Job No: 2017-01

17 January 2019

Claron Consulting Pty Ltd
PO Box 542
LINDFIELD NSW 2070

Attention: Brent Winning

RE: 55 MARTIN ROAD BADGERYS CREEK – STORMWATER WATER MANAGEMENT

Introduction

This Stormwater Water Management Plan & Report has been prepared to support the Development Application for the proposed industrial development at 55 Martin Road, Badgerys Creek.

The scope of this report includes an assessment of the stormwater and surface water management requirements for the proposed development. Accordingly, this report includes findings of the assessment and proposes a best practice stormwater management strategy.

Site

The site is 55 Martin Road (Lot 4 DP611519) Badgerys Creek and is located between Martin Road and Lawson Road. The site is located in the Badgerys Creek catchment and Martin Road is at the top of the catchment with the properties on the eastern side of the road draining to South Creek. An engineering survey of the site was undertaken by Revolution Surveys (Ref 3330-1B) on 31 May 2017 and is shown in *Appendix A.*

The site falls evenly from RL 59.5m AHD at the eastern boundary of the site to RL 51.6m AHD on the western boundary. The site area is 2.54 Ha. The site drains to the existing sag in Lawson Road, which is drained by an existing 450mm diameter concrete pipe. The upstream invert level of this pipe is RL 51.23m AHD. The site is impacted by drainage easements on the western portion of the site.

There is an existing residence located on the site in the upper eastern part of the property and is proposed to be repurposed as a site office and staff amenities. The site has been previously used for rural purposes; it is currently being used for agistment.

The site has mainly been cleared and is well covered with grasses with the majority of the trees located at the lower western end of the site fronting Lawson Road. There is one dam located on the property at the western end of the site; the trees have been identified as remnant stand of Cumberland Plain vegetation. It

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is proposed that this dam will remain on the site to maintain the current conditions within the Cumberland Plain vegetation but is not part of the stormwater management of the site.

Figure 1 Locality Map

The site is located clear of the Badgerys Creek floodplain; however, it is subject to local overland flow from the surrounding properties.

The design of the site will be undertaken to ensure that there is no impact on the local overland flow.

Proposed Development

The proposed development for a resource recovery and associated facilities. The project comprises of a large shed, several covered storage bins and a hardstand manoeuvring area. The existing house on the site is to be reconfigured as the site office and a carpark will be provided adjacent to the office. The lower portion of the site, fronting Lawson Road, is not to be developed to protect the remnant Cumberland Plain vegetation.

To address Council's stormwater management requirements for on-site detention and stormwater treatment a combined tank is proposed to be constructed under the hardstand. The tank will contain a rainwater tank, detention tank and a *Stormwater 360 Stormfilter* (or equivalent) for treatment within the detention tank. In addition to the normal stormwater management system a standalone leachate management reuse system is also being provided to treat flows from the storage bins, shed internal processing area and wheelwash.

Further details on the proposed stormwater drainage system are provided below.

Council Requirements

The site is located within the Liverpool City Council LGA and as such the following specific requirements and guidelines have been adopted:

- Liverpool Development Control Plan 2008
- Water Management Policy 2016
- On-Site Stormwater Detention Technical Specification 2003
- Erosion and Sediment Control Policy 2003
- Guidelines For Development And Subdivision Of Land 2003

A Pre-Application meeting (PL-85/2017) on the 19 July 2017 between Council and the Proponent noted the following requirements:

- Stormwater drainage for the site must be in accordance with Council's Development Control Plan.
- A stormwater concept plan shall be submitted with the application.
- The stormwater concept plan shall be accompanied by a supporting report and calculations.
- On-site detention is required to be provided for the site.
- The on-site detention system must be within common property and accessible from the street without going through dwellings or private courtyards.
- A water quality treatment device shall be provided in accordance with Council's Development Control Plan. Provide MUSIC Model

Stormwater Analysis Overview

In order to determine the appropriate discharge control for the site and external flows the DRAINS hydrological/hydraulic computer software was used. The total flow from the catchment was calibrated against the probability rational method to ensure that the flows were of the correct magnitude.

To analyse the stormwater quality treatment train for the site the MUSIC model was developed for the site. These models are discussed in further detail below.

Hydrological Analysis

Hydrological Model Setup

The DRAINS model used the following input data:

- Soil Type 3
- AMC 4
- Depression Storage Paved 1mm Supplementary 1mm Grassed 5mm

The IFD data was obtained from the BOM website for the following coordinates; 33.875 S and 150.75 E. (raw data: 29.83, 6.42, 1.89, 59.14.00, 12.57, 4.17, skew 0.01, F2 4.3, F50 15.8)

The model was constructed using nodes and overland flow routes. Detailed information on the existing case model is provided in *Appendix B*.

Catchment Areas

A combination of orthophoto map imagery, GIS information, detail around survey and confirmation by a site inspection was used to determine the catchment areas for the existing site conditions.

The total area draining to the outlet (Node A/1) is 19.90 Ha and this is broken up as follows:

- Site Area 2.54 Ha
- Northern External Catchment 9.23 Ha
- Southern External Catchment 8.13 Ha

The existing catchment plan is shown in Figure 2.

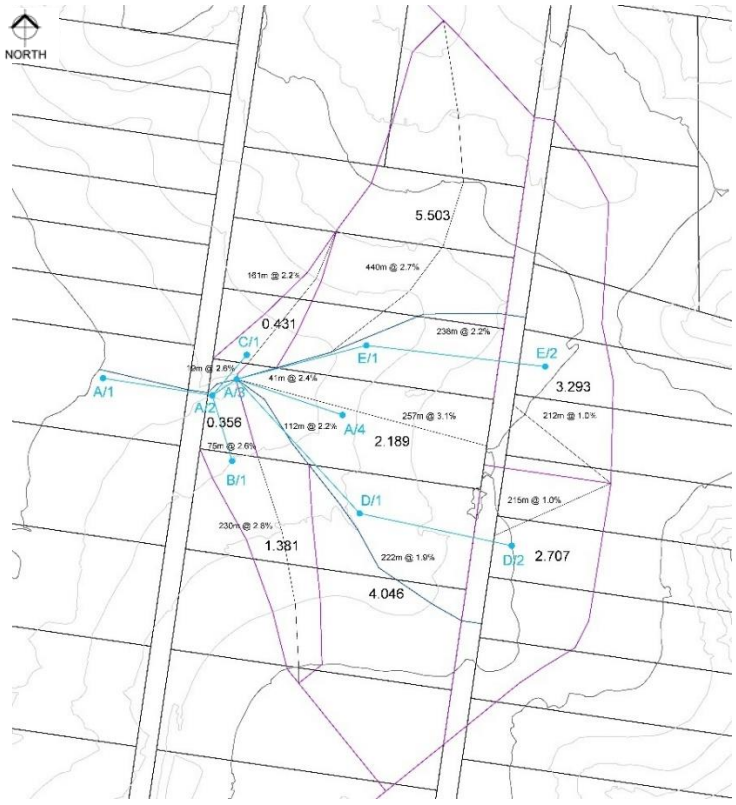


Figure 2 Existing Catchment Plan

Existing Flows

The existing flows, at the critical locations and the adopted permitted site discharge (PSD) for the site is summarised below:

Catchment	Node	Q100 (m^3/s)	Q50 (m^3/s)	Q20 (m^3/s)	Q10 (m^3/s)	Q5 (m^3/s)	Q2 (m^3/s)
Outlet (DRAINS)	A/1	4.44	3.68	2.86	2.21	1.69	0.84
Outlet (PRM)	A/1	4.28	3.45	2.58	1.99	1.55	1.00
Northern External	E/1	1.98	1.65	1.28	0.99	0.75	0.37
Southern External	D/1	1.46	1.22	0.94	0.73	0.55	0.27
Site - PSD		0.66	0.54	0.42	0.32	0.24	0.12

