Appendix D

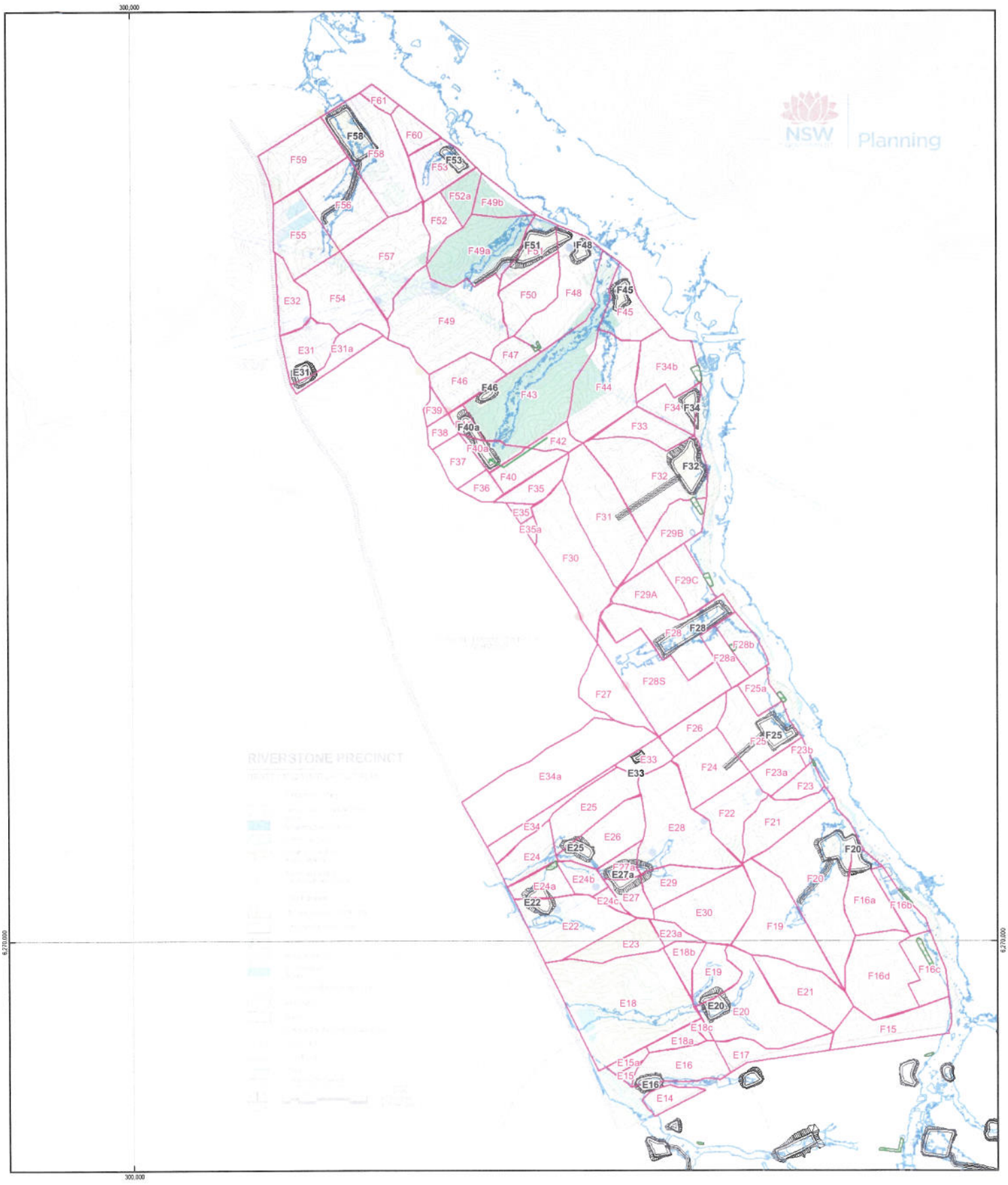
Detention Basin Hydrological Modelling

RAFTS Hydrological Model Catchment Plan – Riverstone

RAFTS Hydrological Model Catchment Plan – Alex Avenue

RAFTS Model Layouts

RAFTS Result Summary



Legend

- RAFTS Catchments
- Potential Raingarden Locations
- 100-year ARI Event Developed Flood Extents
- Existing 2m Contours

For Information

1:20,000

0 0.04 0.08 0.16 0.24 0.32 0.4

Kilometres (at A3)

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

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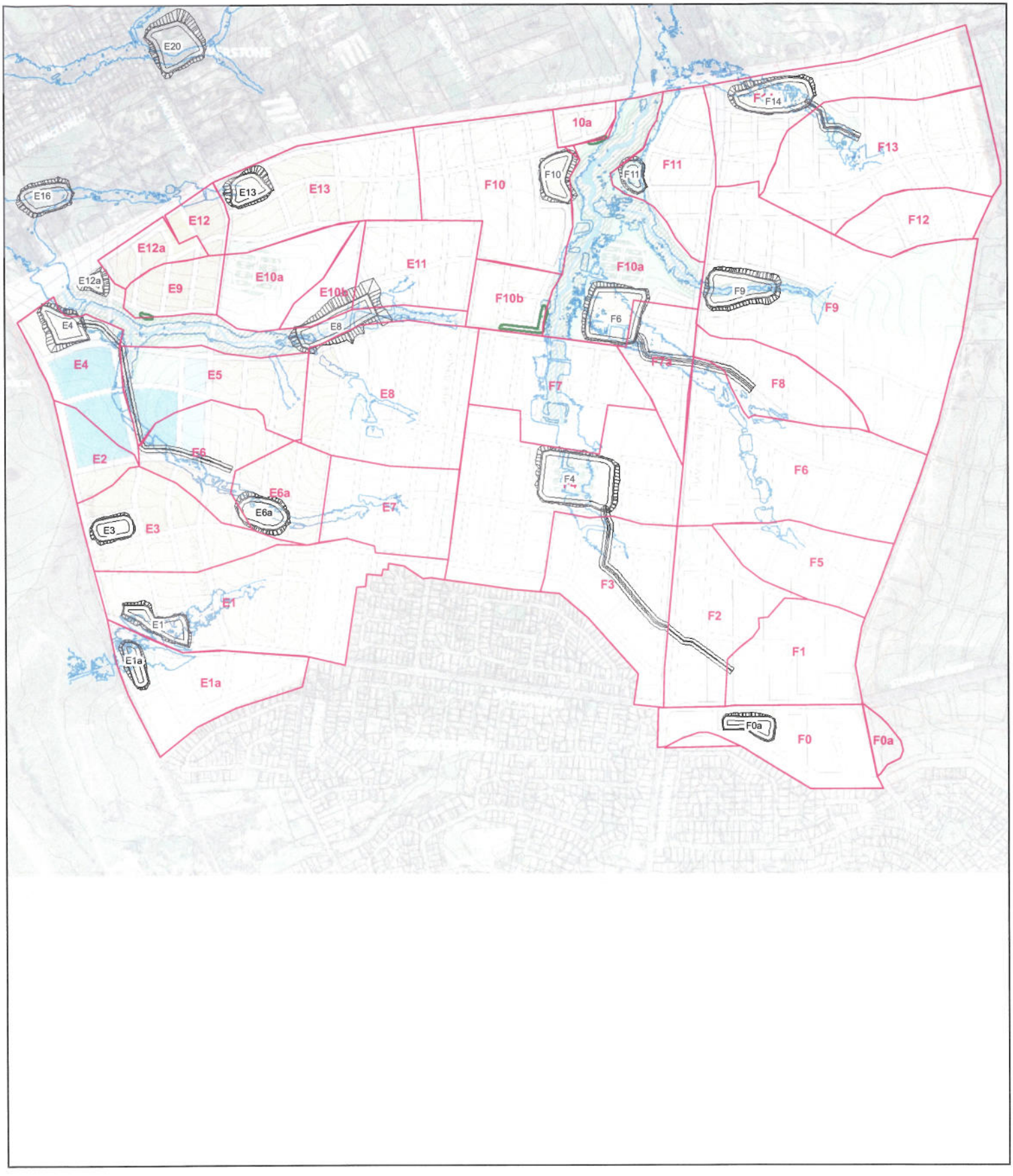
Riverstone Alex Avenue

