk Category (high, medium and low)
11. Rate reference Number

Items 1, 2, 3, 4 and 11 were generated digitally by Melbourne Water.

Appendix A - RORB Model Network, Input and Output Files



RORB NETWORK MODEL
FOR TOORONGA ROAD AND
CRESWICK STREET
MAIN DRAIN CATCHMENT

Toorong Road Drain

0, More than one reach type
1,3,0.488,1.0,-99, model storage 1
3, store hydrograph
1,3,0.204,0.73,-99, model storage 2
4, add
5,3,0.487,0.41,-99, model storage 3
3, store hydrograph
1,3,0.226,0.44,-99, model storage 4
4, add
5,2,0.105,0.40,-99, model storage 5
3, store hydrograph
1,2,0.450,0.45,-99, Model storage 6
4, add
5,3,0.450,0.40,-99, model storage 7
3, store hydrograph
1,3,0.559,0.50,-99, model storage 8
4, add
7, print

PEAK FLOW u/s Wheatland Rd

16,
Storage at Wheatland Rd
1,0,5
0,0, 10,2.3, 1400,3, 2000,6, 3000,15,-99
1,5
0,0, 0.1,10, 0.5,1400, 0.7,2000, 1,3000,-99
5,3,0.243,1.00,-99, model storage 9
3, store hydrograph
1,2,0.650,0.50,-99, model storage 10
2,3,0.350,0.60,-99, model storage 11
2,3,0.202,1.60,-99, model storage 12
4, add
7, print

PEAK FLOW u/s Wattletree Rd

5,3,0.331,1.50,-99, model storage 13
3, stor hydrograph
1,2,0.618,2.40,-99, model storage 14
3, store hydrograph
1,3,0.128,3.80,-99, model storage 15
24, add
5,3,0.191,2.60,-99, model storage 16
4, add
7, print

PEAK FLOW AT RESERVE (Vivian St)

19,3,0,0,1

Vivian St Toorong Rd

3
0,0, 10,10, 50,10,-99, Diversion of 10 m3/s down Toorong Rd
16,

Storage (Vivia St to Young St)

1,0,5
0,0, 50,1, 1200,3, 3600,9, 6000,20,-99
1,5

0,0, 0.1,50, 0.3,1200, 0.6,3600, 1,6000,-99
5,3,0.313,1.60,-99, model storage 17
3, store hydrograph
1,3,0.104,2.40,-99, model storage 18
4, add
16,

Storage (Young to High st)

1,0,5
0,0, 50,1, 1500,3, 4000,9, 8000,20,-99
1,5

0,0, 0.1,50, 0.3,1500, 0.6,4000, 1,8000,-99
5,3,0.278,1.40,-99, model storage 19
3, store hydrograph
1,2,0.517,2.20,-99, model storage 20
3, store hydrograph
1,3,0.283,3.90,-99, model storage 21
4, add
5,2,0.492,1.80,-99, model storage 22
4, add
7, print

PEAK FLOW AT High St

5,3,0.255,1.00,-99, model storage 23
3, store hydrograph
1,3,0.254,4.70,-99, model storage 24
4, add
5,3,0.437,1.11,-99, model storage 25
3, store hydrograph
1,2,0.378,2.10,-99, model storage 26
4, add
3, store hydrograph
1,2,0.898,2.50,-99, model storage 27
3, store hydrograph
1,2,0.151,3.90,-99, model storage 28
4, add
5,3,0.351,1.90,-99, model storage 29
3, store hydrograph
1,3,0.700,2.80,-99, model storage 30
4, add
19,2,0,1,1,-99, pipe inflow from Tooronga & Vivia
7, print

PEAK FLOW AT Cr ^{Tooronga} Toor & Malvern Rd

5,3,0.206,1.80,-99, model storage 31
4, add
7, print

PEAK FLOW AT Malvern Rd

5,3,0.299,1.00,-99, model storage 32
3, store hydrograph
1,3,0.300,1.60,-99, model storage 33
4, add
7, print

PEAK FLOW AT Tooronga Rd

5,3,0.350,1.10,-99, model storage 34
3, store hydrograph

1,3,0.200,0.80,-99 model storage 35

4, add

7, print

PEAK FLOW AT SEF

0, END OF CONTROL VECTOR

C SUB-AREA AREAS (km sq.)

0.1352,0.1210,0.1395,0.1612,0.2779,0.1421,0.1702,0.2057,0.1673,0.2728,

0.1597,0.2607,0.2335,0.3290,0.1564,0.2071,0.2310,0.2000,0.2197,

0.1500,-99

C Impervious areas (45 to 50)

1,0.48,0.50,0.47,0.50,0.50,0.50,0.49,0.50,0.46,0.50,0.50,0.46,0.46,0.50,

0.45,0.49,0.50,0.45,0.48,0.48,-99

AR&R(1987) Design Storm: 100yr ARI 25 min,Catch 3.94 sq kms

DESIGN

8.333334E-02,12,1,1,0,-99

0,5

ST Kilda :total 33.6 mm

6.0,8.7,11.8,3.7,3.4,-99

** RORB Version 4.2 (PC), 1 May 1995 (C) Copyright Monash University **

This copy supplied to :

HYDROTECHNOLOGY, Armadale Vic 22/5/1995

Run at: 11:40 on 27/ 9/1996

Data from file :b:t25-100.dat

Output type 1

Reading of data completed

Data check completed

Loss model 0 selected

ROUTING RESULTS:

Tooronga Road Drain

AR&R(1987) Design Storm: 100yr ARI 25 min,Catch 3.94 sq kms

DESIGN run No. 1

Parameters: kc= 4.4 m= .80

Loss parameters: Initial loss (mm) Runoff coeff.
15.0 .60

*** Calculated hydrograph, PEAK FLOW u/s Wheatland Rd

Hydrograph Calc.

Peak discharge,m³/s 8.727

Time to peak,h .417

Volume,m³ 1.49E+04

Time to centroid,h .513

Lag (c.m. to c.m.),h .294

Lag to peak,h .197

Time inc.= .08 h

Time Discharge Discharge, m³/s X: Calc. O:

Calc.	0	1.7	3.5	5.2	7.0	8.7
incs. m ³ /s	m ³ /s					
	*	5 R/fall 10 excess 15 mm 20 25				
0	.000	*				
1	.000	*-----				
2	1.013	* X	-----			
3	4.662	* -----	X			
4	7.692	*			X	
5	8.727	*-----				X
6	8.209	*			X	
7	6.373	*		X		
8	4.638	*	X			

9	3.261	*		X
10	2.287	*	X	
11	1.627	*	X	
12	1.180	*	X	

.....

Results of routing through special storage Storage at Wheatland Rd
Peak elevation= .78 m
Peak outflow = 8.33 m³/s
Peak storage = 2.26E+03 m³

*** Special storage : Storage at Wheatland Rd

Hydrograph		
	Outflow	Inflow
Peak discharge,m ³ /s	8.330	8.727
Time to peak,h	.500	.417
Volume,m ³	1.42E+04	1.49E+04
Time to centroid,h	.585	.513
Lag (c.m. to c.m.),h	.365	.294
Lag to peak,h	.281	.197

*** Calculated hydrograph, PEAK FLOW u/s Wattletree Rd

Hydrograph	
	Calc.
Peak discharge,m ³ /s	11.23
Time to peak,h	.500
Volume,m ³	2.30E+04
Time to centroid,h	.520
Lag (c.m. to c.m.),h	.300
Lag to peak,h	.281

*** Confluence at d/s end of Reach 15

Hydrograph		
	This br.	Prev.br.
Peak discharge,m ³ /s	8.226	1.710
Time to peak,h	.250	.333
Volume,m ³	5.41E+03	2.79E+03
Time to centroid,h	.275	.496
Lag (c.m. to c.m.),h	.055	.276
Lag to peak,h	.030	.114

*** Calculated hydrograph, PEAK FLOW AT RESERVE (Vivian)

Hydrograph	
Calc.	
Peak discharge, m ³ /s	17.12
Time to peak, h	.333
Volume, m ³	3.06E+04
Time to centroid, h	.499
Lag (c.m. to c.m.), h	.280
Lag to peak, h	.114