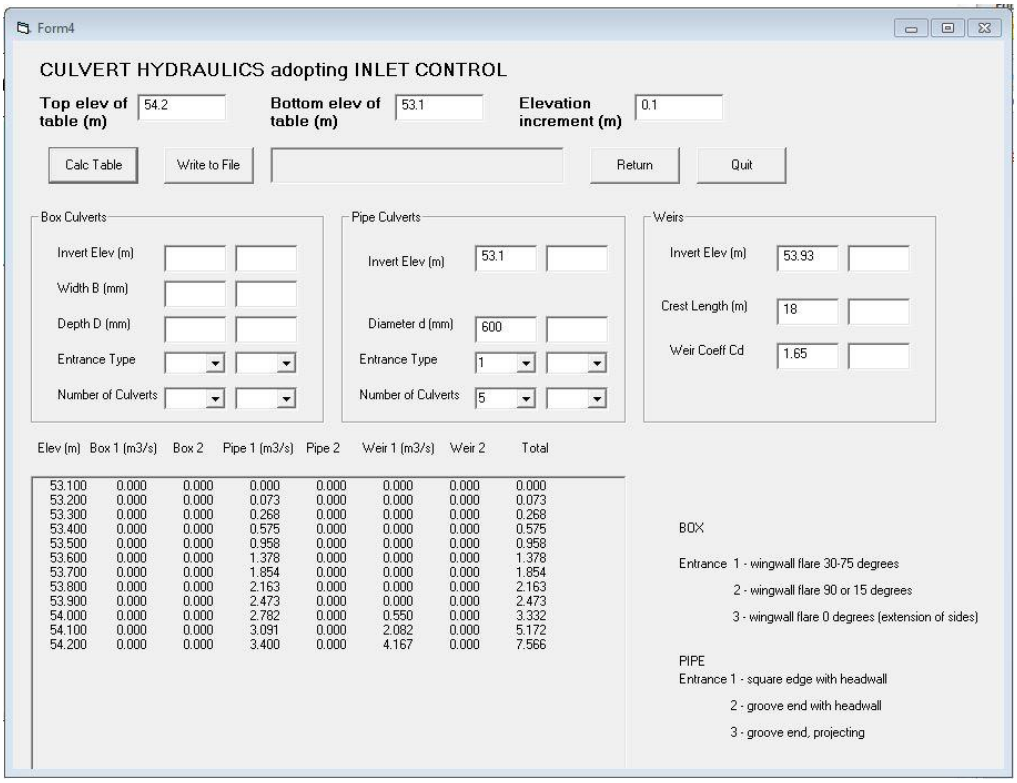
Detailed information on the existing case results is provided in *Appendix C*.

Overland Flow Management

The external overland flows are to be managed by the following methods:

- For the northern catchment the shed and retaining wall have been set back from the low point and easement, so as to not obstruct the flow.
- With the southern catchment, the overland flowpath is obstructed by the access driveway and ramp to the hardstand. To convey the flows under the accessway a 5 cell 600 diameter piped culvert is proposed.

Once the flow is past these points it will flow unchanged through the site.



On Site Detention Design

Given the configuration of the site, the lower portion of the site will bypass the detention tank. The area of this bypass is 0.65 Ha with the remaining 1.89 Ha to be drained to the tank. The design of the tank has considered this bypass as part of the sizing process, to ensure that the site PSD is met.

The detention tank is to be located at the western end of the hardstand area and as described earlier will also include a rainwater tank and the stormwater quality treatment. For the sizing of the detention tank both the rainwater tank and treatment system are considered to be full.

The roof areas of the shed and bins are to be directed to the rainwater tank, with the remainder of the site directed to the treatment system and detention tank.

The developed case DRAINS model has been structured to simulate the post development flows off the site only with a simplified model to simplify the pre-development model. That is there has been no modelling of the stormwater reticulation within the site and all the flows are assumed to be captured and directed to the detention tank. Whilst this model is of a uncomplicated structure, it provides a robust indication of the stormwater runoff and storage requirements, as well as readily comparing the pre and post development flows from the site. The design DRAINS model layout is shown in Figure 3

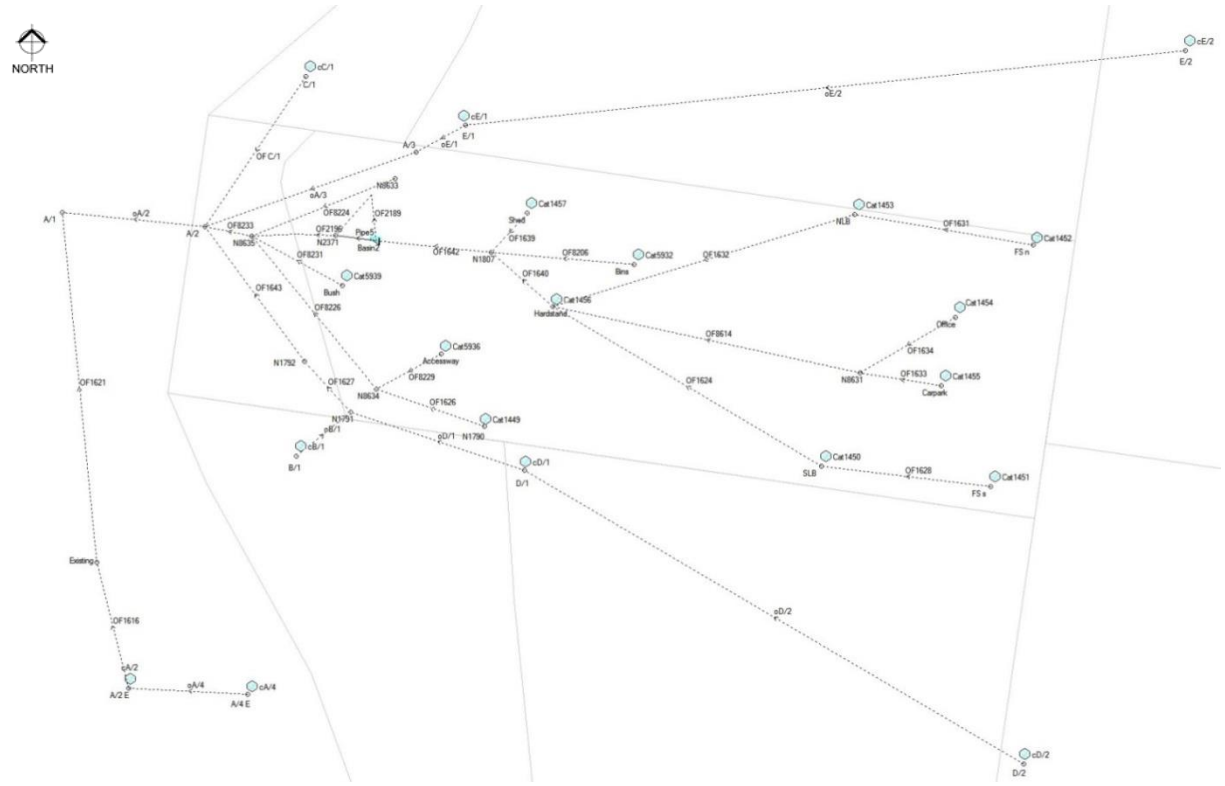


Figure 3 DRAINS model design layout

To determine compliance with the OSD requirement which is to compare the total peak post development flow rates with the predevelopment for a range of storm events the basin's outlets will need to be capable of detaining the range of flows for all these events.

In the event of total blockage of the outlet pipe from the basin, an emergency overflow weir is provided and it will drain into the open space at the bottom of the site and into the existing watercourse.

Detailed information on the developed case model is provided in *Appendix D*.

The table below summarises the peak flow from the developed site compared to the PSD:

ARI	Pre-Development Q (m^3/s)	Post Development Q (m^3/s)	Volume (m^3)
100	0.658	0.342	721
50	0.543	0.306	628
20	0.418	0.27	529
10	0.322	0.224	443
5	0.244	0.173	383
2	0.121	0.121	271

To detain the post development flows to pre-development conditions a tank with a minimum capacity of 633 m^3 is required. The modelling has also shown that a low 175mm (invert RL 52.6m AHD) and a higher 200mm (invert RL 53.7m AHD) diameter outlet pipes will satisfactorily detain the flows to meet the PSD requirements.

Detailed information on the developed case results is provided in *Appendix E*.

Stormwater Quality Treatment

This WSUD strategy has been developed in accordance with Council's requirements and guidelines, as well as industry best practice. The proposed treatment train consists of rainwater tanks for all roof areas, pit insert filers for the pits within the hardstand area and a treatment tank for a proprietary system, a Stormwater 360 *Stormfilter* (or approved equivalent), located within the detention tank. This system has been designed to manage the pollutant loads from the site to meet the required targets.

The in-tank system was chosen over a more traditional bioretention basin as the basin would need to be located downstream of the tank and this would impact on the Cumberland Plan vegetation in this area. In addition, the bioretention basin would also need to be carefully sited to ensure the upstream overland flows are directed around the basin.

The treatment train for the site has been modelled using the MUSIC stormwater quality modelling software, as required by Council. The modelling parameters have been adopted tom the Sydney Catchment Management Authority (SCMA) and other local guidelines for all inputs including rainfall and evaporation, rainfall-runoff, pollution generation and treatment node parameters.

The objective of the WSUD strategy is to capture the following percentage of the following pollutant loadings, as per Council's DCP 2008:

- Total Suspended Solids 80 %
- Total Phosphorus 45 %
- Total Nitrogen 45 %

Proposed Treatment Measures

This WSUD strategy prescribes the use of 2 major components, as described below.

Rainwater Tanks

There 2 tanks proposed for the site a small 3KL tank located near the existing building and a large 100KL tank located adjacent to the detention tank.

The tank located near the office is to be connected to the toilets and local irrigation. Overflow from this tank is to be connected to the line running to the main rainwater tank.