Riverstone: RAFTS Catchments

Job Number	21-18423
Revision	C
Date	30th Nov 2009

Figure D1

10 Bond Street Sydney NSW 2000 Australia T 61 2 9239 7000 F 61 2 9239 7199 E sydmail@ghd.com.au W www.ghd.com.au



Legend

- RAFTS Catchments
- Potential Raingarden Locations
- 100-year ARI Event Developed Flood Extents
- Existing 2m Contours

For Information

1:10,000

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Kilometres (at A3)

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

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Riverstone Alex Avenue

Alex Ave: RAFTS Catchments

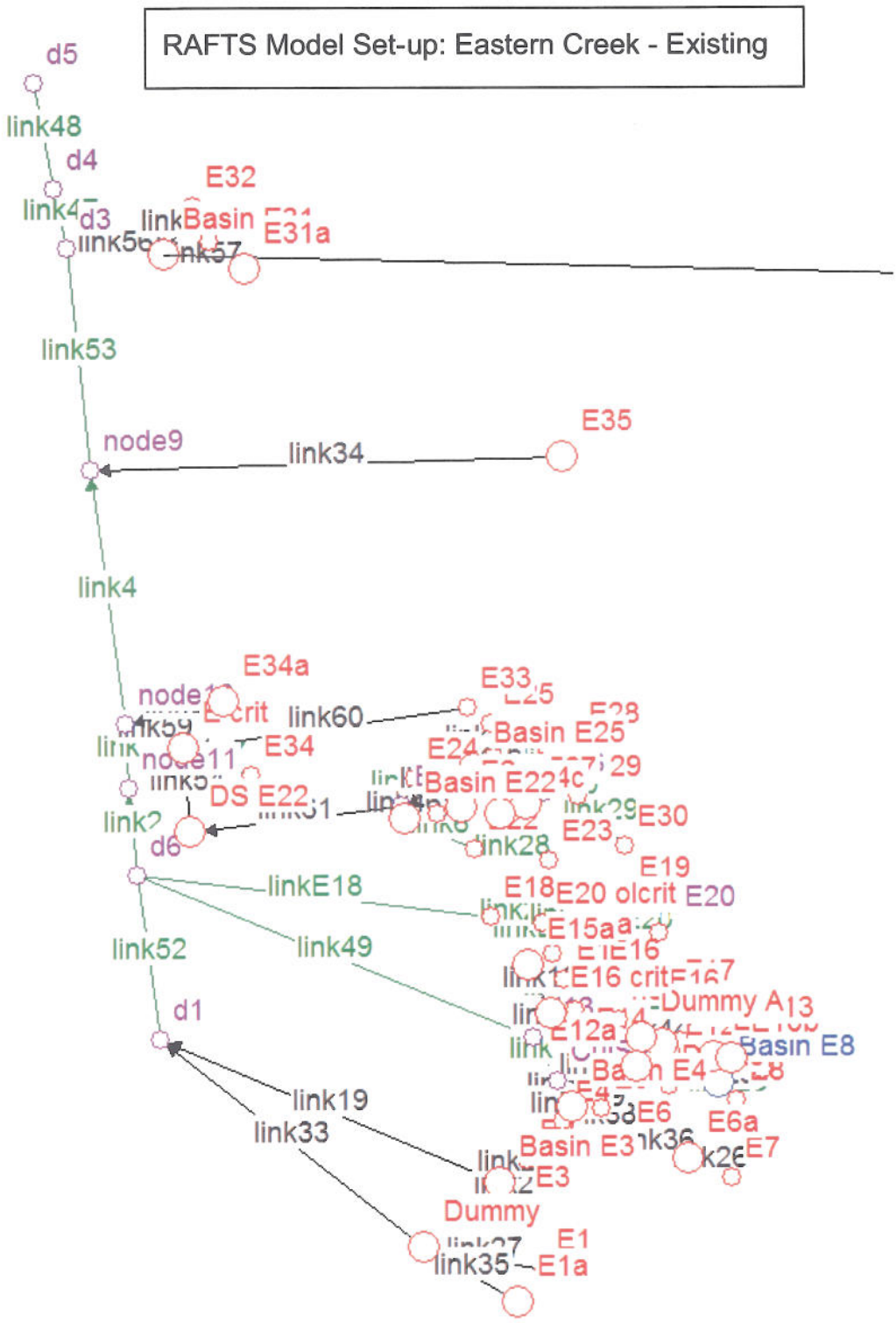
Job Number	21-18423
Revision	A
Date	30th Nov 2009

