DRAINS POST-DEVELOPMENT MODEL INPUT DETAILS

PIT / NODE DETAILS			Version 9								
Name	Type	Family	Size	Ponding Volume (cu.m)	Pressure Change Coeff. Ku	Surface Elev (m)	Max Pond Depth (m)	Base Inflow (cu.m/s)	Blocking Factor	x	y
C1 -pd	Node					10		0		61.309	13.604
C3 -pd	Node					10		0		200.592	10.954
C4 -pd	Node							0		273.62	43.051
C2 -pd	Node					10		0		135.514	10.954

DETENTION BASIN DETAILS											
Name	Elev	Surf. Area	Init Vol. (cu.m)	Outlet Type	K	Dia(mm)	Centre RL	Pit Family	Pit Type	x	y
C1 Basin	10	0	0	Culvert	0.5					60.671	42.413
	10.6	210									
C3 Basin	10	0	0	Culvert	0.5					200.297	40.695
	10.6	1490									
C2 Basin	10	0	0	Culvert	0.5					134.213	43.803
	10.85	560									

SUB-CATCHMENT DETAILS											
Name	Pit or Node	Total Area (ha)	Paved Area %	Grass Area %	Supp Area %	Paved Time (min)	Grass Time (min)	Supp Time (min)	Paved Length (m)	Grass Length (m)	Supp Length (m)
C1 - post-dev	C1 Basin	0.647	79	21	0	5	10	0			
C3 - post-dev	C3 Basin	2.954	79	21	0	5	10	0			
C4 - post-dev	C4 -pd	0.352	0	100	0	0	5.33	0			
C2-post-dev	C2 Basin	2.597	81	19	0	5	10	0			

PIPE DETAILS											
Name	From	To	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Type	Dia (mm)	I.D. (mm)	Rough	Pipe Is
Pipe1	C1 Basin	C1 -pd	10	10	9.5	5	Concrete, not under roads	225	225	0.3	NewFixed
Pipe 3	C3 Basin	C3 -pd	10	10	9.5	5	Concrete, not under roads	450	450	0.3	NewFixed
Pipe 2	C2 Basin	C2 -pd	10	10	9.5	5	Concrete, not under roads	450	450	0.3	NewFixed

DETAILS of SERVICES CROSSING PIPES										
Pipe	Chg (m)	Bottom Elev (m)	Height of Servic (m)	Chg (m)	Bottom Elev (m)	Height of (m)	Chg (m)	Bottom Elev (m)	Height of (m)	etc

CHANNEL DETAILS											
Name	From	To	Type	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Base Widt (m)	L.B. Slope (1:?)	R.B. Slope (1:?)	Manning n

OVERFLOW ROUTE DETAILS											
Name	From	To	Travel Time (min)	Spill Level (m)	Crest Length (m)	Weir Coeff. C	Cross Section	Safe Dept Major Sto (m)	SafeDepth Minor Sto (m)	Safe DxV (sq.m/sec	Bed Slope (%)
OF-1	C1 Basin	C1 -pd	1	10.6	5	1.7	Grassed swale with 1:4 sideslopes	0.5	0.4	1	5
OF-3	C3 Basin	C3 -pd	1	10.6	5	1.7	Grassed swale with 1:4 sideslopes	0.5	0.4	1	5
OF-2	C2 Basin	C2 -pd	1	10.85	5	1.7	Grassed swale with 1:4 sideslopes	0.5	0.4	1	5

DRAINS RESULTS FOR 1 IN 100 YR ARI STORM (POST-DEVELOPMENT)

DRAINS results prepared 22 June, 2009 from Version 2008.07

PIT / NODE DETAILS				Version 8			
Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboarc (m)	Overflow (cu.m/s)	Constraint
C1 -pd	9.62		0				
C3 -pd	9.68		0				
C2 -pd	9.7		0				