*** Concentrated channel outflow at Vivian St Toorong Rd

Hydrograph		
Downstr. Outflow		
Peak discharge, m ³ /s	7.12	10.00
Time to peak, h	.333	.250
Volume, m ³	6.08E+03	2.45E+04
Time to centroid, h	.364	.533
Lag (c.m. to c.m.), h	.145	.313
Lag to peak, h	.114	.031

Results of routing through special storage Storage (Vivia St to Young S

Peak elevation= .37 m
 Peak outflow = 4.46 m³/s
 Peak storage = 1.78E+03 m³

*** Special storage : Storage (Vivia St to Young S

Hydrograph		
Outflow	Inflow	
Peak discharge, m ³ /s	4.462	7.123
Time to peak, h	.417	.333
Volume, m ³	6.02E+03	6.08E+03
Time to centroid, h	.468	.364
Lag (c.m. to c.m.), h	.249	.145
Lag to peak, h	.197	.114

Results of routing through special storage Storage (Young to High st)

Peak elevation= .38 m
 Peak outflow = 4.62 m³/s
 Peak storage = 2.17E+03 m³

*** Special storage : Storage (Young to High st)

Hydrograph	
Outflow	Inflow

Peak discharge, m ³ /s	4.618	5.560
Time to peak, h	.500	.250
Volume, m ³	9.21E+03	9.18E+03
Time to centroid, h	.557	.431
Lag (c.m. to c.m.), h	.338	.212
Lag to peak, h	.281	.031

*** Calculated hydrograph, PEAK FLOW AT High St

Hydrograph
Calc.

Peak discharge, m ³ /s	8.838
Time to peak, h	.500
Volume, m ³	1.72E+04
Time to centroid, h	.565
Lag (c.m. to c.m.), h	.345
Lag to peak, h	.280

*** Concentrated channel inflow at Vivian St Tooronga Rd

Hydrograph
Downstr. Inflow

Peak discharge, m ³ /s	20.28	10.00
Time to peak, h	.333	.250
Volume, m ³	3.58E+04	2.45E+04
Time to centroid, h	.494	.533
Lag (c.m. to c.m.), h	.066	.104
Lag to peak, h	-.0951	-.1784

*** Calculated hydrograph, PEAK FLOW AT Cr Toor & Malve

Hydrograph
Calc.

Peak discharge, m ³ /s	20.28
Time to peak, h	.333
Volume, m ³	3.58E+04
Time to centroid, h	.494
Lag (c.m. to c.m.), h	.0656
Lag to peak, h	-.0951

*** Calculated hydrograph, PEAK FLOW AT Malvern Rd

Hydrograph
Calc.

Peak discharge, m ³ /s	33.76
-----------------------------------	-------

Time to peak,h .333
Volume,m³ 6.08E+04
Time to centroid,h .521
Lag (c.m. to c.m.),h .219
Lag to peak,h .0315

*** Calculated hydrograph, PEAK FLOW AT Tooronga Rd

Hydrograph
Calc.
Peak discharge,m³/s 35.26
Time to peak,h .333
Volume,m³ 6.38E+04
Time to centroid,h .531
Lag (c.m. to c.m.),h .233
Lag to peak,h .0350

*** Calculated hydrograph, PEAK FLOW AT SEF

Hydrograph
Calc.
Peak discharge,m³/s 36.28
Time to peak,h .417
Volume,m³ 6.52E+04
Time to centroid,h .549
Lag (c.m. to c.m.),h .253
Lag to peak,h .121

Finished

Max. real array storage = 680 words

Max. integer array storage = 274 words

Max. character array storage= 126 words

Appendix B - Property Flood Risk Report

Property Flood Risk Report

Sinclair Knight Merz

Job Number 5V810.000

Tooronga Road Main Drain Catchment

September 1996

Drain No.	Street No.	Street name	Suburb	Property use	Floor Level (m AHD)	100 year Flood Level (m AHD)	50 year Flood Level (m AHD)	20 year Flood Level (m AHD)	100 year Depth to Floor (m)	50 year Depth to Floor (m)	20 year Depth to Floor (m)	Flood Risk Category (1,2,3)	Floodway Risk Category	Rate Ref. No.	Comments
Lara Street MD															
4822	44	MILTON PARADE	MALVERN	Res.		10.07	9.76	9.5					LOW	12826467	
4822	44A	MILTON PARADE	MALVERN	Res.		10.08	9.78	9.52					LOW	12826475	
4822	46	MILTON PARADE	MALVERN	Res.		10.1	9.79	9.53					LOW	12826483	
4822	48	MILTON PARADE	MALVERN	Res.		10.07	9.83	9.6					LOW	12826491	
4822	50	MILTON PARADE	MALVERN	Res.		10.05	9.86	9.67					LOW	12826504	
4822	52	MILTON PARADE	MALVERN	Res.		10.01	9.93	9.81					LOW	12826512	
4822	54	MILTON PARADE	MALVERN	Res.		10.35	10.27	10.18					LOW	12826520	
4822	56	MILTON PARADE	MALVERN	Res.		10.7	10.62	10.51					LOW	12826539	
4822	58	MILTON PARADE	MALVERN	Res.		10.9	10.81	10.69					LOW	12826547	
Tooronga Road MD & Creswick Street MD <i>SUPPLACED BY GHD REPORT DATED MAY 2004</i>															
4824	11/17	CARROLL CRES	GLEN IRIS	Res.	14.58								LOW	12836884	
4824	101	CLAREMONT AVENUE	MALVERN	Res.		41.65	41.5	41.17					LOW	12887112	
4824	103	CLAREMONT AVENUE	MALVERN	Res.		41.65	41.5	41.17					LOW	12887120	
4824	105	CLAREMONT AVENUE	MALVERN	Res.	41.7	41.65	41.5	41.17					LOW	12887139	
4824	107	CLAREMONT AVENUE	MALVERN	Res.	42.03	41.65	41.5	41.17					LOW	12887147	
4824	80-82	CLAREMONT AVENUE	MALVERN	Res.	41.54	41.65	41.5	41.17	0.11			1	LOW	25281881	
4824	81	CLAREMONT AVENUE	MALVERN	Res.	41.73	41.65	41.5	41.17					LOW	12887016	
4824	83	CLAREMONT AVENUE	MALVERN	Res.	41.8	41.65	41.5	41.17					LOW	12887024	
4824	FLAT 1 84	CLAREMONT AVENUE	MALVERN	Res.	41.73	41.65	41.5	41.17					LOW	12887307	
4824	FLAT 2 84	CLAREMONT AVENUE	MALVERN	Res.	41.65	41.65	41.5	41.17					LOW	12887315	
4824	FLAT 3 84	CLAREMONT AVENUE	MALVERN	Res.	41.65	41.65	41.5	41.17					LOW	12887323	
4824	FLAT 4 84	CLAREMONT AVENUE	MALVERN	Res.	41.65	41.65	41.5	41.17					LOW	12887331	
4824	85	CLAREMONT AVENUE	MALVERN	Res.	41.62	41.65	41.5	41.17	0.03			1	LOW	12887032	
4824	86	CLAREMONT AVENUE	MALVERN	Res.	41.66	41.65	41.5	41.17					LOW	12887294	
4824	87	CLAREMONT AVENUE	MALVERN	Res.	41.62	41.65	41.5	41.17	0.03			1	LOW	12887040	
4824	88	CLAREMONT AVENUE	MALVERN	Res.		41.65	41.5	41.17					LOW	12887286	
4824	89	CLAREMONT AVENUE	MALVERN	Res.	41.63	41.65	41.5	41.17	0.02			1	LOW	12887059	
4824	91	CLAREMONT AVENUE	MALVERN	Res.	41.56	41.65	41.5	41.17	0.09			1	LOW	12887067	
4824	93	CLAREMONT AVENUE	MALVERN	Res.	41.51	41.65	41.5	41.17	0.14			1	LOW	12887075	
4824	95	CLAREMONT AVENUE	MALVERN	Res.	41.49	41.65	41.5	41.17	0.16	0.01		2	LOW	12887083	ED (1.1) x EV (0.3) = 0.33
4824	97	CLAREMONT AVENUE	MALVERN	Res.	41.56	41.65	41.5	41.17	0.09			1	LOW	12887091	where ED = Egress depth (mm), and
4824	99	CLAREMONT AVENUE	MALVERN	Res.	41.64	41.65	41.5	41.17	0.01			1	LOW	12887104	EV = Egress velocity (m/s).
4824	10	CRESWICK STREET	GLEN IRIS	Res.		15.31	15.13	14.97					MEDIUM	12831979	
4824	11	CRESWICK STREET	GLEN IRIS	Res.		14.8	14.63	14.45					MEDIUM	12831805	Floor levels in Creswick Street are all
4824	12	CRESWICK STREET	GLEN IRIS	Res.		15.06	14.88	14.72					MEDIUM	12831960	above 100 year ARI flood levels.
	14	CRESWICK STREET	GLEN IRIS	Res.		14.8	14.63	14.45					MEDIUM		Average Flood depth in Creswick
4824	UNITS 16	CRESWICK STREET	GLEN IRIS	Res.		14.51	14.38	14.13					MEDIUM	12831944	Street is 0.35 m and Average Velocity
4824	18	CRESWICK STREET	GLEN IRIS	Res.		14.41	14.28	14.03					MEDIUM	12831936	is 1.30 m/s.