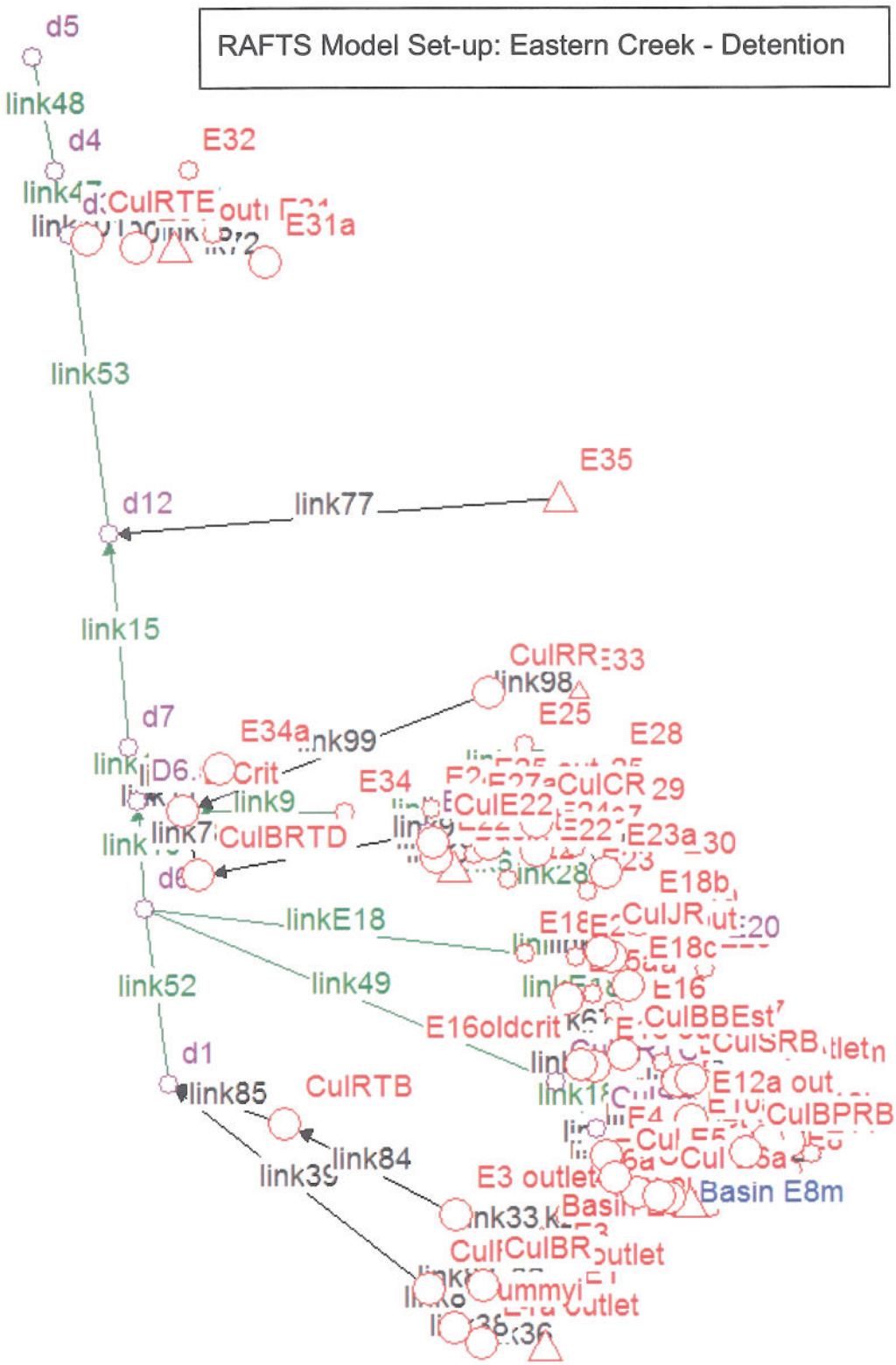
Figure D2

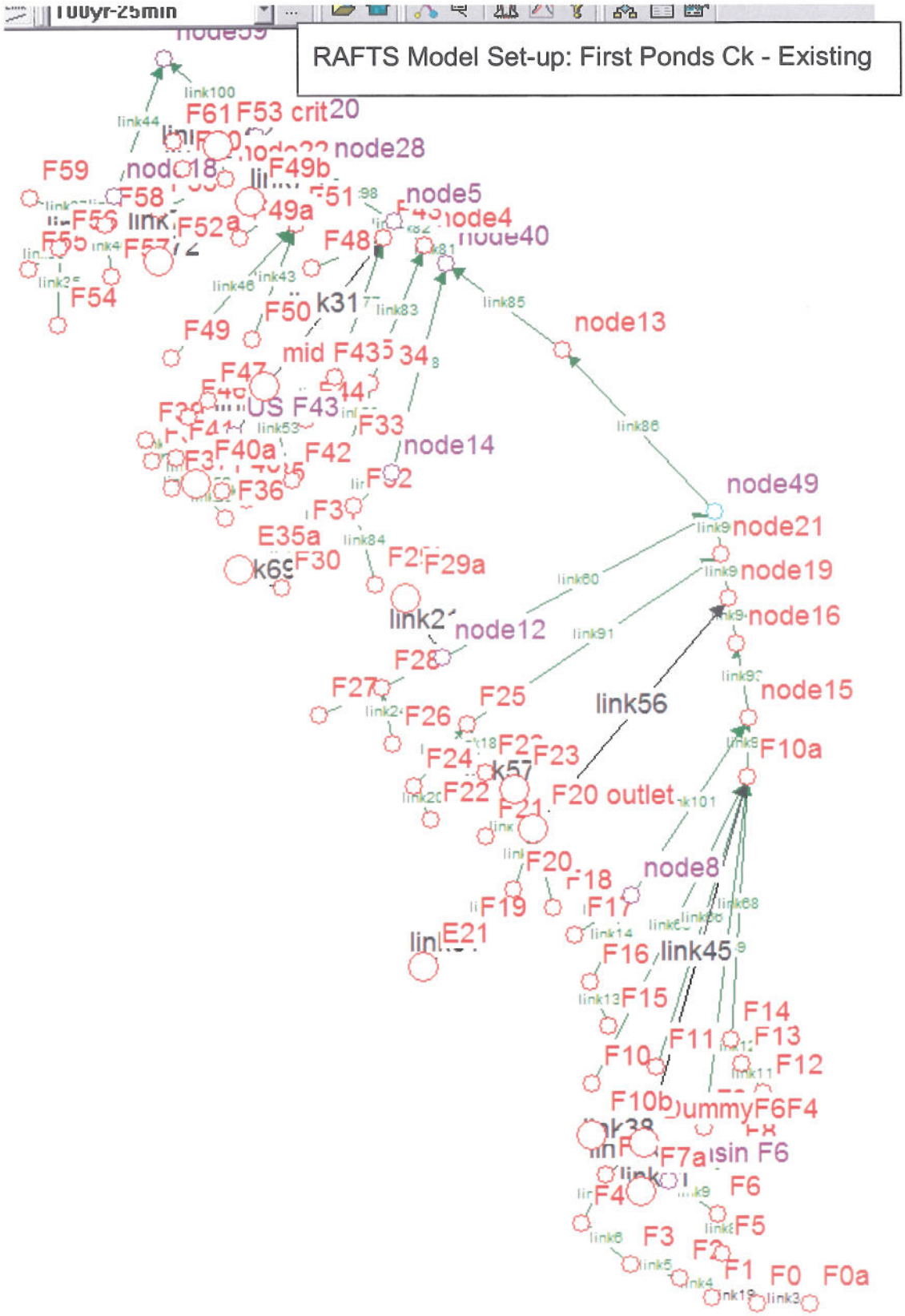
B:\Template\GHD-A3-PORTRAIT.mxt

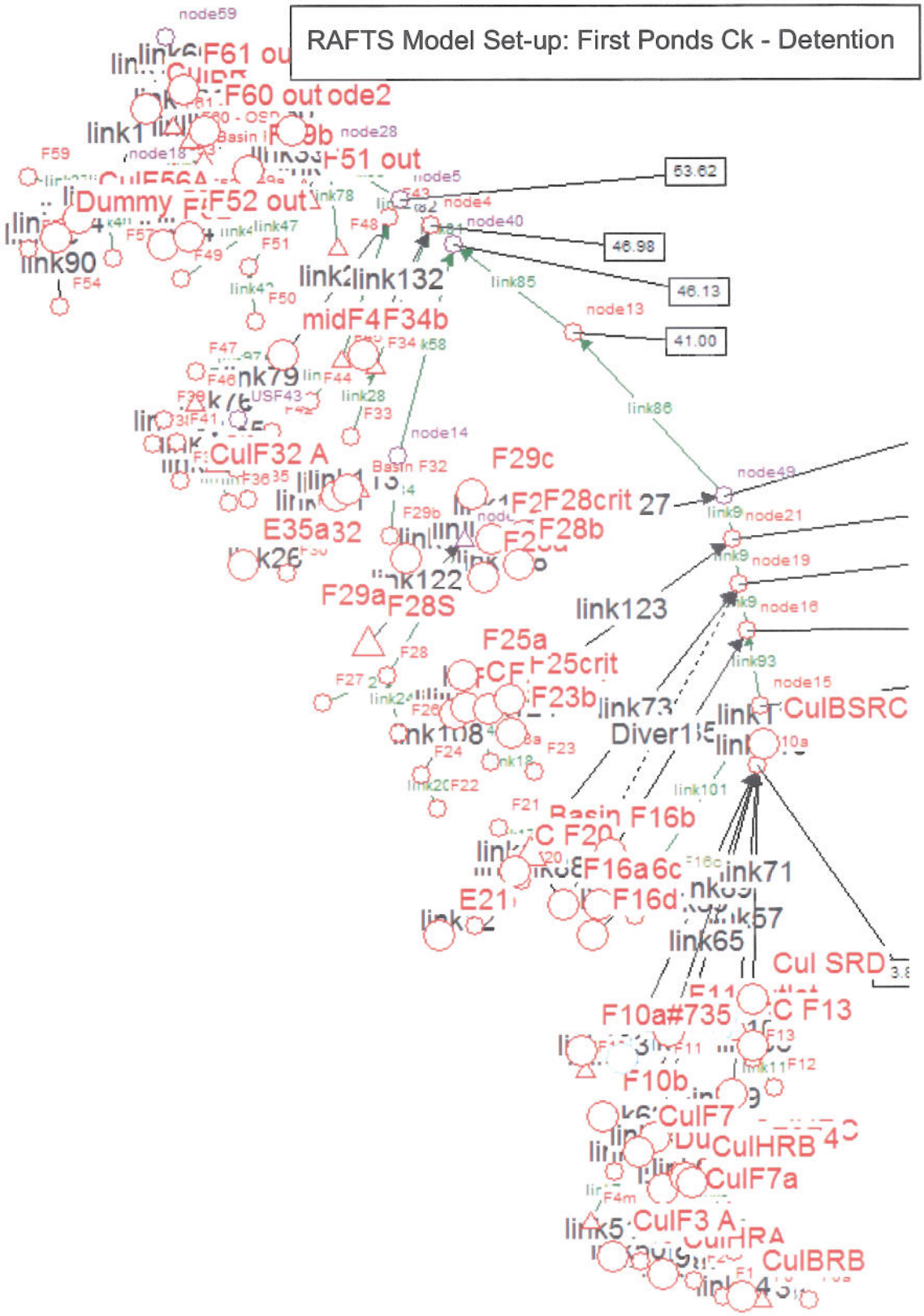
10 Bond Street Sydney NSW 2000 Australia T 61 2 9239 7000 F 61 2 9239 7199 E sydmail@ghd.com.au W www.ghd.com.au

Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by: C Pappin


RAFTS Model Set-up: Eastern Creek - Existing
d5
link48
d4
E32
d3
E31a
link53
node9
link34
E35
link4
E34a
E33
link60
E34
Basin E25
DS E22
Basin E22
E30
E23
d6
E19
E18
E20 olcrit E20
linkE18
E15a
link52
link49
E16
E16 crit
Dummy A
E12a
Basin E8
d1
link19
link33
E6
E6a
Basin E3
E7
E3
Dummy
E1
link35
E1a


RAFTS Model Set-up: Eastern Creek - Detention
d5
link48
d4
E32
E31a
link53
E35
d12
link77
link15
CulRR
E33
link98
E25
d7
E34a
link99
E28
Crit
E34
link9
link7
CulBRTD
E23a
30
E18b
linkE18
E18c
link52
link49
E16
E16oldcrit
CulBBEst
d1
link85
CulRTB
E12a out
CulBPRB
link84
E3 outlet
Basin E8m
CulBR
outlet


RAFTS Model Set-up: First Ponds Ck - Existing
100yr-25min
node39
link100
F61
F53
crit20
link44
node28
F59
node18
F49b
F58
F51
node5
49a
node4
F56
link
F52a
F48
node40
F55
F54
link46
link43
link83
link85
F50
k31
F49
node13
mid
F43
F33
F40a
F42
node14
F36
F32
F30
E35a
link84
F29a
link86
node49
node21
link60
node19
link91
node16
node12
F28
F27
F25
link56
node15
F26
F24
F23
k57
F10a
F22
F20 outlet
F21
F20
F18
node8
F19
F17
link68
E21
F16
link45
F15
F14
F11
F13
F10
F12
F10b
F7a
F6
F4
F5
F3
F2
F1
F0
F0a


RAFTS Model Set-up: First Ponds Ck - Detention
node59
F61 ou
F60 out
ode2
link1
node28
F59
node18
F51 out
Dummy F
F52 out
53.62
node5
node4
node40
46.98
46.13
link90
F54
F51
F49
link85
node13
41.00
midF4F34b
link86
node14
CulF32 A
F29c
node49
F28crit
27
node21
E35a32
F28b
node19
F29a
F28S
link123
node16
F25a
F25crit
link93
node15
F23b
CulBSRC
Diver
F24
F23
F22
link101
F21
Basin F16b
F16a
link71
E21
link57
link65
Cul SRD
F10a#735
C F13
F10b
CulF7
CulHRB
CulF7a
CulF3 A
CulBRB

GHD
NSW Growth Centres Commission
Riverstone and Alex Avenue
21-18423

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133 Castlereagh Street, Sydney

RAFTS Peak Flow Results

Flows are only provided at points where a direct flow comparison is possible.

First Ponds Creek

	Existing Flow		Post-Detention Flow	
	5yr ARI	100yr ARI	5yr ARI	100yr ARI
F9	2.265	3.946	2.092	2.514
F10	1.289	2.255	1.043	1.205
F11	0.7301	1.571	0.7048	0.8198
F14	2.513	4.389	2.462	2.903
Basin F25	3.144	5.561	1.956	3.306
Basin F32	4.681	8.092	3.122	4.776
F34	2.149	4.588	0.3471	0.4076
Basin F6m	2.853	4.863	2.13	2.513
node12	5.571	10.101	2.003	3.42
node14	4.681	8.092	4.432	7.097
node18	4.554	8.859	4.109	7.114
node20	40.067	71.16	37.804	59.102
node28	39.066	69.404	36.856	57.787
USF43	2.195	4.197	1.918	2.931
node40	32.481	56.662	29.339	46.134
node49	29.191	51.067	26.006	41.004
F10a	16.091	28.081	15.939	23.838
node59	44.367	79.272	41.888	66.067
node4	33.275	58.162	30.033	46.975
F43	4.341	8.047	4.274	7.427
F48	1.285	2.668	1.071	1.263
node13	29.191	51.067	26.006	41.004
node15	18.245	32.018	18.04	27.843
node16	18.245	32.018	18.289	28.216
node19	22.802	40.081	21.461	33.784
node21	25.28	44.426	23.427	37.263
F49a	0.5741	1.261	0.5737	1.31
node5	36.288	64.242	33.962	53.615
F0	0.8325	1.575	0.7764	0.9113
F0a	0.1063	0.2198	0.1127	0.2811
F61 - OSD	0.1503	0.3333	0.1471	0.2525
F60 - OSD	0.3293	0.7425	0.2816	0.4865
CulHRC	8.564	14.91	2.093	2.514

Eastern Creek

	Existing Flow		Post-Detention Flow	
	5yr ARI	100yr ARI	5yr ARI	100yr ARI
E1	1.643	3.287	1.568	1.837
E18	7.36	11.425	6.703	11.078
E27a	3.617	6.631	3.257	5.021
CulSRA	6.561	12.875	6.419	9.015
Basin E20	2.236	4.535	1.519	2.553
d1	3.614	7.337	3.451	4.029
E22crit	8.18	15.061	7.002	9.833
d3	29.826	53.64	26.655	38.19
d4	29.826	53.64	26.655	38.19
d5	29.826	53.64	26.655	38.19
d6	17.654	32.222	15.661	22.08
Basin E16	2.626	4.971	2.47	2.891
E20 crit	3.517	7.727	1.519	2.554
E33	0.3777	1.149	0.3502	0.3998
Basin E8m	2.449	4.541	2.083	2.418
E10a	0.5729	1.177	0.4131	0.771
E25 out	1.661	3.067	1.181	1.729
Basin E3	1.203	2.524	1.091	1.275
E1a	0.8948	1.868	0.7959	0.9243
BasinE13m	1.257	2.422	0.7889	0.9263
E6a	1.28	2.683	0.6152	0.7253
E12a	0.2477	0.561	0.1967	0.2253
Basin E22	2.553	5.906	1.798	2.089
Basin E31	1.389	2.686	1.29	1.488
E16oldcrit	2.734	5.094	2.603	3.473
E35	0.1185	0.3817	0.0915	0.1576
E Crit	8.812	16.225	7.606	10.737
E34a	7.111	11.399	7.111	11.399