SUB-CATCHMENT DETAILS							
Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Sto
C1 - post-dev	0.487	0.4	0.087	5	10	0	AR&R 100
C3 - post-dev	2.224	1.826	0.398	5	10	0	AR&R 100
C4 - post-dev	0.258	0	0.258	0	5.33	0	AR&R 100
C2-post-dev	1.963	1.646	0.316	5	10	0	AR&R 100

Outflow Volumes for Total Catchment (4.95 impervious + 1.60 pervious = 6.55 total ha)

Storm	Total Rainfa cu.m	Total Runoff cu.m (Runoff %)	Impervious Runoff cu.m (Runoff %)	Pervious Runoff cu.m (Runoff %)
AR&R 100 year, 15 minutes storm, average 200 mm/h, Zone 1	3275	3070.63 (93.8%)	2424.70 (98.0%)	645.93 (80.7%)
AR&R 100 year, 20 minutes storm, average 177 mm/h, Zone 1	3864.5	3643.84 (94.3%)	2870.05 (98.3%)	773.79 (81.9%)
AR&R 100 year, 25 minutes storm, average 161 mm/h, Zone 1	4393.96	4156.20 (94.6%)	3270.04 (98.5%)	886.16 (82.5%)
AR&R 100 year, 30 minutes storm, average 148 mm/h, Zone 1	4847	4593.40 (94.8%)	3612.30 (98.6%)	981.10 (82.8%)

PIPE DETAILS						
Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm	
Pipe1	0.405	3.3	10.116	9.616	AR&R 100 year, 25 minutes stor	
Pipe 3	1.818	4.4	10.179	9.679	AR&R 100 year, 25 minutes stor	
Pipe 2	1.607	4.7	10.2	9.7	AR&R 100 year, 25 minutes stor	

CHANNEL DETAILS						
Name	Max Q (cu.m/s)	Max V (m/s)	Chainage (m)	Max HGL (m)	Due to Storm	

OVERFLOW ROUTE DETAILS							
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Widt	Max V
OF-1	0	0	1.262	0	0	0	0
OF-3	0	0	1.262	0	0	0	0
OF-2	0	0	1.262	0	0	0	0

DETENTION BASIN DETAILS						
Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level	
C1 Basin	10.54	35.3	0.405	0.405	0	
C3 Basin	10.59	303.2	1.818	1.818	0	
C2 Basin	10.82	163.3	1.607	1.607	0	

CONTINUITY CHECK for AR&R 100 year, 25 minutes storm, average 161 mm/h, Zone 1

Node	Inflow (cu.m)	Outflow (cu.m)	Storage Change (cu.m)	Difference %
C1 Basin	412.83	412.82	0	0
C1 -pd	412.82	412.82	0	0
C3 Basin	1884.84	1884.8	0.01	0
C3 -pd	1884.8	1884.8	0	0
C4 -pd	195.86	195.86	0	0
C2 Basin	1662.68	1662.65	0.01	0
C2 -pd	1662.65	1662.65	0	0

Run Log for P0601504JX03_V2.drn run at 10:16:03 on 22/6/2009

EXHIBIT 08J EASTERN CATCHMENTS (REPRODUCED FROM SHEET 9 OF 11 MARTENS & ASSOCIATES REPORT APPENDIX D).

REV.	DESCRIPTION	DATE	ISSUED
1.0	DRAFT	26.06.09	DMM

BAR SCALE

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DESIGNED: DMM | DATUM: NA
DRAWN/REVIEWED: BR | HORIZONTAL RATIO: NA
PAPER SIZE: A1/A3 | VERTICAL RATIO: NA

CLIENT/ PROJECT: HASTINGS COUNCIL

THIS PLAN MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED BY PRINCIPAL CERTIFYING AUTHORITY
All measurements in mm unless otherwise specified.

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TITLE: DRAINS MODEL
POST-DEVELOPMENT INPUTS AND 100YR OUTPUT

PROJECT MANAGER: DR D. MARTENS
DRAWING NUMBER: P0601504JD04-V1.TCW

SHEET 9 OF 11 SHEETS