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4824	19	CRESWICK STREET	GLEN IRIS	Res.		14.11	13.98	13.73					MEDIUM	12831856	
4824	20	CRESWICK STREET	GLEN IRIS	Res.		14.31	14.18	13.93					MEDIUM	12831928	
4824	UNIT 21	CRESWICK STREET	GLEN IRIS	Res.		14.01	13.88	13.63					MEDIUM	12831864	
4824	23	CRESWICK STREET	GLEN IRIS	Res.		13.91	13.78	13.53					MEDIUM	12831872	
4824	25	CRESWICK STREET	GLEN IRIS	Res.		13.88	13.74	13.51					MEDIUM	12831880	
4824	27	CRESWICK STREET	GLEN IRIS	Res.		13.8	13.68	13.4					MEDIUM	12831899	
4824	3	CRESWICK STREET	GLEN IRIS	Res.		15.81	15.67	15.47					MEDIUM	12831768	
4824	5	CRESWICK STREET	GLEN IRIS	Res.		15.56	15.38	15.22					MEDIUM	12831776	
4824	FLATS 6	CRESWICK STREET	GLEN IRIS	Res.		15.81	15.67	15.47					MEDIUM	12832031	
4824	7	CRESWICK STREET	GLEN IRIS	Res.		15.31	15.13	14.97					MEDIUM	12831784	
4824	FLATS 8	CRESWICK STREET	GLEN IRIS	Res.		15.56	15.38	15.22					MEDIUM	12831995	
4824	9	CRESWICK STREET	GLEN IRIS	Res.		15.06	14.88	14.72					MEDIUM	12831792	
4824	10	EDGAR STREET	GLEN IRIS	Res.		23.19	23.1	22.95					LOW	12829959	
4824	FLATS 12	EDGAR STREET	GLEN IRIS	Res.		23.06	22.97	22.82					LOW	12829967	
4824	FLATS 14	EDGAR STREET	GLEN IRIS	Res.		22.93	22.84	22.69					LOW	12830060	
4824	FLATS 16	EDGAR STREET	GLEN IRIS	Res.		22.8	22.71	22.56					LOW	12830175	
4824	18	EDGAR STREET	GLEN IRIS	Res.		22.67	22.58	22.43					LOW	12830183	
4824	UNITS 2	EDGAR STREET	GLEN IRIS	Res.		23.71	23.62	23.47					LOW	12829764	
4824	FLATS 31	EDGAR STREET	GLEN IRIS	Res.		21.66	21.53	21.36					LOW	12829553	
4824	FLATS 33-35	EDGAR STREET	GLEN IRIS	Res.		21.4	21.3	21.25					LOW	12829457	
4824	UNITS 4	EDGAR STREET	GLEN IRIS	Res.		23.58	23.49	23.34					LOW	12829772	
4824	FLATS 6	EDGAR STREET	GLEN IRIS	Res.		23.45	23.36	23.21					LOW	12829780	
4824	8	EDGAR STREET	GLEN IRIS	Res.		23.32	23.23	23.08					LOW	12829940	
4824	1482	HIGH STREET	GLEN IRIS	Res.	26.44	25.71	25.52	25.26					LOW	12822239	
4824	1484	HIGH STREET	GLEN IRIS	Res.	25.97	25.61	25.42	25.22					LOW	12822220	
4824	1486	HIGH STREET	GLEN IRIS	Res.	25.79	25.58	25.4	25.18					LOW	12822212	
4824	1488	HIGH STREET	GLEN IRIS	Res.	25.67	25.52	25.3	25.16					LOW	12822204	
4824	18	LEOPOLD STREET	GLEN IRIS	Res.	28.88	28.4	28.33	28.25					LOW	12876376	
4824	20	LEOPOLD STREET	GLEN IRIS	Res.	28.47	28.3	28.23	28.17					LOW	12876368	
4824	FLATS 22/24	LEOPOLD STREET	GLEN IRIS	Res.	27.81	27.7	27.63	27.57					LOW	12876181	
4824	FLATS 20	LYSTERVILLE AVENUE	MALVERN	Res.		41.64	41.49	41.17					LOW	12890338	
4824	1438	MALVERN ROAD	GLEN IRIS	Res.		17.4	17.27	17.16					LOW	12804743	
4824	1440	MALVERN ROAD	GLEN IRIS	Res.		17.6	17.47	17.38					LOW	12804735	
4824	1442	MALVERN ROAD	GLEN IRIS	Res.		17.82	17.65	17.59					LOW	12804727	
4824	1444	MALVERN ROAD	GLEN IRIS	Res.		17.92	17.79	17.69					LOW	12804719	
4824	1446	MALVERN ROAD	GLEN IRIS	Res.		18.02	17.89	17.79					LOW	12804700	
4824	1448	MALVERN ROAD	GLEN IRIS	Res.		18.12	17.99	17.89					LOW	12804698	
4824	1450	MALVERN ROAD	GLEN IRIS	Res.		18.22	18.09	17.99					LOW	12804671	
	1452	MALVERN ROAD	GLEN IRIS	Res.		18.3	18.19	18.09					LOW		
4824	1501	MALVERN ROAD	GLEN IRIS	Comm.	17.52	17.4	17.27	17.16					LOW	12799163	
	1503	MALVERN ROAD	GLEN IRIS	Comm.	17.27	17.8	17.69	17.57	0.53	0.42	0.3	3	LOW		
	1505	MALVERN ROAD	GLEN IRIS	Comm.	17.69	17.9	17.79	17.67	0.21	0.1		2	LOW		
4824	1509	MALVERN ROAD	GLEN IRIS	Comm.	17.9	18.1	17.99	17.87	0.2	0.09		2	LOW	12799171	