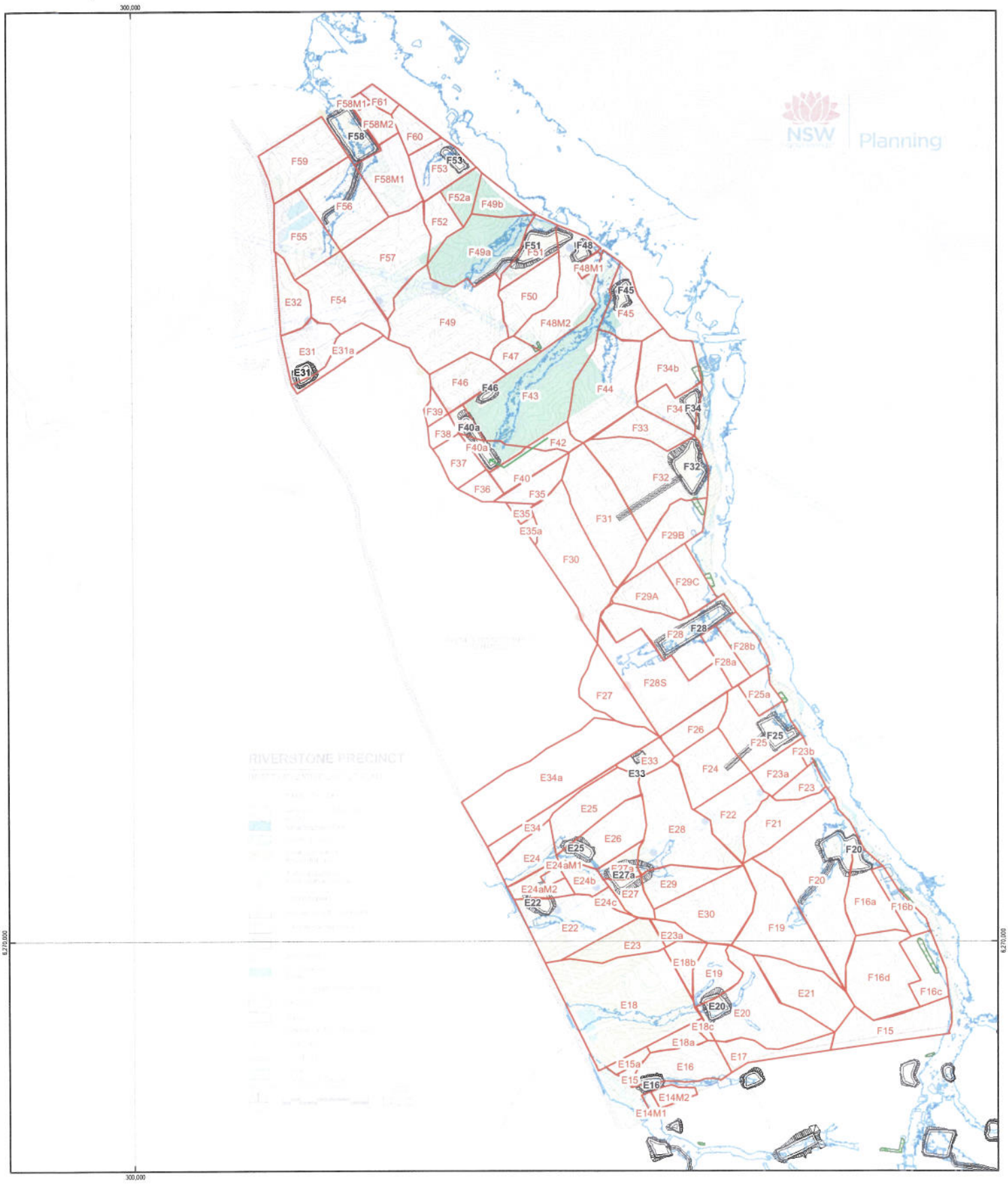
Appendix E

Stormwater Quality Modelling

MUSIC Water Quality Model Catchment Plan – Riverstone

MUSIC Water Quality Model Catchment Plan – Alex Avenue

Music Model Setup and Results



Legend

- MUSIC Catchments
- Potential Raingarden Locations
- 100-year ARI Event Developed Flood Extents
- Existing 2m Contours

For Information

1:20,000

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Kilometres (at A3)

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

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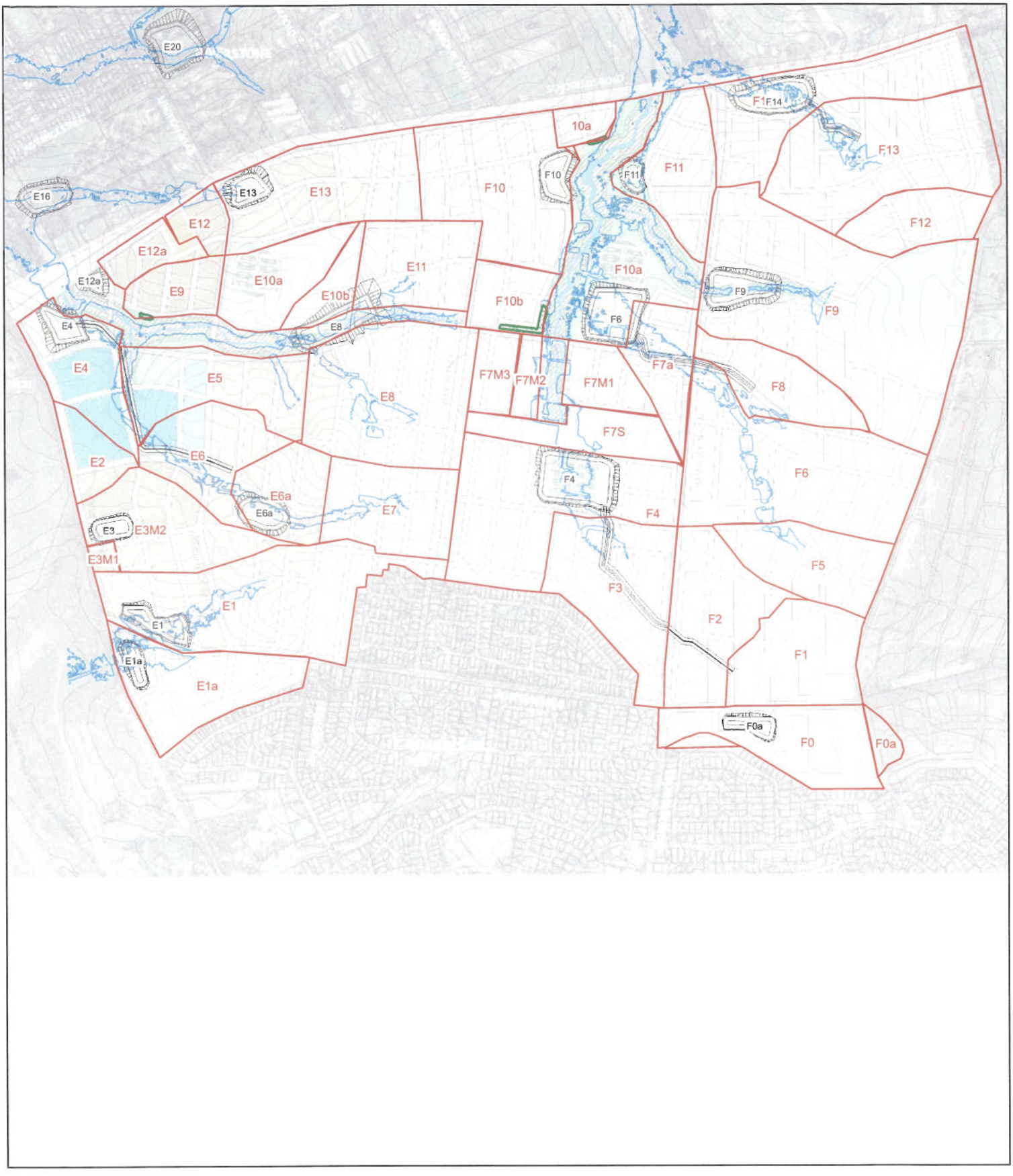
Riverstone Alex Avenue