The yearly water demand is estimated at 4.0 ML for dust suppression for an area of 2.5 ha. This includes stockpiling of materials, processing of materials, landscaping and vegetation

Stormfilter System

As previously described the proposed Stormfilter system is to be co-located within the detention tank. The filter is located in a 8.5 x 8.5 m square tank with a 790mm wall around the tank. There is no internal roof to this tank and flows that pond greater than this height will overflow on to the filter tanks. This will only occur in storm events greater than the 0.5EY storm. The sizing of the Stormfilter is shown in Figure 4.

In addition to the above a wheel wash is also provided for all vehicles entering and leaving the site. The impact of the wheel wash has not been included the modelling.

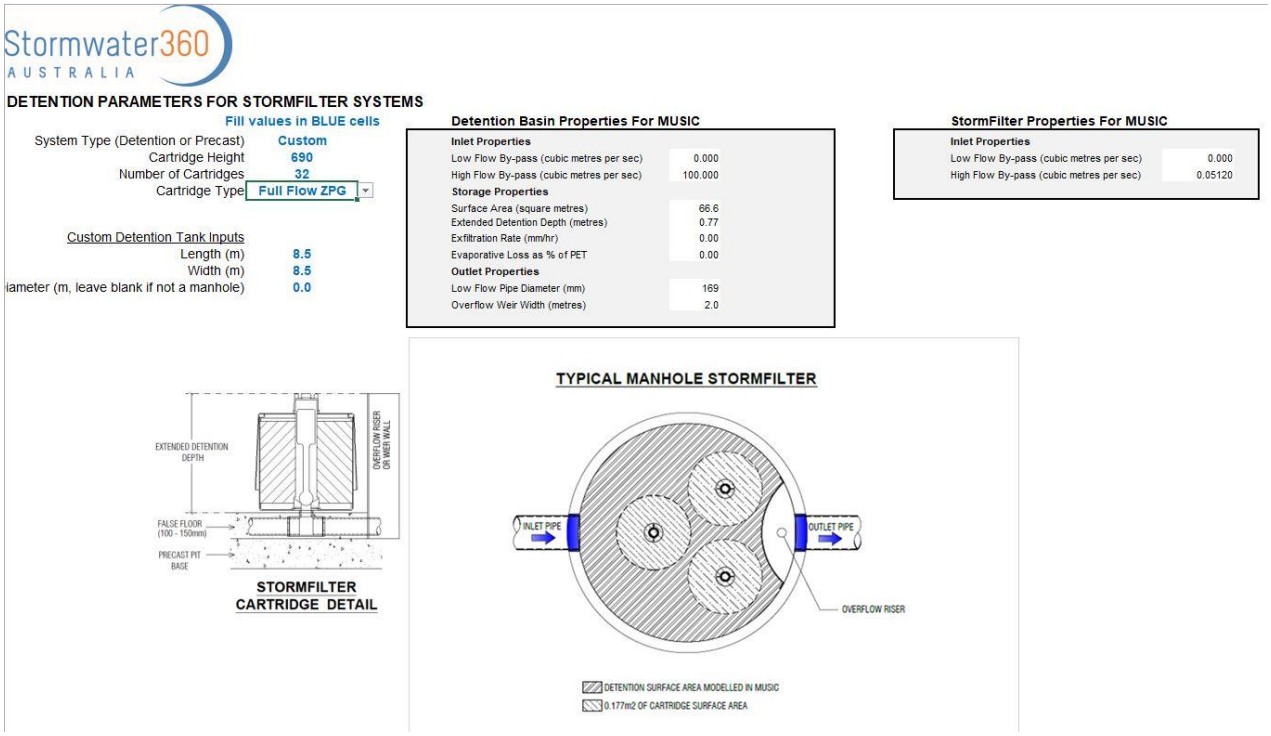
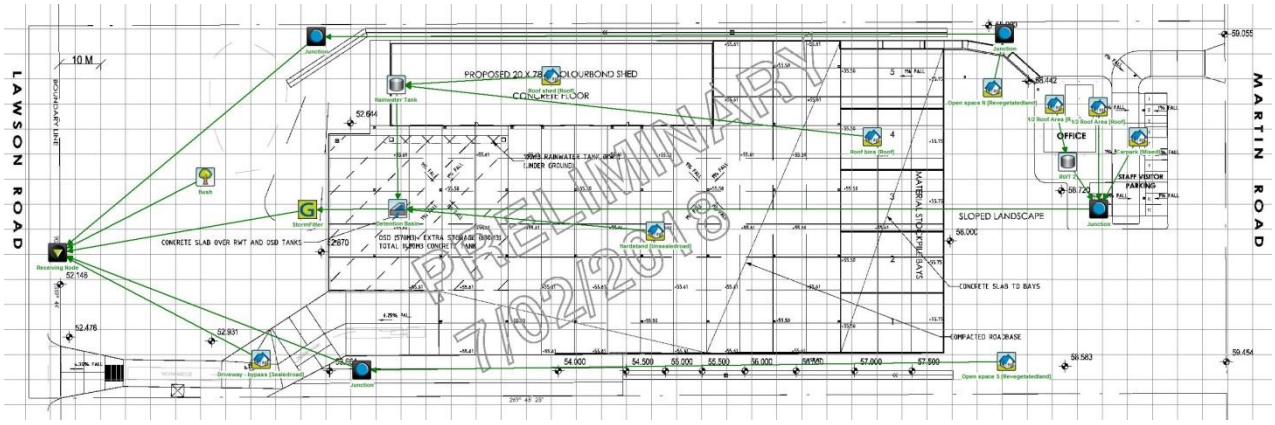


Figure 4 Stormfilter Sizing

The MUSIC model layout is shown in Figure 5 below.



Results

The estimated treatment train effectiveness is summarised in the table below:

	Sources	Residual Load	Reduction (%)
Treatment Train Effectiveness at Stormfilter			
Flow (ML/yr)	9.53	6.75	29.2
Total Suspended Solids (kg/yr)	7870	600	92.4
Total Phosphorus (kg/yr)	4.14	0.807	80.5
Total Nitrogen (kg/yr)	22.1	10.2	54
Gross Pollutants (kg/yr)	253	0	100
Treatment Train Effectiveness at Receiving Node			
Flow (ML/yr)	12.4	9.6	22.5
Total Suspended Solids (kg/yr)	8220	951	88.4
Total Phosphorus (kg/yr)	4.76	1.43	69.9
Total Nitrogen (kg/yr)	26.4	14.4	45.2
Gross Pollutants (kg/yr)	298	45.2	84.8

Leachate Management

Leachate collected from the shed, wheel wash and stockpile bays will be managed onsite by a separate drainage system, consisting of the following:

- The stockpile bays are covered from rainfall and bunded to ensure no stormwater runoff enters the bays.
- Underdrains are provided to collect any leachate runoff from the stockpiled material.
- The underdrains will have a flushing point and cleanout out pit to facilitate regular maintenance of the drain without the need to fully clear the bay.
- The underdrains are then piped by a gravity system to a holding tank and pump well. From here the collected leachate is pumped via a rising main to the treatment system.
- The leachate is to be treated by a *Stormwater 360 Jellyfish* filter. This filter uses gravity, flow rotation and up-flow membrane filtration to remove a high-level suspended solids and particulate bound pollutants.
- The treated leachate is then collected in a reuse tank for use in the dust suppression system within the shed and storage bays. Where there is a build-up of excess treated leachate, it will be collected and disposed off-site a suitable trade waste facility.

Erosion and Sediment Control

A Soil and Water Management Plan (SWMP) will be prepared and implemented to minimise potential impacts on hydrology and water quality during the construction period and ongoing operation of the site. This Plan will incorporate the design and installation of erosion controls in accordance with the requirements Managing Urban Stormwater: Soils and Construction published by Landcom (colloquially known as the "Blue Book").

The Plan will include the following:

1. At the vegetation clearing stage, cleared vegetation will be mulched and spread over disturbed area to provide a natural erosion barrier
2. Prior to commencement of earthworks, a range of measures will be put in place including:
    - Construction of cut-off drains to prevent clean water from upstream of the corridor flowing onto and eroding disturbed areas
    - The diversion of site discharge points to erosion control measures such as silt fences and sedimentation basins in order to control dirty water areas
    - The stabilisation of exposed areas as soon as practical following the construction of each section of works
3. Controls outside the specific work area would be put in place including:
    - Refuelling of plant and machinery within bunded areas or off site in appropriate locations
    - Minimisation of disturbed areas so that the potential export of sediment is minimised
    - The establishment and maintenance of stabilised construction compounds to reduce the overall disturbance area for the Project.
4. Temporary sediment basins will be constructed to capture water and sediment before it can leave the site or enter the receiving water bodies. Conceptual design of the temporary sediment basins will be included in the SWMP and follow the methodology outlined in the "Blue Book" with the following features:
    - Sediment basins are to be located at points near where dirty water would discharge to receiving waters or leave the site
    - Basins are to be designed for Type F/D soils, as outlined in Section 6.3.4 of the Blue Book, in accordance with the soil type classifications
    - The minimum depth of the basins will be 0.6 metres with an average depth of 1 metre.