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4824	1511/3	MALVERN ROAD	GLEN IRIS	Comm.		18.22	18.09	17.99					LOW	12799198	
4824	101	TOORONGA ROAD	GLEN IRIS	Res.	37.55	36.48	36.32	36.12					LOW	12846679	
4824	103	TOORONGA ROAD	GLEN IRIS	Res.	37.14	36.03	35.87	35.67					LOW	12846687	
4824	105	TOORONGA ROAD	GLEN IRIS	Res.	36.71	35.63	35.47	35.27					LOW	12846695	
4824	107	TOORONGA ROAD	GLEN IRIS	Res.	35.98	35.43	35.27	35.07					LOW	12846708	
4824	109	TOORONGA ROAD	GLEN IRIS	Res.	35.76	35.23	35.07	34.87					LOW	12846716	
4824	110	TOORONGA ROAD	MALVERN EAST	Res.		40.22	40.1	39.98					LOW	12845393	
4824	111	TOORONGA ROAD	GLEN IRIS	Res.	35.55	35.03	34.87	34.67					LOW	12846724	
4824	112	TOORONGA ROAD	MALVERN EAST	Res.		40.12	40	39.88					LOW	12845385	
4824	113	TOORONGA ROAD	GLEN IRIS	Res.		34.98	34.82	34.62					LOW	12846732	
4824	114	TOORONGA ROAD	MALVERN EAST	Res.		39.92	39.85	39.55					LOW	12845377	
4824	115	TOORONGA ROAD	GLEN IRIS	Res.	35.09	34.83	34.67	34.47					LOW	12846740	
4824	116	TOORONGA ROAD	MALVERN EAST	Res.	39.87	39.74	39.6	39.3					LOW	12845369	
4824	117	TOORONGA ROAD	GLEN IRIS	Res.	35.23	34.63	34.47	34.27					LOW	12846759	
4824	118	TOORONGA ROAD	MALVERN EAST	Res.	39.78	39.5	39.35	39.08					LOW	12845350	
4824	119	TOORONGA ROAD	GLEN IRIS	Res.	34.97	34.43	34.31	34.2					LOW	12846767	
4824	120	TOORONGA ROAD	MALVERN EAST	Res.	39.7	39.45	39.3	39.03					LOW	12845342	
4824	121	TOORONGA ROAD	GLEN IRIS	Res.	34.78	34.28	34.16	34.05					LOW	12846775	
4824	122	TOORONGA ROAD	MALVERN EAST	Comm.	39.56	39.2	39.05	38.81					LOW	12845334	
4824	123	TOORONGA ROAD	GLEN IRIS	Comm.	34.74	34.13	34.01	33.9					LOW	12846783	
4824	124	TOORONGA ROAD	MALVERN EAST	Comm.	39.14	39.02	38.9	38.7					LOW	12845326	
4824	125	TOORONGA ROAD	GLEN IRIS	Comm.	34.33	33.96	33.8	33.57					LOW	12846791	
4824	126	TOORONGA ROAD	GLEN IRIS	Comm.	39	38.8	38.68	38.48					LOW	12845318	
4824	129	TOORONGA ROAD	GLEN IRIS	Res.	34.21	33.86	33.75	33.57					LOW	12846804	
4824	131	TOORONGA ROAD	GLEN IRIS	Res.	34.52	33.76	33.65	33.48					LOW	12846812	
4824	133	TOORONGA ROAD	GLEN IRIS	Res.	34.63	33.66	33.55	33.4					LOW	12846820	
4824	138	TOORONGA ROAD	GLEN IRIS	Res.		35.63	35.47	35.27					LOW	12845246	
4824	140	TOORONGA ROAD	GLEN IRIS	Res.	35.55	35.03	34.88	34.68					LOW	12845238	
4824	142	TOORONGA ROAD	GLEN IRIS	Res.	35.49	34.78	34.63	34.43					LOW	12845211	
4824	144	TOORONGA ROAD	GLEN IRIS	Res.	35.39	34.53	34.45	34.32					LOW	12845203	
4824	146	TOORONGA ROAD	GLEN IRIS	Res.	34.08	34.35	34.24	34.1	0.27	0.16	0.02	3	LOW	12845190	
4824	148	TOORONGA ROAD	GLEN IRIS	Res.		34.28	34.16	34.05					LOW	12845182	
4824	150	TOORONGA ROAD	GLEN IRIS	Res.	34.91	34.01	33.86	33.66					LOW	12845174	
4824	152	TOORONGA ROAD	GLEN IRIS	Res.	34.77	33.96	33.8	33.57					LOW	12845166	
4824	75	TOORONGA ROAD	MALVERN EAST	Res.	42.28	41.49	41.39	41.12					LOW	12846513	
4824	77	TOORONGA ROAD	MALVERN EAST	Res.	41.69	41.3	41.19	40.9					LOW	12846521	
4824	79	TOORONGA ROAD	MALVERN EAST	Res.	41.64	41.09	41	40.7					LOW	12846548	
4824	81	TOORONGA ROAD	MALVERN EAST	Res.	41.04	40.9	40.8	40.5					LOW	12846556	
4824	83	TOORONGA ROAD	MALVERN EAST	Res.	40.82	40.71	40.6	40.3					LOW	12846564	
4824	85	TOORONGA ROAD	MALVERN EAST	Res.	40.49	40.47	40.35	40.05					LOW	12846572	
4824	87	TOORONGA ROAD	MALVERN EAST	Res.	40.33	40.22	40.1	39.8					LOW	12846580	
4824	89	TOORONGA ROAD	MALVERN EAST	Res.	40.29	39.92	39.85	39.55					LOW	12846599	
4824	91	TOORONGA ROAD	MALVERN EAST	Res.	41.43	39.67	39.6	39.3					LOW	24526824	

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4824	93	TOORONGA ROAD	MALVERN EAST	Res.	40.27	39.42	39.35	39.05					LOW	12846636	
4824	95	TOORONGA ROAD	MALVERN EAST	Res.		39.2	39.05	38.91					LOW	12846644	
4824	97	TOORONGA ROAD	MALVERN EAST	Comm.	40.25	39.02	38.9	38.7					LOW	12846652	
4824	97A	TOORONGA ROAD	MALVERN EAST	Comm.		38.98	38.86	38.66					LOW	12846660	
4824	57	VINCENT STREET	GLEN IRIS	Res.	26.21	26.5	26.35	26.2	0.29	0.14		2	LOW	12877117	
4824	58	VINCENT STREET	GLEN IRIS	Res.		25.83	25.62	25.3					LOW	12876528	
4824	59	VINCENT STREET	GLEN IRIS	Res.	25.83	26.23	26.02	25.7	0.4	0.19		2	LOW	12877125	
4824	60	VINCENT STREET	GLEN IRIS	Res.		25.75	25.57	25.28					LOW	12876501	
4824	61	VINCENT STREET	GLEN IRIS	Res.	25.78	25.83	25.62	25.3	0.05			1	LOW	12877133	
4824	1	VIVA STREET	GLEN IRIS	Res.	32.68	32.41	32.2	32					LOW	28277247	
4824	1A	VIVA STREET	GLEN IRIS	Res.	32.71	32.41	32.2	32					LOW	12875525	
4824	2	VIVA STREET	GLEN IRIS	Res.	33.07	33	32.86	32.68					LOW	12875533	
4824	3	VIVA STREET	GLEN IRIS	Res.	32.36	32.41	32.2	32	0.05			1	LOW	36215505	
4824	3A	VIVA STREET	GLEN IRIS	Res.		32.41	32.2	32					LOW	36215513	
4824	4	VIVA STREET	GLEN IRIS	Res.		32.8	32	31.8					LOW	12875541	
4824	5	VIVA STREET	GLEN IRIS	Res.		32.41	32.2	32					LOW	12875496	
4824	262/74	WATTLETREE ROAD	MALVERN	Comm.	38.61	38.37	38.27	38.07					LOW	12868982	
4824	276	WATTLETREE ROAD	MALVERN EAST	Comm.		38.37	38.27	38.07					LOW	12868974	
4824	277	WATTLETREE ROAD	MALVERN EAST	Comm.		37.83	37.7	37.54					LOW	12867162	
4824	279	WATTLETREE ROAD	MALVERN EAST	Comm.		37.83	37.7	37.54					LOW	12867170	
4824	LOT 1	WEIR STREET	GLEN IRIS	Ind.	11.72								LOW	36392149	Sheet flow up to 200mm depth may occur in this area.
	2	WEIR STREET	GLEN IRIS	Ind.									LOW		
	4	WEIR STREET	GLEN IRIS	Ind.									LOW		
	6	WEIR STREET	GLEN IRIS	Ind.									LOW		
4824	3	WEIR STREET	GLEN IRIS	Ind.	11.72								LOW	12828630	
	8	WEIR STREET	GLEN IRIS	Ind.	12.76								LOW		
	10	WEIR STREET	GLEN IRIS	Ind.	11.47								LOW		
	12	WEIR STREET	GLEN IRIS	Ind.	11.38								LOW		
4824	14	WEIR STREET	GLEN IRIS	Ind.	11.56								LOW	12828606	
4824	16	WEIR STREET	GLEN IRIS	Ind.	11.56								LOW	12828585	
4824	18	WEIR STREET	GLEN IRIS	Ind.	11.73								LOW	12828577	
4824	LOT 2	WEIR STREET	GLEN IRIS	Ind.									LOW	36399412	
4824	20	WEIR STREET	GLEN IRIS	Ind.	11.7								LOW	12828569	
	22	WEIR STREET	GLEN IRIS	Ind.	11.57								LOW		
	24	WEIR STREET	GLEN IRIS	Ind.									LOW		
4824	26	WEIR STREET	GLEN IRIS	Ind.									LOW	12828550	
4824	28	WEIR STREET	GLEN IRIS	Ind.									LOW	12828542	
4824	32	WHEATLAND ROAD	MALVERN	Res.		41.64	41.5	41.17					LOW	12899383	Water depth in the road up to 1 m. Low velocity with average of 0.3 m/s.
4824	34	WHEATLAND ROAD	MALVERN	Res.		41.64	41.5	41.17					LOW	12899375	
4824	36	WHEATLAND ROAD	MALVERN	Res.		41.64	41.5	41.17					LOW	12899367	
4824	38	WHEATLAND ROAD	MALVERN	Res.		41.64	41.5	41.17					LOW	12899359	
4824	40	WHEATLAND ROAD	MALVERN	Res.		41.64	41.5	41.17					LOW	12899340	
4824	42	WHEATLAND ROAD	MALVERN	Res.	41.95	41.64	41.5	41.17					LOW	12899332	