Riverstone: MUSIC Catchments

Job Number	21-18423
Revision	C
Date	30th Nov 2009

Figure E1

10 Bond Street Sydney NSW 2000 Australia T 61 2 9239 7000 F 61 2 9239 7199 E sydmail@ghd.com.au W www.ghd.com.au



Legend

- MUSIC Catchments
- Potential Raingarden Locations
- 100-year ARI Event Developed Flood Extents
- Existing 2m Contours

For Information

1:10,000

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Kilometres (at A3)

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

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GHD CLIENTS PEOPLE PERFORMANCE

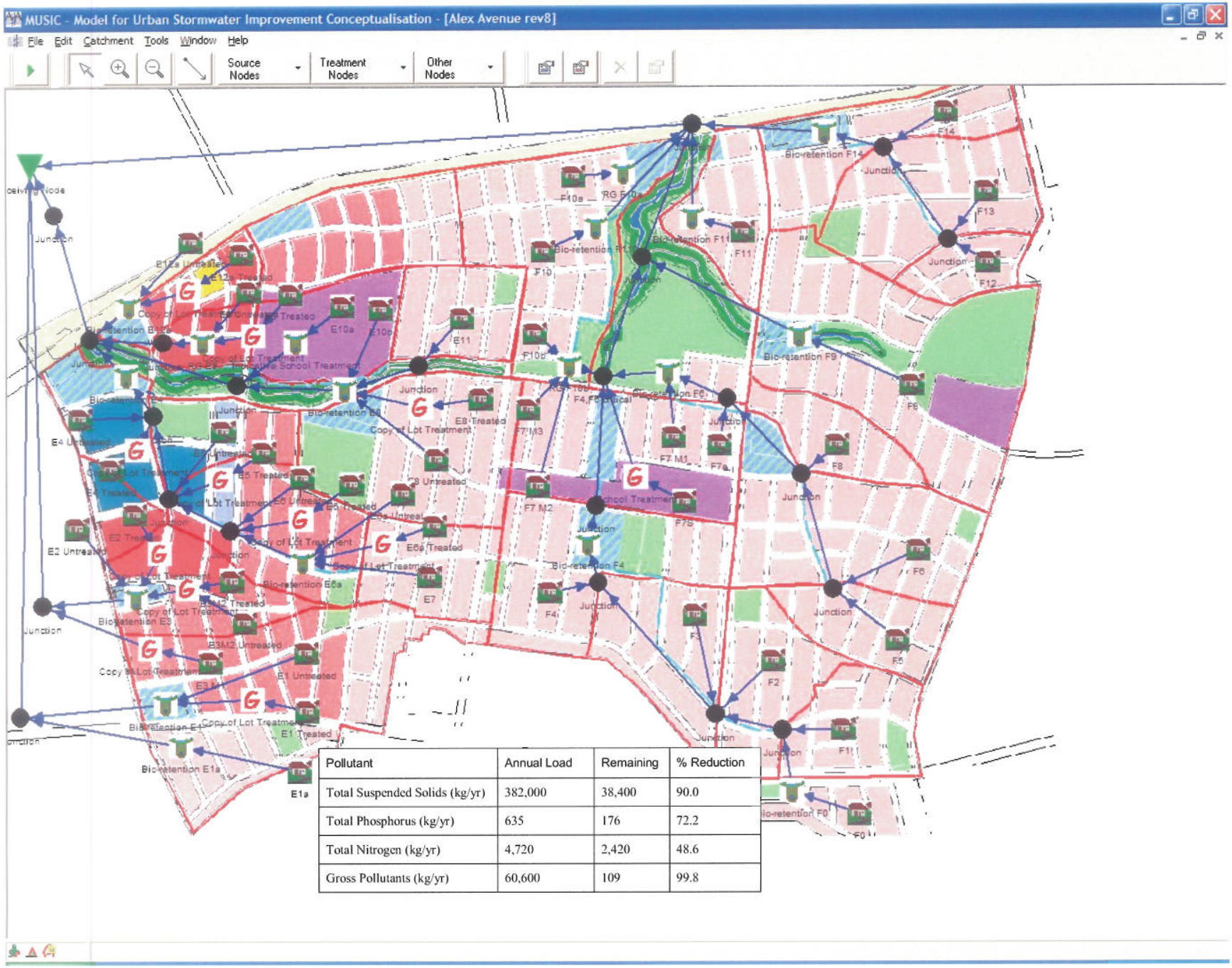
Riverstone Alex Avenue

Alex Ave: MUSIC Catchments

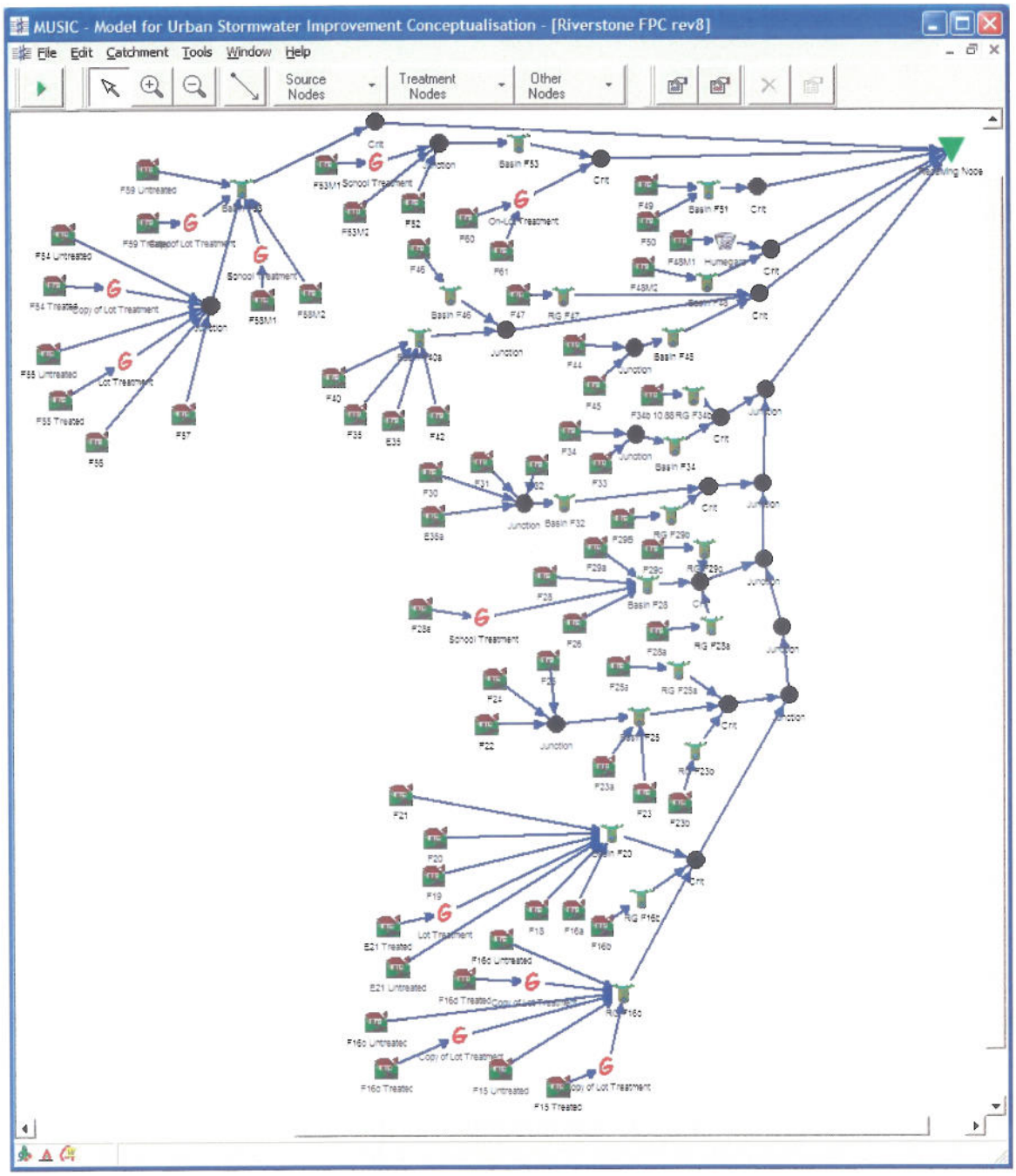
Job Number	21-18423
Revision	A
Date	30th Nov 2009