A surface water quality monitoring program for the construction and operational periods will be developed to monitor water quality upstream and downstream of the construction areas. Construction period monitoring will be carried out periodically and after rainfall events as part of the assessment of the operation of water quality mitigation measures. Monitoring during the construction phase of the project would examine the following indicators:

- pH
- Electrical conductivity

- Turbidity
- Dissolved oxygen
- Total Suspended Solids
- Oil and Grease

Conclusion

This report is submitted for Council's review and approval and should be read in conjunction with the engineering drawings submitted for the development application for the proposed works.

Based on the proposed stormwater drainage concept the key features are:

- Post development flows will be attenuated to at least pre-development rates for the range of events up to the 100 Year ARI event.
- An underground OSD tank will be provided with a minimum detention volume of 633m^3.
- Rainwater tanks will capture the runoff from the roof areas and reused onsite.
- A Stormwater 360 *Stormfilter* will be co-located within the detention tank.
- A separate leachate management system utilising a Stormwater 360 *Jellyfish filter* to manage the quality of the leachate.
- Erosion and sediment control measures will be implemented during the construction phase.

It is therefore concluded that the drainage design for the site addresses Council's water-cycle management requirements for the development.

Yours faithfully,

ULTRAMARK PTY LTD

ROBERT PETERSON
Director

Appendices

Appendix A Site Survey Plan

Appendix B Existing Case DRAINS model layout

Appendix C Existing Case Results

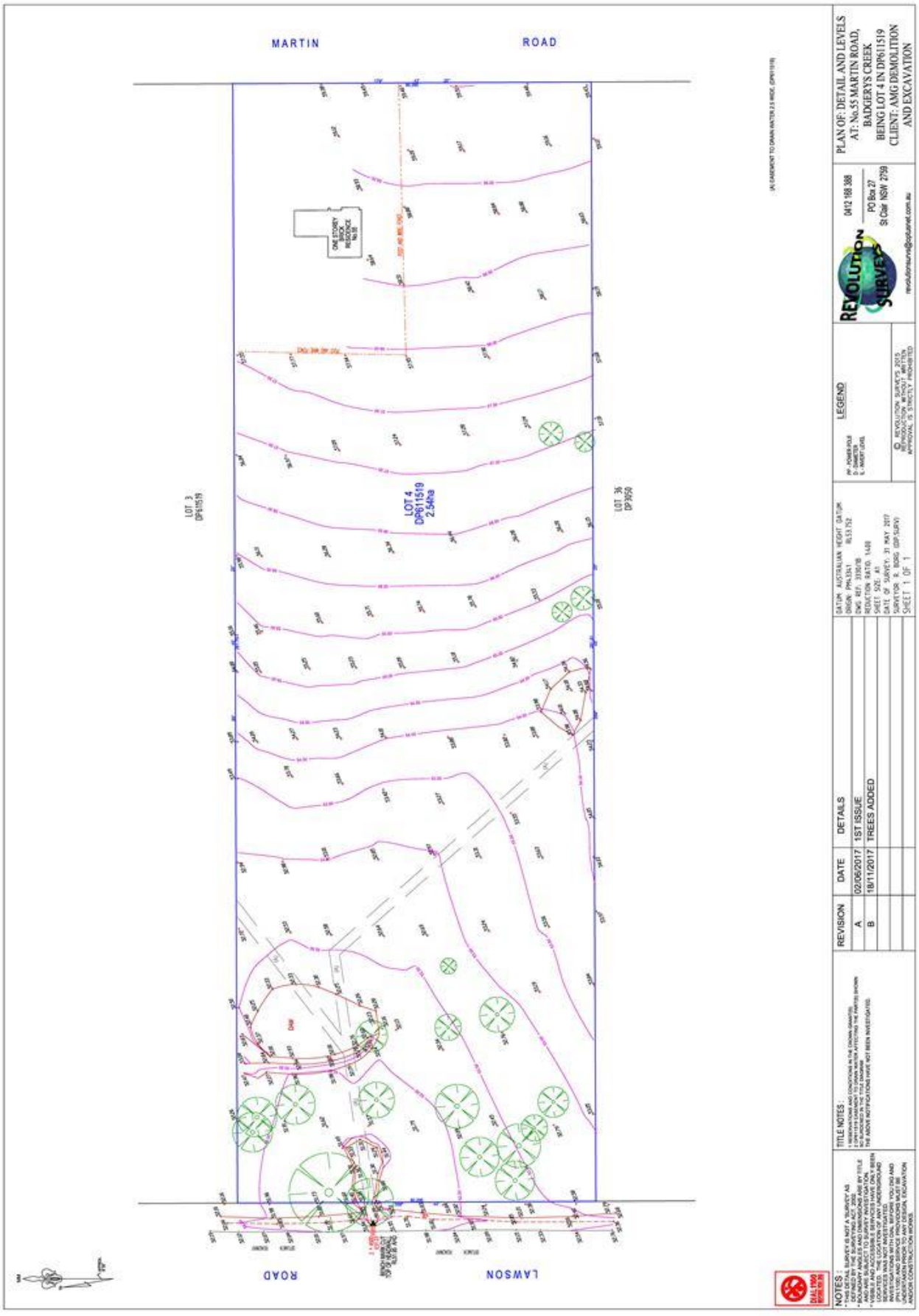
Appendix D Developed Case DRAINS model layout

Appendix E Developed Case DRAINS Results

Appendix F MUSIC model layout and results

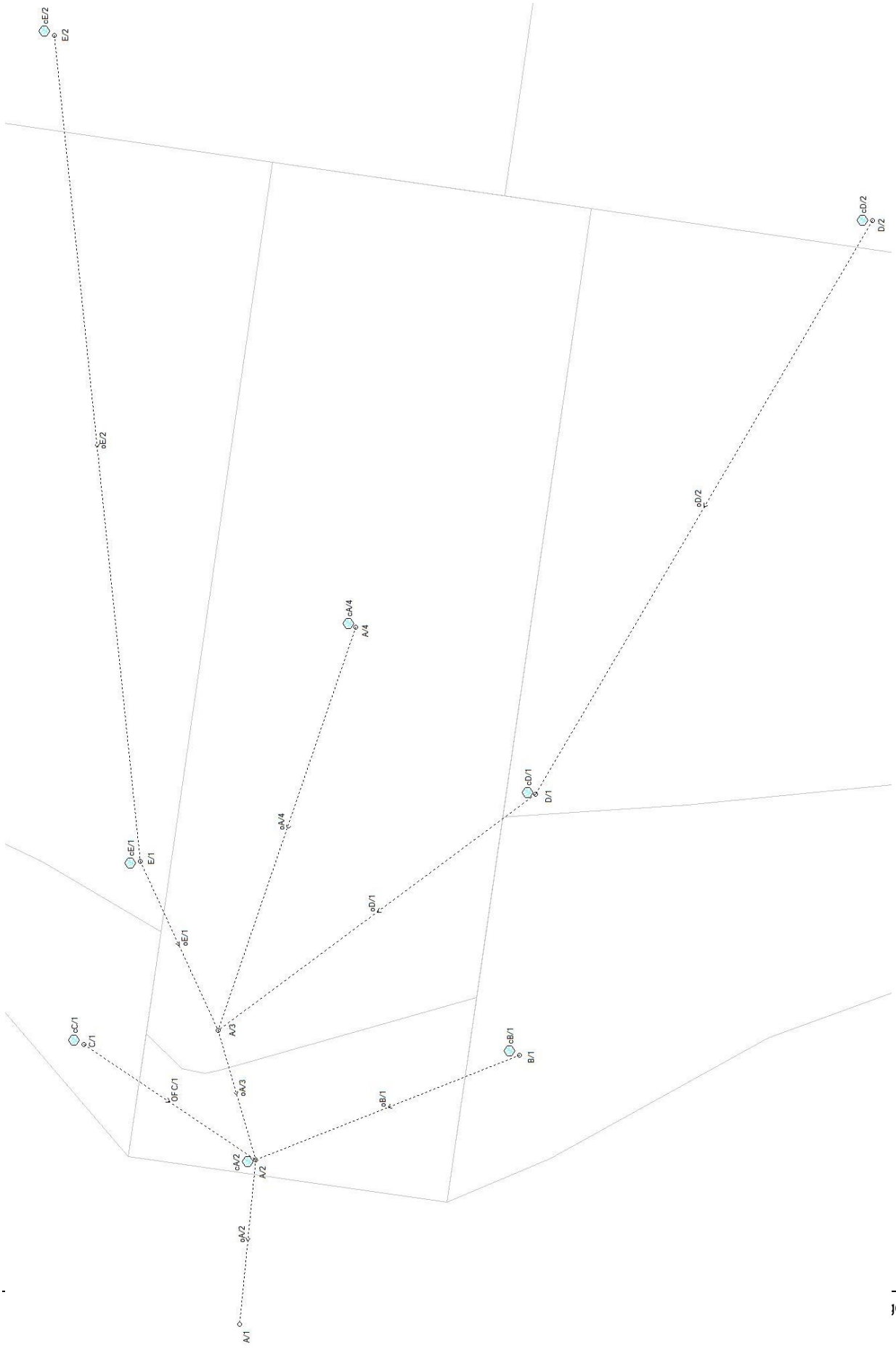
Appendix G Stormwater Water Concept Plan