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4824	44	WHEATLAND ROAD	MALVERN	Res.	42.01	41.64	41.5	41.17					LOW	12899324	
4824	46	WHEATLAND ROAD	MALVERN	Res.	41.82	41.64	41.5	41.17					LOW	12899316	
4824	48	WHEATLAND ROAD	MALVERN	Res.	41.98	41.64	41.5	41.17					LOW	12899308	
4824	50	WHEATLAND ROAD	MALVERN	Res.	41.62	41.64	41.5	41.17	0.02			1	LOW	12899295	
4824	FLAT 1 51/3	WHEATLAND ROAD	MALVERN	Res.	41.83	41.64	41.5	41.17					LOW	22125760	
4824	FLAT 2 51/3	WHEATLAND ROAD	MALVERN	Res.	41.83	41.64	41.5	41.17					LOW	22125779	
4824	FLAT 3 51/3	WHEATLAND ROAD	MALVERN	Res.	41.83	41.64	41.5	41.17					LOW	22125787	
4824	FLAT 4 51/3	WHEATLAND ROAD	MALVERN	Res.	41.83	41.64	41.5	41.17					LOW	22125795	
4824	FLAT 5 51/3	WHEATLAND ROAD	MALVERN	Res.	41.83	41.64	41.5	41.17					LOW	22125808	
4824	FLAT 6 51/3	WHEATLAND ROAD	MALVERN	Res.	41.83	41.64	41.5	41.17					LOW	22125816	
4824	FLAT 7 51/3	WHEATLAND ROAD	MALVERN	Res.	41.83	41.64	41.5	41.17					LOW	22125824	
4824	FLAT 8 51/3	WHEATLAND ROAD	MALVERN	Res.	41.83	41.64	41.5	41.17					LOW	22125832	
4824	FLAT 9 51/3	WHEATLAND ROAD	MALVERN	Res.	41.83	41.64	41.5	41.17					LOW	22125840	
4824	FLAT 10 51/3	WHEATLAND ROAD	MALVERN	Res.	41.83	41.64	41.5	41.17					LOW	22125859	
4824	FLAT 11 51/3	WHEATLAND ROAD	MALVERN	Res.	41.83	41.64	41.5	41.17					LOW	22125867	
4824	51/53	WHEATLAND ROAD	MALVERN	Res.	41.83	41.64	41.5	41.17					LOW	12899076	
4824	52	WHEATLAND ROAD	MALVERN	Res.	41.41	41.64	41.49	41.17	0.23	0.08		2	LOW	12899279	
4824	52A	WHEATLAND ROAD	MALVERN	Res.	41.44	41.64	41.49	41.17	0.2	0.05		2	LOW	12899287	
4824	54	WHEATLAND ROAD	MALVERN	Res.	41.78	41.64	41.49	41.16					LOW	12899260	
4824	55	WHEATLAND ROAD	MALVERN	Res.	41.67	41.64	41.49	41.17					LOW	12899084	
4824	56	WHEATLAND ROAD	MALVERN	Res.	41.97	41.64	41.49	41.16					LOW	12899252	
4824	57/57A	WHEATLAND ROAD	MALVERN	Res.	41.65	41.64	41.49	41.15					LOW	12899092	
4824	58	WHEATLAND ROAD	MALVERN	Res.		41.63	41.49	41.15					LOW	12899244	
4824	59	WHEATLAND ROAD	MALVERN	Res.	41.78	41.64	41.49	41.15					LOW	12899105	
4824	60	WHEATLAND ROAD	MALVERN	Res.	41.82	41.63	41.48	41.13					LOW	12899236	
4824	61	WHEATLAND ROAD	MALVERN	Res.	41.65	41.63	41.48	41.14					LOW	12899113	
4824	62	WHEATLAND ROAD	MALVERN	Res.	41.81	41.63	41.48	41.13					LOW	12899228	
4824	63	WHEATLAND ROAD	MALVERN	Res.	41.53	41.63	41.48	41.13	0.1			1	LOW	12899121	
4824	64	WHEATLAND ROAD	MALVERN	Res.	41.96	41.63	41.48	41.12					LOW	12899201	
4824	65	WHEATLAND ROAD	MALVERN	Res.	41.71	41.63	41.48	41.12					LOW	12899148	
4824	67	WHEATLAND ROAD	MALVERN	Res.	41.61	41.62	41.47	41.11	0.01			1	MEDIUM	12899156	
4824	10	YOUNG STREET	GLEN IRIS	Res.	30.53	30.9	30.8	30.7	0.37	0.27	0.17	3	LOW	12875891	
4824	11	YOUNG STREET	GLEN IRIS	Res.	30.43	29.55	29.35	29.17					LOW	12875795	
4824	12	YOUNG STREET	GLEN IRIS	Res.	30.37	30.9	30.8	30.7	0.53	0.43	0.33	3	LOW	24510195	
4824	13	YOUNG STREET	GLEN IRIS	Res.	30.43	29.55	29.35	29.17					LOW	12875787	
4824	15	YOUNG STREET	GLEN IRIS	Res.	29.86	29.55	29.35	29.17					LOW	12875779	
4824	14	YOUNG STREET	GLEN IRIS	Res.	30.34	30.4	30.05	29.9	0.06			1	LOW	12875920	
4824	17	YOUNG STREET	GLEN IRIS	Res.	29.21	29.55	29.35	29.17	0.34	0.14		2	LOW	12875760	
4824	18	YOUNG STREET	GLEN IRIS	Res.		29.55	29.35	29.17					LOW	12875939	
4824	19	YOUNG STREET	GLEN IRIS	Res.	29.29	29.55	29.35	29.17	0.26	0.06		2	LOW	12875752	
4824	20	YOUNG STREET	GLEN IRIS	Res.		29.55	29.35	29.17					LOW	12875947	
4824	21	YOUNG STREET	GLEN IRIS	Res.	29.58	29.95	29.35	29.17	0.37			1	LOW	12875744	