Figure D1

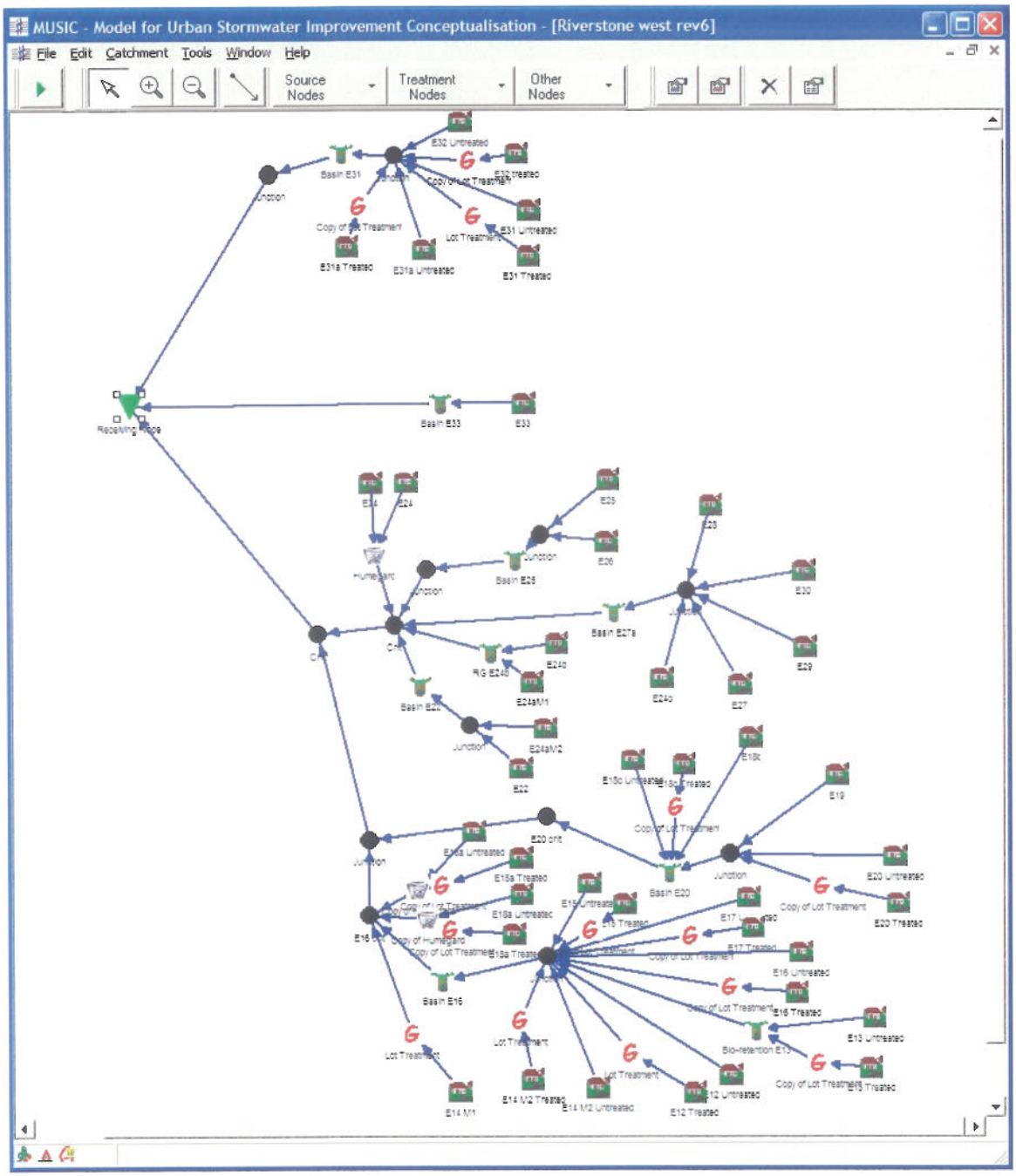
10 Bond Street Sydney NSW 2000 Australia T 61 2 9239 7000 F 61 2 9239 7199 E sydmail@ghd.com.au W www.ghd.com.au



Pollutant	Annual Load	Remaining	% Reduction
Total Suspended Solids (kg/yr)	382,000	38,400	90.0
Total Phosphorus (kg/yr)	635	176	72.2
Total Nitrogen (kg/yr)	4,720	2,420	48.6
Gross Pollutants (kg/yr)	60,600	109	99.8



Pollutant	Annual Load	Remaining	% Reduction
Total Suspended Solids (kg/yr)	608,000	50,700	91.7
Total Phosphorus (kg/yr)	1,010	263	73.9
Total Nitrogen (kg/yr)	7,490	3,800	49.3
Gross Pollutants (kg/yr)	95,900	133	99.9



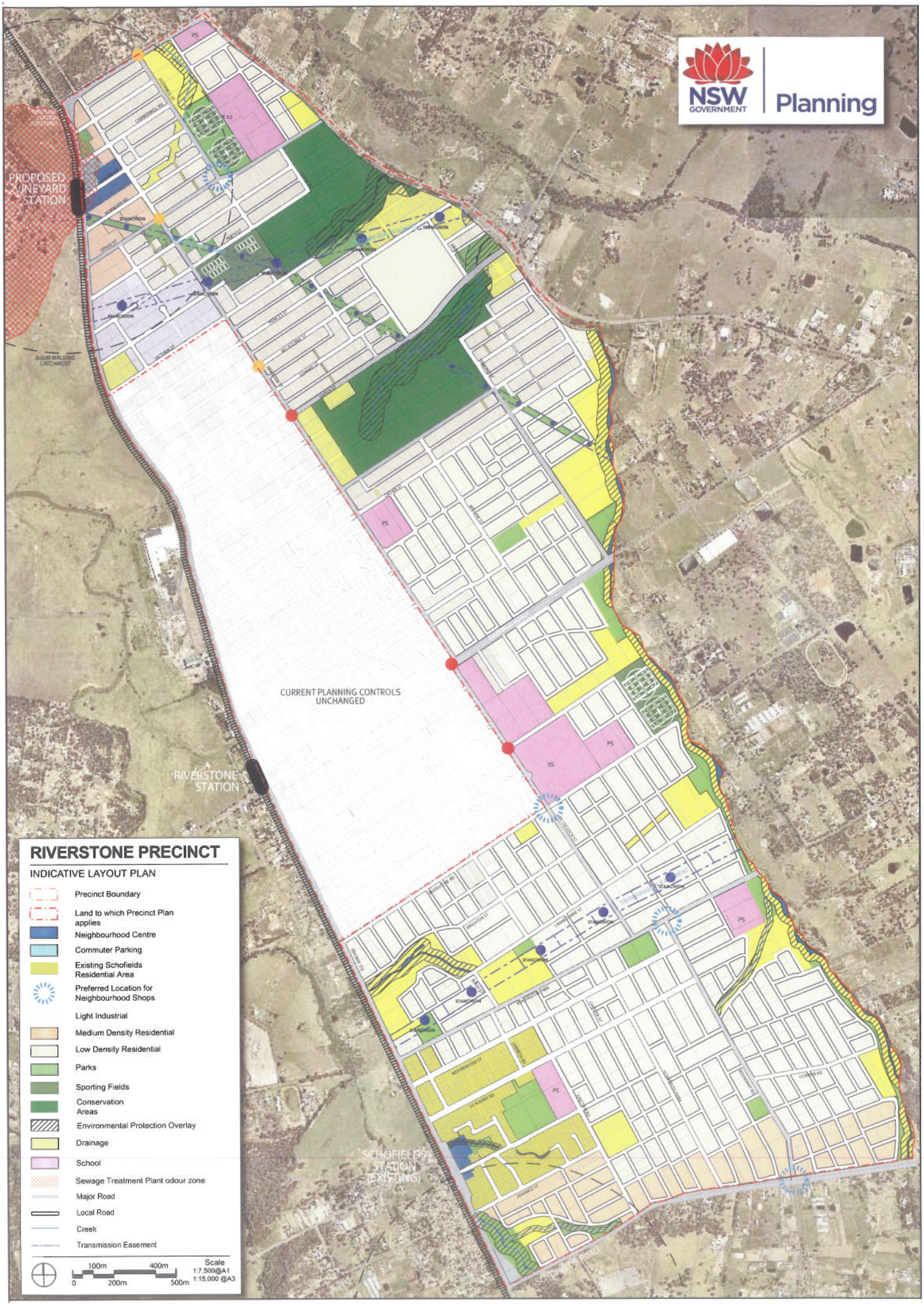
Pollutant	Annual Load	Remaining	% Reduction
Total Suspended Solids (kg/yr)	231,000	25,600	88.9
Total Phosphorus (kg/yr)	380	113	70.2
Total Nitrogen (kg/yr)	2,830	1, 450	48.8
Gross Pollutants (kg/yr)	35,800	326	99.1