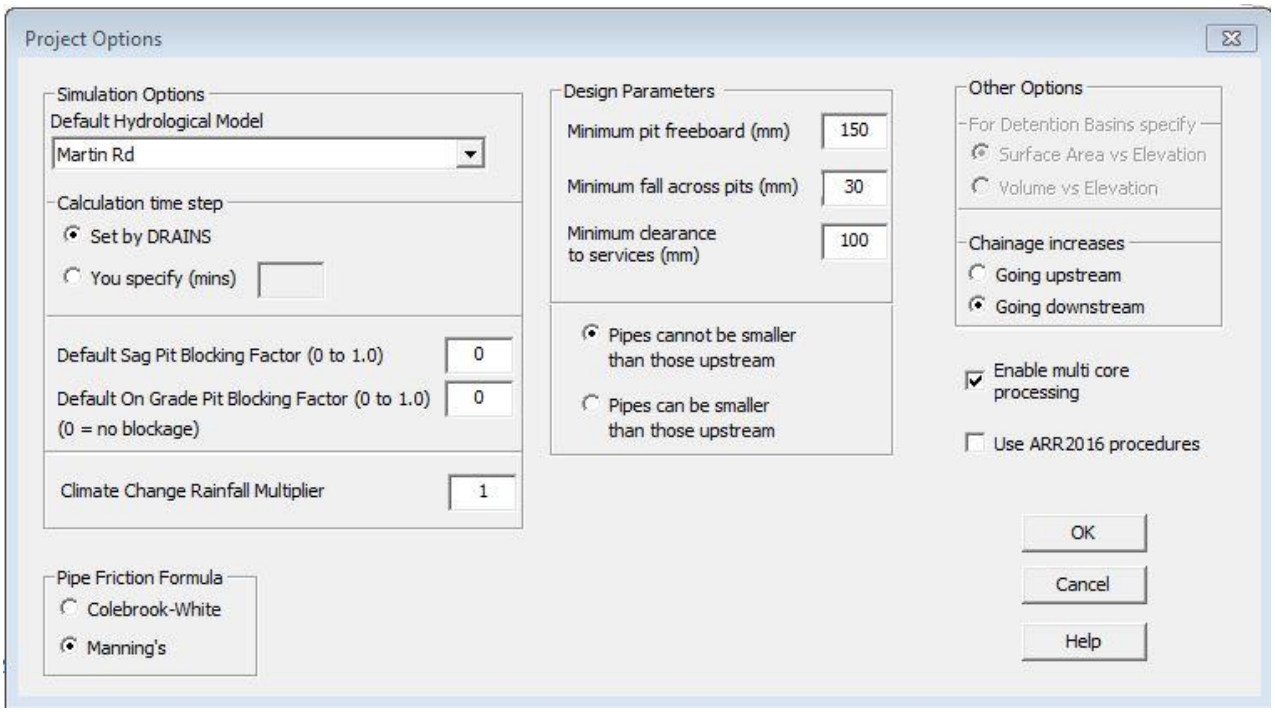
Appendix A Site Survey Plan

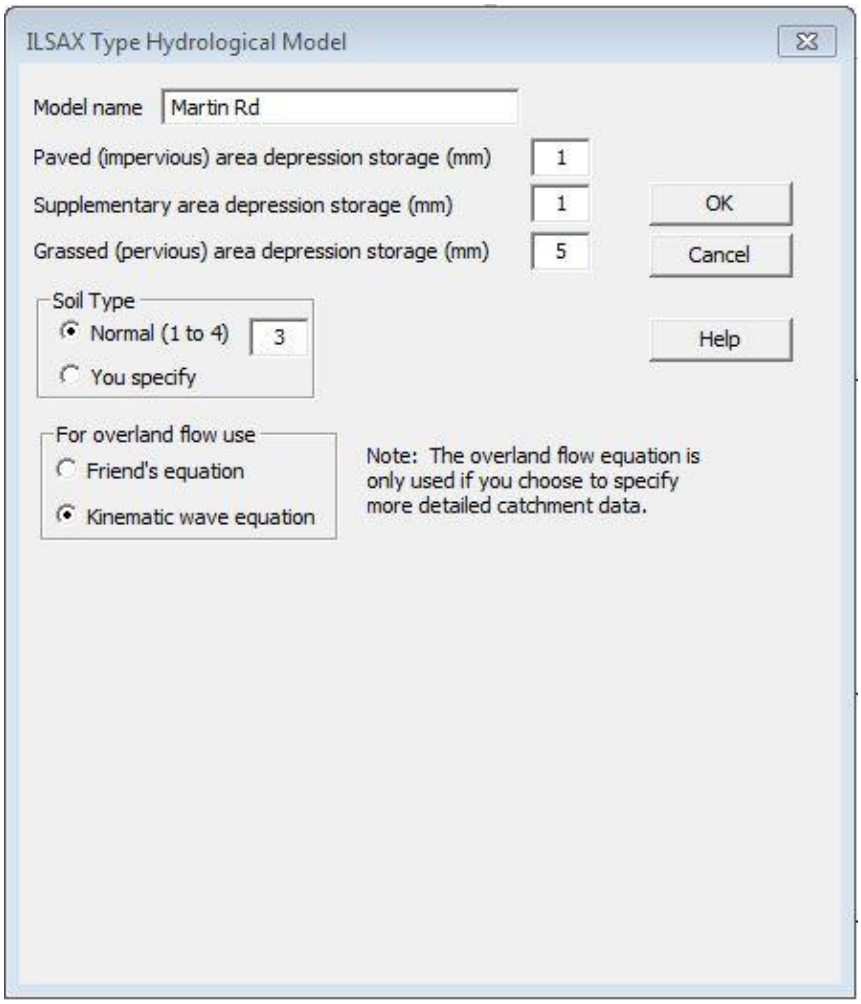


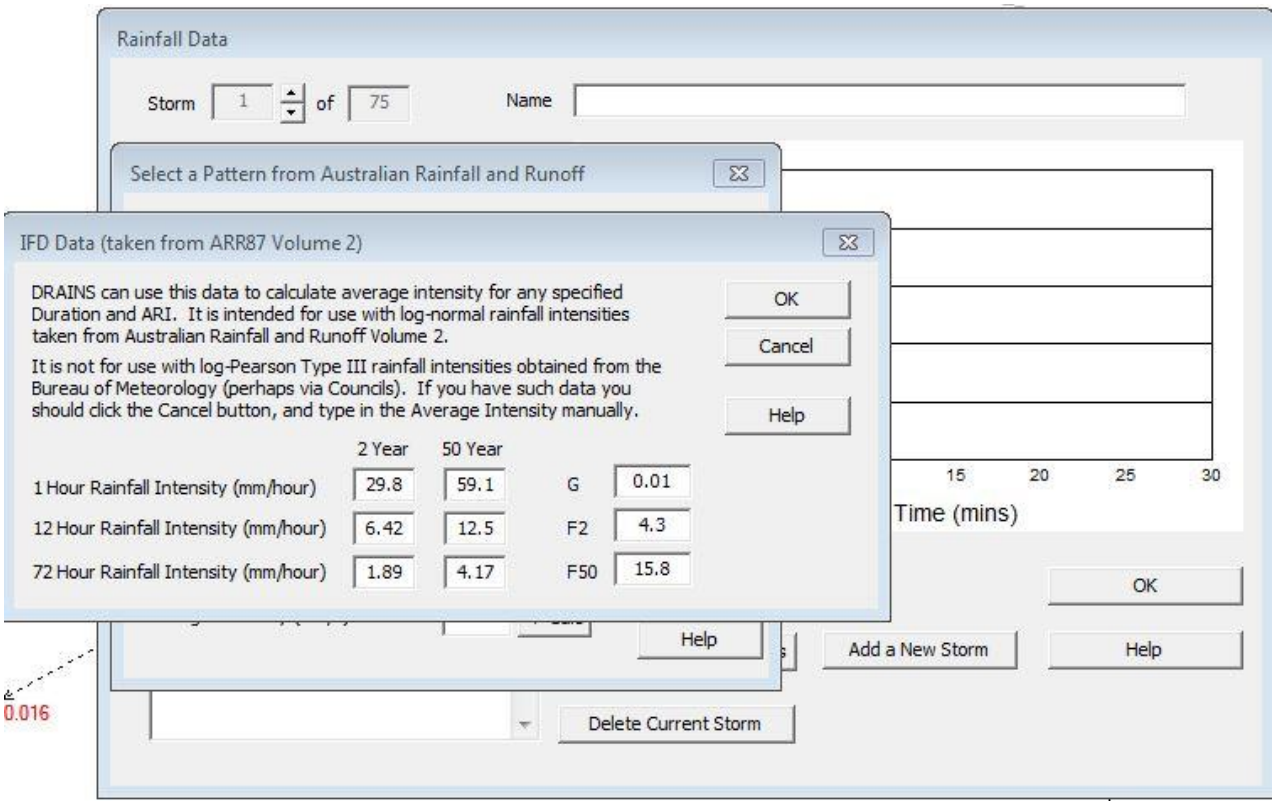
Appendix B Existing Case DRAINS model layout