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Rix Street MD															
4825	5	BRISTOL COURT	GLEN IRIS	Res.		22.2	22.16	22.09					LOW	11552521	
4825	465	BURKE ROAD	CAMBERWELL	Comm.	29.39	29.41	29.38	29.35	0.02			1	LOW	11540731	
4825	467	BURKE ROAD	CAMBERWELL	Comm.	29.35	29.41	29.38	29.35	0.06	0.03		1	LOW	11540723	
4825	469	BURKE ROAD	CAMBERWELL	Comm.	29.29	29.41	29.38	29.35	0.12	0.09	0.06	3	LOW	11540715	
4825	471	BURKE ROAD	CAMBERWELL	Comm.	29.32	29.41	29.38	29.35	0.09	0.06	0.03	3	LOW	11540707	
4825	473	BURKE ROAD	CAMBERWELL	Comm.	29.15	29.41	29.38	29.35	0.26	0.23	0.2	3	LOW	11540694	
4825	475	BURKE ROAD	CAMBERWELL	Comm.	29.05	29.41	29.38	29.35	0.36	0.33	0.3	3	LOW	11540686	
4825	477	BURKE ROAD	CAMBERWELL	Comm.	29	29.41	29.38	29.35	0.41	0.38	0.35	3	LOW	11540678	
4825	479	BURKE ROAD	CAMBERWELL	Comm.	29.16	29.41	29.38	29.35	0.25	0.22	0.19	3	LOW	11540651	
4825	483	BURKE ROAD	CAMBERWELL	Comm.	29.11	29.41	29.38	29.35	0.3	0.27	0.24	3	LOW	11540635	
4825	1	FAIRCROFT AVENUE	GLEN IRIS	Res.	12.93	12.62	12.59	12.59					LOW	11552935	
4825	1A	FAIRCROFT AVENUE	GLEN IRIS	Res.	12.93	12.62	12.59	12.59					LOW	11552927	
4825	2	FAIRCROFT AVENUE	GLEN IRIS	Res.	11.85	11.48	11.42	11.34					LOW	11552556	
4825	2A	FAIRCROFT AVENUE	GLEN IRIS	Res.		11.45	11.39	11.31					LOW	11552548	
4825	3	FAIRCROFT AVENUE	GLEN IRIS	Res.	12.76	12.88	12.84	12.76	0.12	0.08		2	MEDIUM	11552919	
4825	4	FAIRCROFT AVENUE	GLEN IRIS	Res.	11.86	11.48	11.42	11.34					LOW	11552564	
4825	5	FAIRCROFT AVENUE	GLEN IRIS	Res.	12.76	12.88	12.84	12.76	0.12	0.08		2	MEDIUM	11552900	
4825	7	FAIRCROFT AVENUE	GLEN IRIS	Res.		13.18	13.15	13.15					LOW	11552898	
4825	1	GROSVENOR ROAD	GLEN IRIS	Res.		22.2	22.16	22.09					LOW	11552054	
4825	10	GROSVENOR ROAD	GLEN IRIS	Res.	20.51	20.98	20.94	20.87	0.47	0.43	0.36	3	MEDIUM	11552118	
4825	12	GROSVENOR ROAD	GLEN IRIS	Res.	20.14	20.76	20.72	20.65	0.62	0.58	0.51	3	MEDIUM	11552126	
4825	14	GROSVENOR ROAD	GLEN IRIS	Res.		20.76	20.72	20.65					LOW	11552134	
4825	2	GROSVENOR ROAD	GLEN IRIS	Res.	22.75	22.2	22.16	22.09					LOW	11552062	
4825	3	GROSVENOR ROAD	GLEN IRIS	Res.		22.08	22.03	21.95					LOW	11552046	
4825	4	GROSVENOR ROAD	GLEN IRIS	Res.	22.37	22.08	22.03	21.95					LOW	11552070	
4825	5	GROSVENOR ROAD	GLEN IRIS	Res.		21.55	21.51	21.44					LOW	11552038	
4825	6	GROSVENOR ROAD	GLEN IRIS	Res.	21.54	21.55	21.51	21.44	0.01			1	LOW	11552089	
4825	8	GROSVENOR ROAD	GLEN IRIS	Res.	21.02	21.1	21.05	21	0.08	0.03		2	LOW	11552097	
4825	4	HADLEY COURT	GLEN IRIS	Res.	21.45	21.75	21.62	21.45	0.3	0.17		2	LOW	11551940	
4825	5	HADLEY COURT	GLEN IRIS	Res.	20.65	20.82	20.7	20.54	0.17	0.05		2	LOW	11551959	
4825	6	HADLEY COURT	GLEN IRIS	Res.	18.93	18.95	18.8	18.7	0.02			1	LOW	11551967	
4825	7	HADLEY COURT	GLEN IRIS	Res.	18.29	18.14	18.08	18.01					LOW	11551975	
4825	8	HADLEY COURT	GLEN IRIS	Res.	17.35	17.59	17.54	17.49	0.24	0.19	0.14	3	MEDIUM	11551983	
4825	9	HADLEY COURT	GLEN IRIS	Res.	16.49	16.9	16.85	16.8	0.41	0.36	0.31	3	MEDIUM	11551991	
4825	17	PARKIN STREET	GLEN IRIS	Res.	14.34	15.02	14.94	14.75	0.68	0.6	0.41	3	MEDIUM	11552388	
4825	19	PARKIN STREET	GLEN IRIS	Res.	14.03	14.1	14.02	13.87	0.07			1	LOW	11552361	
4825	21	PARKIN STREET	GLEN IRIS	Res.	13.18	13.4	13.37	13.37	0.22	0.19	0.19	3	LOW	11552353	
4825	23	PARKIN STREET	GLEN IRIS	Res.	10.72	11.05	10.98	10.86	0.33	0.26	0.14	3	MEDIUM	11552345	
4825	26	PARKIN STREET	GLEN IRIS	Res.	11.38	11.43	11.37	11.29	0.05			1	LOW	11552302	
4825	28	PARKIN STREET	GLEN IRIS	Res.	10.97	11.15	11.08	10.96	0.18	0.11		2	LOW	11552310	
4825	30	PARKIN STREET	GLEN IRIS	Res.	10.97	10.86	10.76	10.7					LOW	11552329	