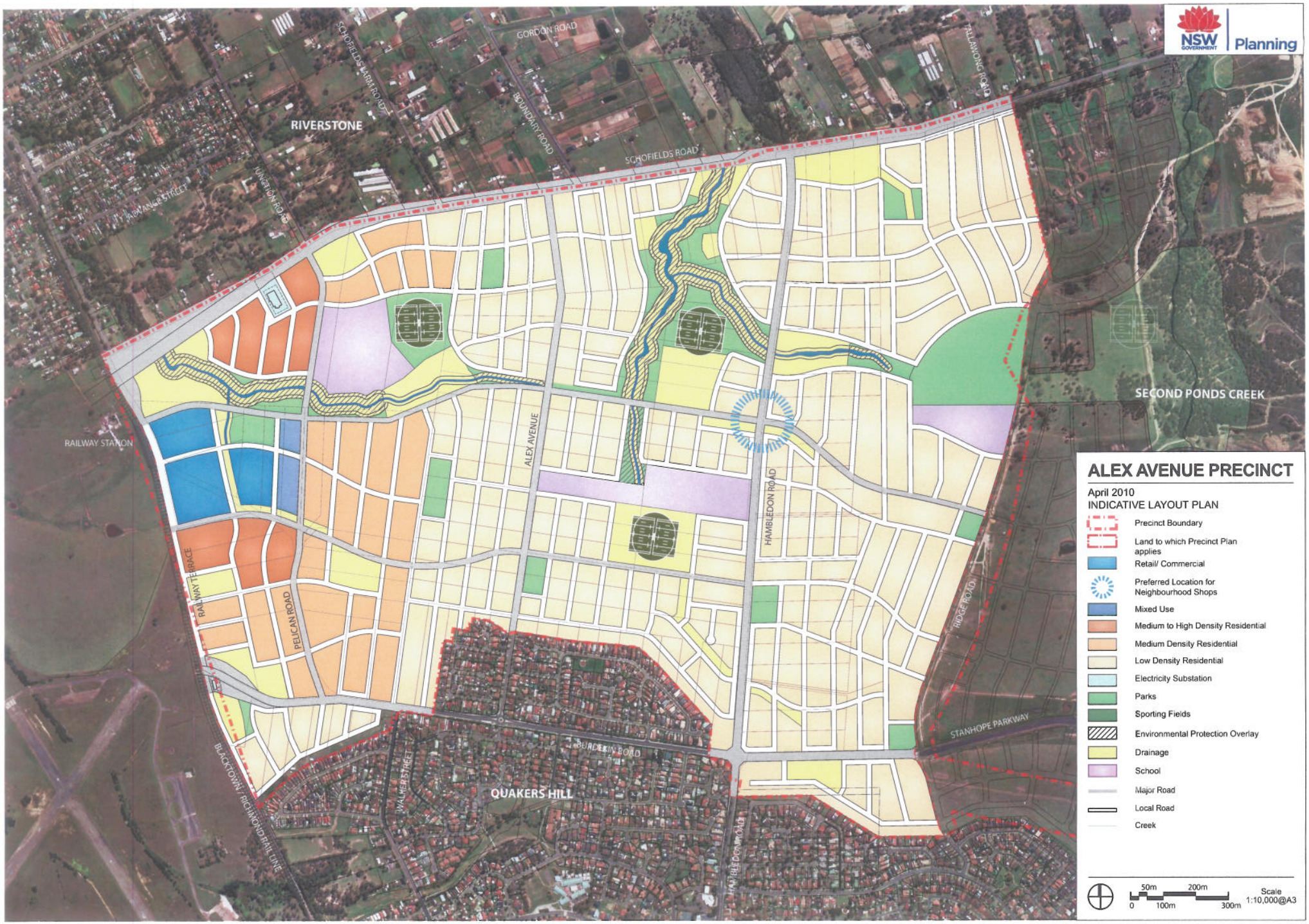
Appendix F

Indicative Layout Plans

Riverstone Precinct Indicative Layout Plan

Alex Avenue Precinct Indicative Layout Plan


NSW GOVERNMENT
Planning
PROPOSED VINEYARD STATION
800M WALKING CATCHMENT
CURRENT PLANNING CONTROLS UNCHANGED
RIVERSTONE STATION
SCHOFIELDS STATION (EXISTING)
RIVERSTONE PRECINCT
INDICATIVE LAYOUT PLAN
Precinct Boundary
Land to which Precinct Plan applies
Neighbourhood Centre
Commuter Parking
Existing Schofields Residential Area
Preferred Location for Neighbourhood Shops
Light Industrial
Medium Density Residential
Low Density Residential
Parks
Sporting Fields
Conservation Areas
Environmental Protection Overlay
Drainage
School
Sewage Treatment Plant odour zone
Major Road
Local Road
Creek
Transmission Easement
0
100m
200m
400m
500m
Scale
1:7,500@A1
1:15,000 @A3


NSW GOVERNMENT Planning
RIVERSTONE
SCHOFIELDS FARM ROAD
GORDON ROAD
BOUNDARY ROAD
SCHOFIELDS ROAD
TALAWONG ROAD
RAILWAY STREET
JUNCTION ROAD
SECOND PONDS CREEK
RAILWAY STATION
ALEX AVENUE
HAMBLEDON ROAD
RAILWAY TERRACE
PELICAN ROAD
RIDGE ROAD
STANHOPE PARKWAY
BURDEKIN ROAD
WALKER STREET
QUAKERS HILL
BLACKTOWN / RICHMOND RAIL LINE
ALEX AVENUE PRECINCT
April 2010
INDICATIVE LAYOUT PLAN
Precinct Boundary
Land to which Precinct Plan applies
Retail/ Commercial
Preferred Location for Neighbourhood Shops
Mixed Use
Medium to High Density Residential
Medium Density Residential
Low Density Residential
Electricity Substation
Parks
Sporting Fields
Environmental Protection Overlay
Drainage
School
Major Road
Local Road
Creek
50m
200m
0
100m
300m
Scale 1:10,000@A3

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Document Status

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		Name	Signature	Name	Signature	Date
DRAFT	Rod Towner Andrew Dyer	Rainer Berg				
DRAFT2	Tim Henderson	Rainer Berg				