Existing Case Model Layout



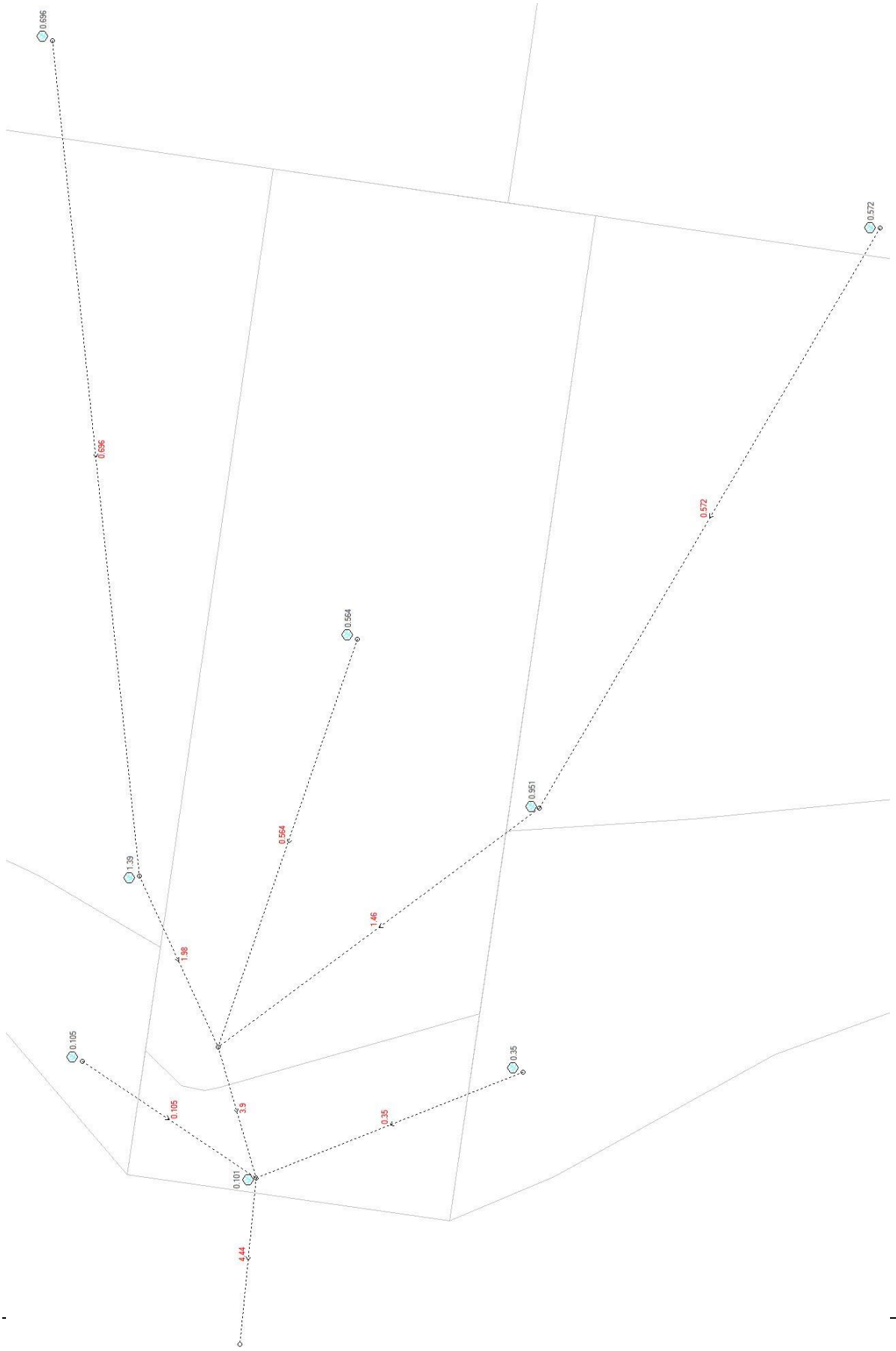

Project Options
Simulation Options
Default Hydrological Model
Martin Rd
Calculation time step
Set by DRAINS
You specify (mins)
Default Sag Pit Blocking Factor (0 to 1.0)
0
Default On Grade Pit Blocking Factor (0 to 1.0)
(0 = no blockage)
0
Climate Change Rainfall Multiplier
1
Pipe Friction Formula
Colebrook-White
Manning's
Design Parameters
Minimum pit freeboard (mm)
150
Minimum fall across pits (mm)
30
Minimum clearance to services (mm)
100
Pipes cannot be smaller than those upstream
Pipes can be smaller than those upstream
Other Options
For Detention Basins specify
Surface Area vs Elevation
Volume vs Elevation
Chainage increases
Going upstream
Going downstream
Enable multi core processing
Use ARR2016 procedures
OK
Cancel
Help


ILSAX Type Hydrological Model
Model name
Martin Rd
Paved (impervious) area depression storage (mm)
1
Supplementary area depression storage (mm)
1
Grassed (pervious) area depression storage (mm)
5
OK
Cancel
Help
Soil Type
Normal (1 to 4)
3
You specify
For overland flow use
Friend's equation
Kinematic wave equation
Note: The overland flow equation is only used if you choose to specify more detailed catchment data.