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4825	1	RIX STREET	GLEN IRIS	Res.		16.18	16.11	15.99					LOW	11551676	
4825	11	RIX STREET	GLEN IRIS	Res.	17.75	16.4	16.35	16.23					LOW	11551713	
4825	FLATS 15	RIX STREET	GLEN IRIS	Res.	18.37	18.5	18.4	18.3	0.13	0.03		2	LOW	11551748	
4825	19	RIX STREET	GLEN IRIS	Res.	19.59	19.66	19.62	19.55	0.07	0.03		2	LOW	11551799	
4825	2	RIX STREET	GLEN IRIS	Res.	14.53	15.02	14.94	14.75	0.49	0.41	0.22	3	MEDIUM	11551668	
4825	2A	RIX STREET	GLEN IRIS	Res.	14.49	15.02	14.94	14.75	0.53	0.45	0.26	3	MEDIUM	11551801	
4825	21	RIX STREET	GLEN IRIS	Res.	20.6	20.76	20.72	20.65	0.16	0.12	0.05	3	LOW	11551641	
4825	3	RIX STREET	GLEN IRIS	Res.		16.4	16.35	16.23					LOW	11551684	
4825	5	RIX STREET	GLEN IRIS	Res.	17.16	16.4	16.35	16.23					LOW	11551692	
4825	7	RIX STREET	GLEN IRIS	Res.	16.41	16.4	16.35	16.23					LOW	11551705	
4825	UNITS 858	TOORAK ROAD	HAWTHORN EAST	Res.		21.72	21.6	21.44					LOW	11554033	
4825	860	TOORAK ROAD	HAWTHORN EAST	Res.	22.94	22.7	22.5	22.3					LOW	11554041	
4825	862	TOORAK ROAD	HAWTHORN EAST	Res.	23.03	22.8	22.6	22.4					MEDIUM	11554068	
4825	864	TOORAK ROAD	HAWTHORN EAST	Res.	22.8	22.9	22.75	22.5	0.1			1	MEDIUM	11554076	
4825	FLATS 866	TOORAK ROAD	HAWTHORN EAST	Res.		24.1	24.06	23.01					LOW	11554084	
4825	868	TOORAK ROAD	HAWTHORN EAST	Res.	24	24	23.8	23.65					LOW	11554164	
4825	870	TOORAK ROAD	HAWTHORN EAST	Res.		25	24.94	24.94					LOW	11554172	
4825	872	TOORAK ROAD	HAWTHORN EAST	Res.		25.1	25.04	25.04					LOW	11554180	
4825	874	TOORAK ROAD	HAWTHORN EAST	Res.		25.62	25.56	25.56					LOW	11554199	
4825	876	TOORAK ROAD	HAWTHORN EAST	Res.		26.2	26.05	26.13					LOW	11554201	
4825	878	TOORAK ROAD	HAWTHORN EAST	Res.	26.44	26.6	26.45	26.3	0.16	0.01		2	LOW	11554228	
Hedgeley Dene MD															
4841	31	ALLENBY AVENUE	MALVERN EAST	Res.	21.1	20.16	19.97	19.77	OK				HIGH	12927057	
4841	33	ALLENBY AVENUE	MALVERN EAST	Res.	19.92	20.16	19.97	19.77	0.24	0.05		2	HIGH	12927065	
4841	35	ALLENBY AVENUE	MALVERN EAST	Res.	19.4	20.16	19.97	19.77	0.76	0.57	0.37	3	HIGH	12927073	
4841	37	ALLENBY AVENUE	MALVERN EAST	Res.	19.4	20.16	19.97	19.77	0.76	0.57	0.37	3	HIGH	12927081	
4841	21	BRUNEL STREET	MALVERN EAST	Res.	35.33	35.14	35	34.79					HIGH	12930301	
4841	FLATS 22	BRUNEL STREET	MALVERN EAST	Res.	36.41	35.49	35.42	35.3					MEDIUM	12931339	
4841	23	BRUNEL STREET	MALVERN EAST	Res.	34.87	35.14	35	34.79	0.27	0.13		2	HIGH	12930336	
4841	24	BRUNEL STREET	MALVERN EAST	Res.	35.09	35.49	35.42	35.3	0.4	0.33	0.21	3	MEDIUM	12931320	
4841	25	BRUNEL STREET	MALVERN EAST	Res.	34.63	35.14	35	34.79	0.51	0.37	0.16	3	HIGH	12930344	
4841	26	BRUNEL STREET	MALVERN EAST	Res.	35.46	35.49	35.42	35.3	0.03			1	MEDIUM	12931312	
4841	27	BRUNEL STREET	MALVERN EAST	Res.	35.06	35.14	35	34.79	0.08			1	HIGH	12930352	
4841	29	BRUNEL STREET	MALVERN EAST	Res.	35.87	35.04	34.9	34.69					HIGH	12930360	
4841	12	FERNCROFT AVENUE	MALVERN EAST	Res.	23.42	24.54	24.49	24.42	1.12	1.07	1	3	LOW	12925617	
4841	14	FERNCROFT AVENUE	MALVERN EAST	Res.	24.08	24.54	24.49	24.42	0.46	0.41	0.34	3	LOW	12925609	
4841	17	FERNCROFT AVENUE	MALVERN EAST	Res.	26.44	26.37	26.3	26.19					MEDIUM	12925203	
4841	20	GRANT STREET	MALVERN EAST	Res.	40.01	40.41	40.34	40.21	0.4	0.33	0.2	3	MEDIUM		
4841	22	KARDELLA STREET	MALVERN EAST	Res.	35.63	34.79	34.67	34.43					HIGH	12923662	
4841	24	KARDELLA STREET	MALVERN EAST	Res.	34.71	34.75	34.63	34.39	0.04			1	HIGH	12923654	
4841	1774-1776	MALVERN ROAD	MALVERN EAST	Res.	24.18	23.62	23.54	23.4					HIGH	12802895	

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4841	1869	MALVERN ROAD	MALVERN EAST	Res.	21.8	22.1	22.01	21.81	0.3	0.21	0.01	3	LOW	12800881	
4841	1871	MALVERN ROAD	MALVERN EAST	Res.		22.1	22.01	21.81					LOW	12800902	
4841	1873	MALVERN ROAD	MALVERN EAST	Res.		22.1	22.01	21.81					LOW	12800910	
4841	67	MANNING ROAD	MALVERN EAST	Res.	42.34	41.62	41.53	41.4					LOW	12914395	
4841	69	MANNING ROAD	MALVERN EAST	Res.	41.69	41.62	41.53	41.4					LOW	12914387	
4841	71	MANNING ROAD	MALVERN EAST	Res.		41.62	41.53	41.4					LOW	12914379	
4841	15	PAXTON STREET	MALVERN EAST	Res.	37.45	36.71	36.65	36.55					MEDIUM	12932964	
4841	17	PAXTON STREET	MALVERN EAST	Res.	36.61	36.71	36.65	36.55	0.1	0.04		2	MEDIUM	12932972	
4841	18	PAXTON STREET	MALVERN EAST	Res.	37.26	37.2	37.09	36.96					MEDIUM	12934484	
4841	20	PAXTON STREET	MALVERN EAST	Res.	37.83	37.3	37.19	37.06					MEDIUM	12934476	
4841	8	STEELE STREET	EAST MALVERN	Res.	35.83	35.93	35.82	35.7	0.1			1	MEDIUM	12935663	
4841	43	TENNYSON STREET	MALVERN EAST	Res.	40.98	41.28	41.23	41.14	0.3	0.25	0.16	3	LOW	12936332	
4841	45	TENNYSON STREET	MALVERN EAST	Res.	40.85	40.95	40.9	40.81	0.1	0.05		2	MEDIUM	12936324	
4841	47	TENNYSON STREET	MALVERN EAST	Res.	40.95	40.8	40.65	40.56					MEDIUM	12936316	
4841	49	TENNYSON STREET	MALVERN EAST	Res.	40.92	40.61	40.54	40.41					MEDIUM	12936308	
4841	FLATS 1	WILTON VALE CRESCENT	MALVERN EAST	Res.		21.9	21.81	21.61					LOW	12927313	
Darling Road MD															
4842	23	CLYNDEN AVENUE	MALVERN EAST	Res.	26.35	26.8	26.77		0.45	0.42		2	LOW	12928455	
4842	UNIT 25	CLYNDEN AVENUE	MALVERN EAST	Res.	26.22	26.8	26.77		0.58	0.55		2	LOW	36361772	
4842	27	CLYNDEN AVENUE	MALVERN EAST	Res.		26.45	26.42						LOW	12928463	
4842	136	DARLING ROAD	MALVERN EAST	Res.		31.38	31.32						LOW	12945554	
4842	138	DARLING ROAD	MALVERN EAST	Res.		31.11	31.04						LOW	12945562	
4842	140	DARLING ROAD	MALVERN EAST	Res.	30.88	30.84	30.77						LOW	12945570	
	142	DARLING ROAD	MALVERN EAST	Res.	30.8	30.5	30.4						LOW		
	144	DARLING ROAD	MALVERN EAST	Res.	30.52	30.41	30.34						LOW		
4842	146	DARLING ROAD	MALVERN EAST	Res.		30.41	30.34						LOW	12945589	
4842	148	DARLING ROAD	MALVERN EAST	Res.	30.42	30.2	30.13						LOW	12945597	
4842	160	DARLING ROAD	MALVERN EAST	Res.		29.4	29.34						LOW	12945669	
4842	169	DARLING ROAD	MALVERN EAST	Res.		30.07	30.01						LOW	12943604	
4842	171	DARLING ROAD	MALVERN EAST	Res.		29.85	29.77						LOW	12943591	
4842	173	DARLING ROAD	MALVERN EAST	Res.		29.72	29.66						LOW	12943583	
4842	175	DARLING ROAD	MALVERN EAST	Res.		29.6	29.54						LOW	12943575	
4842	177/79	DARLING ROAD	MALVERN EAST	Res.		29.5	29.45						LOW	12943567	
4842	189	DARLING ROAD	MALVERN EAST	Res.		29.8	28.86						LOW	12943516	
4842	209	DARLING ROAD	MALVERN EAST	Res.	28.23	28.35	28.35		0.12	0.12		2	LOW	12943444	
4842	11	ILLOWA STREET	MALVERN EAST	Res.		27.32	27.28						LOW	12927719	
4842	7	ILLOWA STREET	MALVERN EAST	Res.	27.29	27.53	27.48		0.24	0.19		2	LOW	12927698	
4842	9	ILLOWA STREET	MALVERN EAST	Res.	27.27	27.43	27.39		0.16	0.12		2	LOW	12927700	
4842	1846	MALVERN ROAD	MALVERN EAST	Comm.		28.7	28.65						LOW	12802545	
4842	1852/8	MALVERN ROAD	MALVERN EAST	Comm.		29.05	29						LOW	12802537	
4842	1919-1921	MALVERN ROAD	MALVERN EAST	Comm.		27.9	27.85						MEDIUM	12801120	