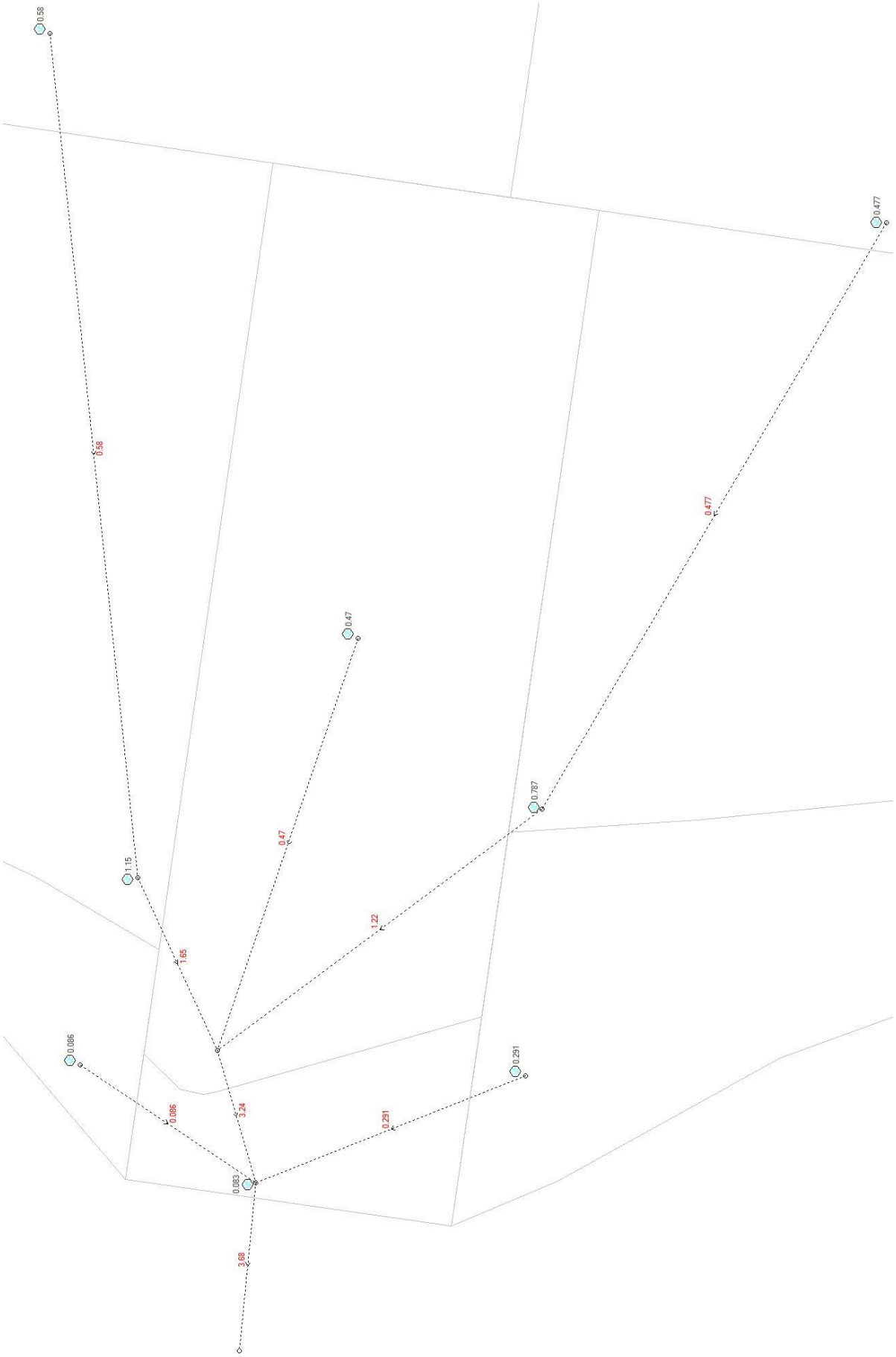

Rainfall Data
Storm
1
of
75
Name
Select a Pattern from Australian Rainfall and Runoff
IFD Data (taken from ARR87 Volume 2)
DRAINS can use this data to calculate average intensity for any specified Duration and ARI. It is intended for use with log-normal rainfall intensities taken from Australian Rainfall and Runoff Volume 2.
It is not for use with log-Pearson Type III rainfall intensities obtained from the Bureau of Meteorology (perhaps via Councils). If you have such data you should click the Cancel button, and type in the Average Intensity manually.
OK
Cancel
Help
2 Year
50 Year
1 Hour Rainfall Intensity (mm/hour)
29.8
59.1
G
0.01
12 Hour Rainfall Intensity (mm/hour)
6.42
12.5
F2
4.3
72 Hour Rainfall Intensity (mm/hour)
1.89
4.17
F50
15.8
15
20
25
30
Time (mins)
OK
Help
Add a New Storm
Help
0.016
Delete Current Storm