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4842	1923	MALVERN ROAD	MALVERN EAST	Comm.		27.4	27.3						LOW	12801139	
4842	1927	MALVERN ROAD	MALVERN EAST	Comm.		27.98	27.93						LOW	12801147	
4842	1929A	MALVERN ROAD	MALVERN EAST	Comm.		28.05	28						LOW	12801155	
4842	1931/3	MALVERN ROAD	MALVERN EAST	Comm.		28.15	28.1						LOW	12801163	
4842	1935	MALVERN ROAD	MALVERN EAST	Comm.		28.3	28.28						LOW	12801171	
4842	1939-1941	MALVERN ROAD	MALVERN	Comm.		28.35	28.35						LOW	28142270	
Dunlop Street MD															
	37	ALBION ROAD	GLEN IRIS	Res	23.53	22.82	22.74	22.64					HIGH		
	39	ALBION ROAD	GLEN IRIS	Res	23.34	22.86	22.81	22.71					HIGH		
4843	40	ALBION ROAD	GLEN IRIS	Res	23.17	22.54	22.47	22.34					HIGH	13465165	
4843	41	ALBION ROAD	GLEN IRIS	Res	23.17	23	22.95	22.83					HIGH	13465915	
4843	42	ALBION ROAD	GLEN IRIS	Res	23.32	22.96	22.91	22.81					HIGH	13465173	
4843	43	ALBION ROAD	GLEN IRIS	Res	23.41	23.12	23.03	22.88					HIGH	13465923	
4843	44	ALBION ROAD	GLEN IRIS	Res	23.5	23.08	22.99	22.84					HIGH	13465181	
4843	45	ALBION ROAD	GLEN IRIS	Res	23.51	23.17	23.08	22.95					HIGH	13465931	
4843	46	ALBION ROAD	GLEN IRIS	Res	23.11	23.14	23.05	22.93	0.03			1	HIGH	13465202	
4843	47	ALBION ROAD	GLEN IRIS	Res	23.53	23.22	23.15	23.06					MEDIUM	13465958	
4843	48	ALBION ROAD	GLEN IRIS	Res	23.21	23.16	23.07	22.93					HIGH	13465210	
4843	49	ALBION ROAD	GLEN IRIS	Res	23.73	23.29	23.23	23.13					MEDIUM	13465966	
4843	50	ALBION ROAD	GLEN IRIS	Res	23.19	23.2	23.14	23.01	0.01			1	MEDIUM	13465229	
4843	51	ALBION ROAD	GLEN IRIS	Res	23.63	23.66	23.56	23.39	0.03			1	HIGH	13465974	
4843	52	ALBION ROAD	GLEN IRIS	Res	23.46	23.29	23.2	23.1					MEDIUM	13465237	
4843	53	ALBION ROAD	GLEN IRIS	Res	23.83	24.13	24	23.79	0.3	0.17		2	HIGH	13465982	
4843	54	ALBION ROAD	GLEN IRIS	Res	23.54	23.66	23.56	23.39	0.12	0.02		2	HIGH	13465245	
4843	55	ALBION ROAD	ASHBURTON	Res	23.91	24.13	24	23.79	0.22	0.09		2	HIGH	13465990	
4843	56	ALBION ROAD	GLEN IRIS	Res	23.55	23.69	23.59	23.42	0.14	0.04		2	HIGH	13465253	
4843	57	ALBION ROAD	ASHBURTON	Res	24.05	24.13	24	23.79	0.08			1	HIGH	13466002	
4843	59	ALBION ROAD	ASHBURTON	Res	24.17	24.11	24.01	23.85					HIGH	13466010	
4843	61	ALBION ROAD	ASHBURTON	Res	24.53	24.11	24.01	23.85					HIGH	13466029	
4843	63	ALBION ROAD	ASHBURTON	Res	24.85	24.11	24.01	23.85					HIGH	13466037	
4843	1	DENT STREET	ASHBURTON	Res	24.15	24.11	24.01	23.85					MEDIUM	13698401	
4843	2	DENT STREET	GLEN IRIS	Res	23.94	24.13	24	23.79	0.19	0.06		2	HIGH	13697900	
4843	3	DENT STREET	GLEN IRIS	Res	24.29	24.09	24.02	23.91					MEDIUM	13698428	
4843	4	DENT STREET	GLEN IRIS	Res	24.11	24.13	24	23.79	0.02			1	HIGH	13697919	
4843	5	DENT STREET	GLEN IRIS	Res	24.64	24.42	24.35	24.23					LOW	13698436	
4843	6	DENT STREET	GLEN IRIS	Res	24.39	24.11	24.01	23.85					MEDIUM	13697927	
4843	7	DENT STREET	GLEN IRIS	Res		24.52	24.45	24.33					LOW	13698444	
4843	8	DENT STREET	GLEN IRIS	Res	24.72	24.15	24.08	23.99					MEDIUM	13697935	
4843	9	DENT STREET	GLEN IRIS	Res		24.77	24.7	24.54					LOW	13698452	
4843	10	DENT STREET	GLEN IRIS	Res	25.09	24.35	24.3	24.18					LOW	13697943	
4843	12	DENT STREET	GLEN IRIS	Res	25.28	24.45	24.4	24.28					LOW	13697951	

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4843	1	DUNLOP STREET	ASHBURTON	Res	23.86	24.1	23.96	23.75	0.24	0.1		2	HIGH	13469756	
4843	2	DUNLOP STREET	ASHBURTON	Res	24.09	23.6	23.56	23.46					MEDIUM	13469617	
4843	3	DUNLOP STREET	ASHBURTON	Res	24.28	23.96	23.86	23.69					HIGH	13469764	
4843	2	FRANCIS CRES	GLEN IRIS	Res	23.16	22.9	22.85	22.75					HIGH	13469166	
4843	4	FRANCIS CRES	GLEN IRIS	Res	23.22	22.79	22.71	22.61					HIGH	13469174	
4843	6	FRANCIS CRES	GLEN IRIS	Res		22.54	22.47	22.34					HIGH	13469182	
4843	8	FRANCIS CRES	GLEN IRIS	Res	22.86	22.38	22.31	22.08					HIGH	13469190	
4843	10	FRANCIS CRES	GLEN IRIS	Res		22.22	22.15	22.02					HIGH	13469203	
4843	12	FRANCIS CRES	GLEN IRIS	Res	22.59	22.07	22	21.87					HIGH	13469211	
4843	14	FRANCIS CRES	GLEN IRIS	Res	21.31	21.92	21.84	21.72	0.61	0.53	0.41	3	HIGH	13469238	
4843	16	FRANCIS CRES	GLEN IRIS	Res	22.35	21.77	21.69	21.57					HIGH	13469246	
4843	18	FRANCIS CRES	GLEN IRIS	Res	22.27	21.61	21.52	21.39					HIGH	13469254	
4843	20	FRANCIS CRES	GLEN IRIS	Res	22.19	21.25	21.15	21.02					HIGH	13469262	
4843	22	FRANCIS CRES	GLEN IRIS	Res	21.83	21.1	21	20.9					HIGH	13469270	
4843	24	FRANCIS CRES	GLEN IRIS	Res	22.31	21.03	20.94	20.8					HIGH	13469289	

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