Appendix C Existing Case Results

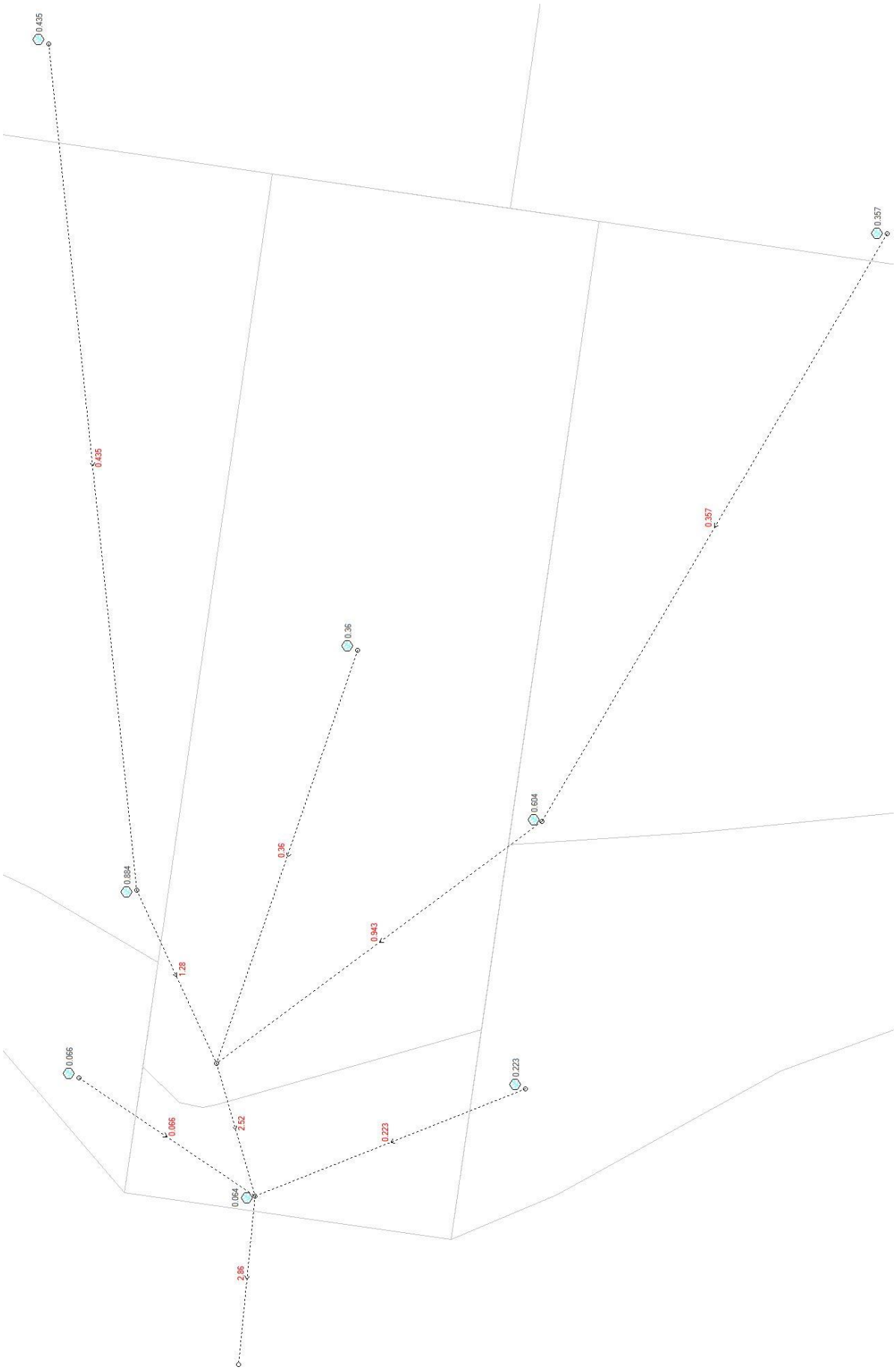
100 Year ARI Existing Case Peak Flows



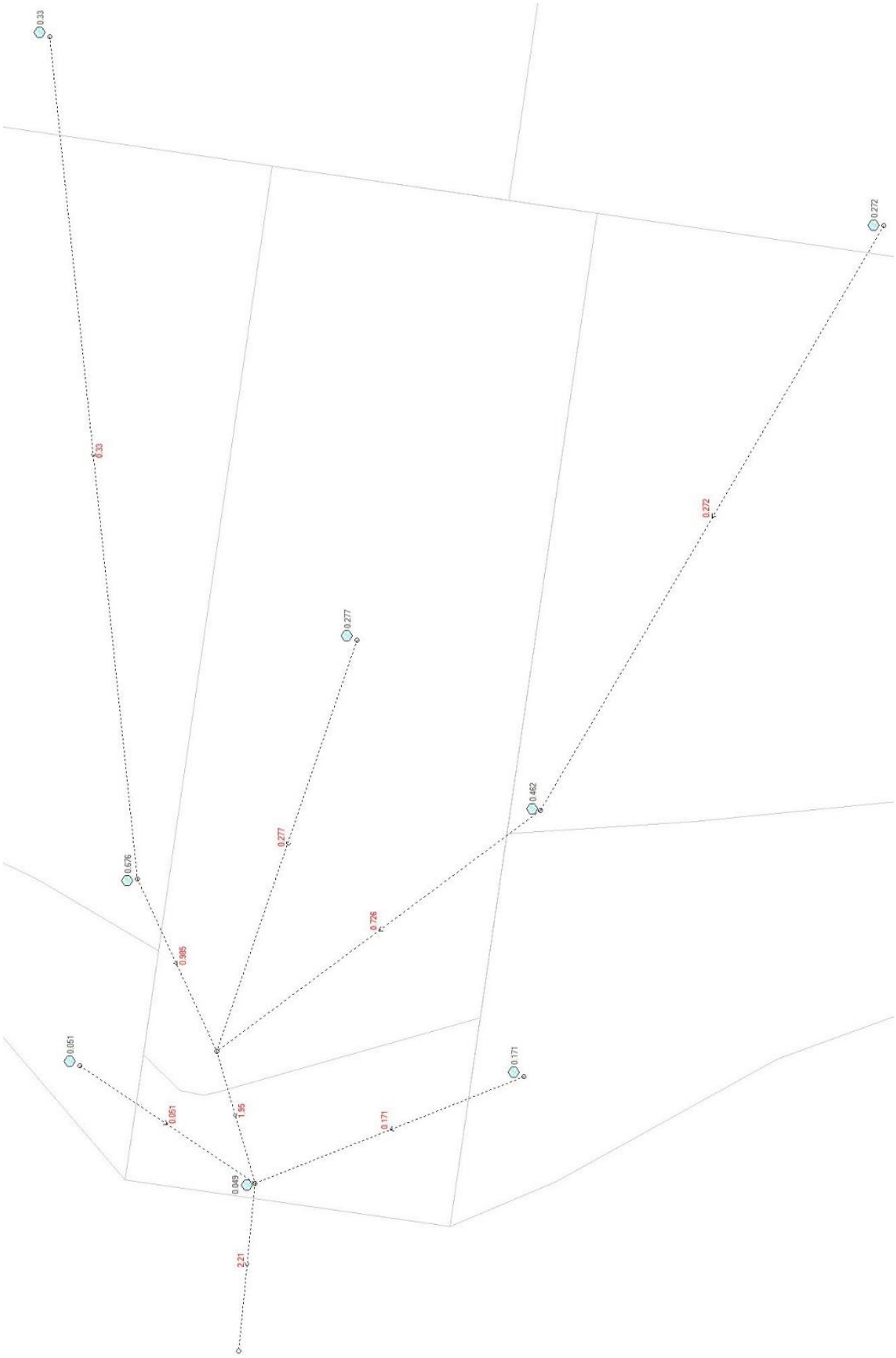
50 Year ARI Existing Case Peak Flows



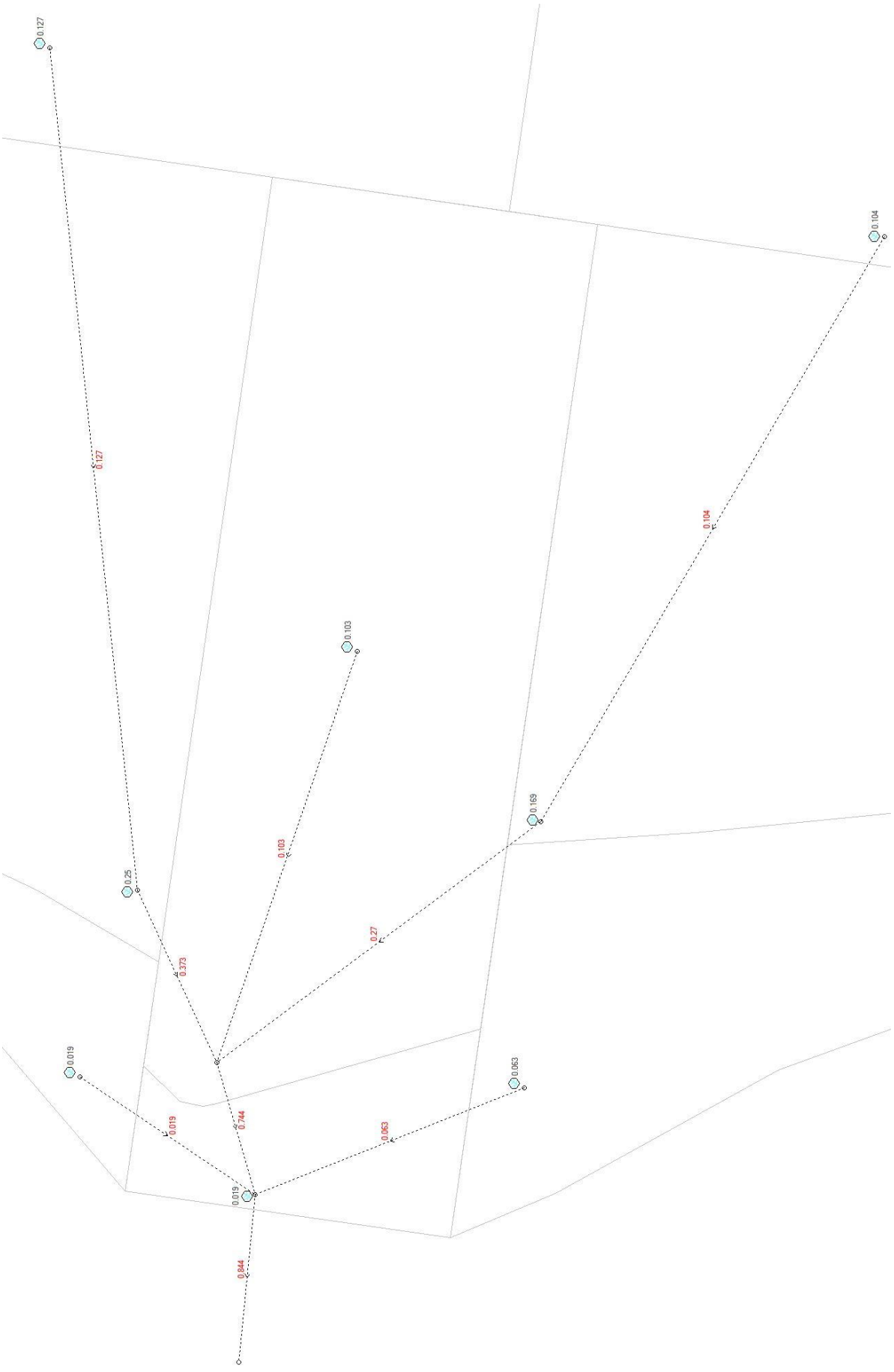
20 Year ARI Existing Case Peak Flows



10 Year ARI Existing Case Peak Flows

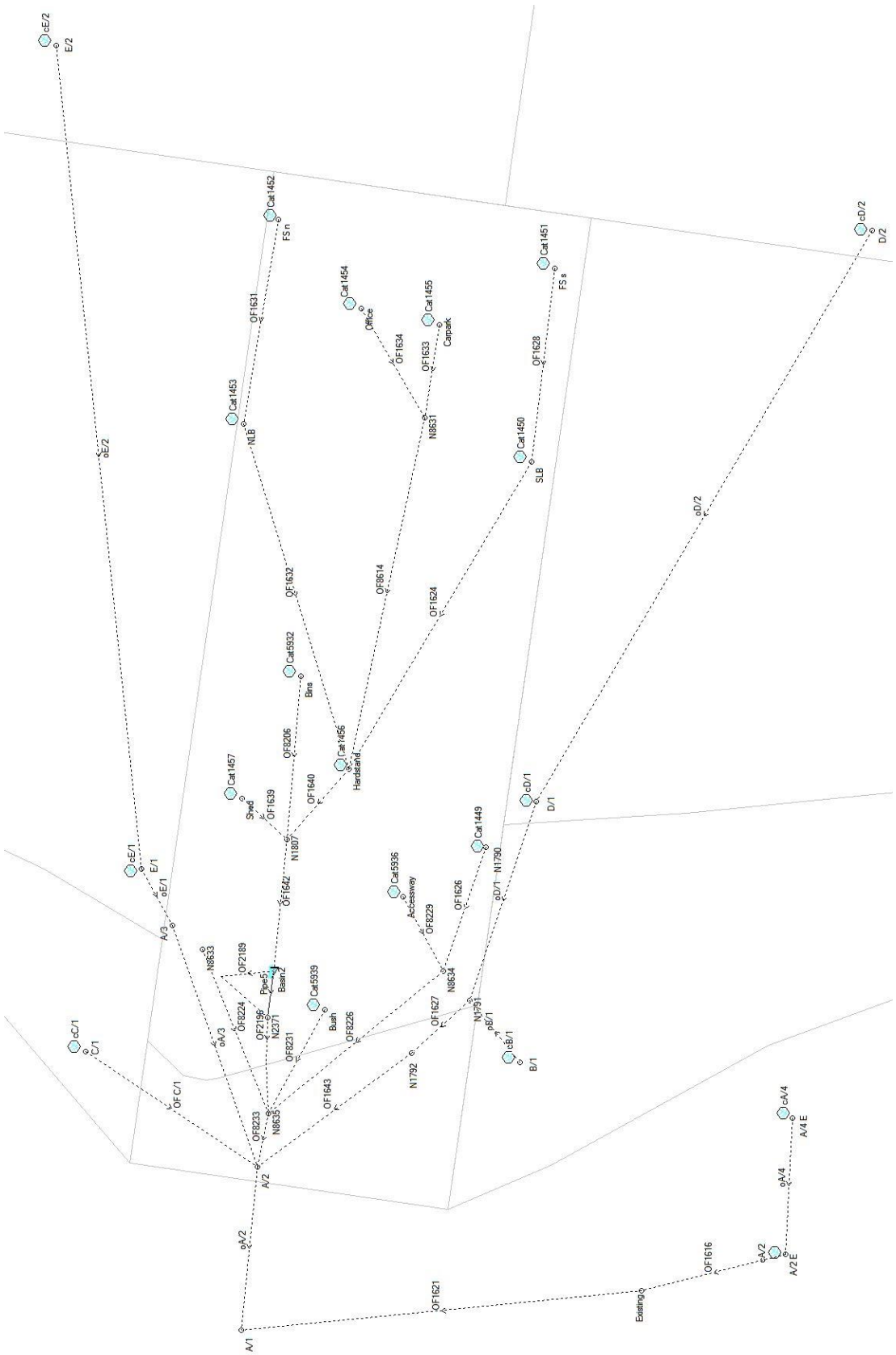


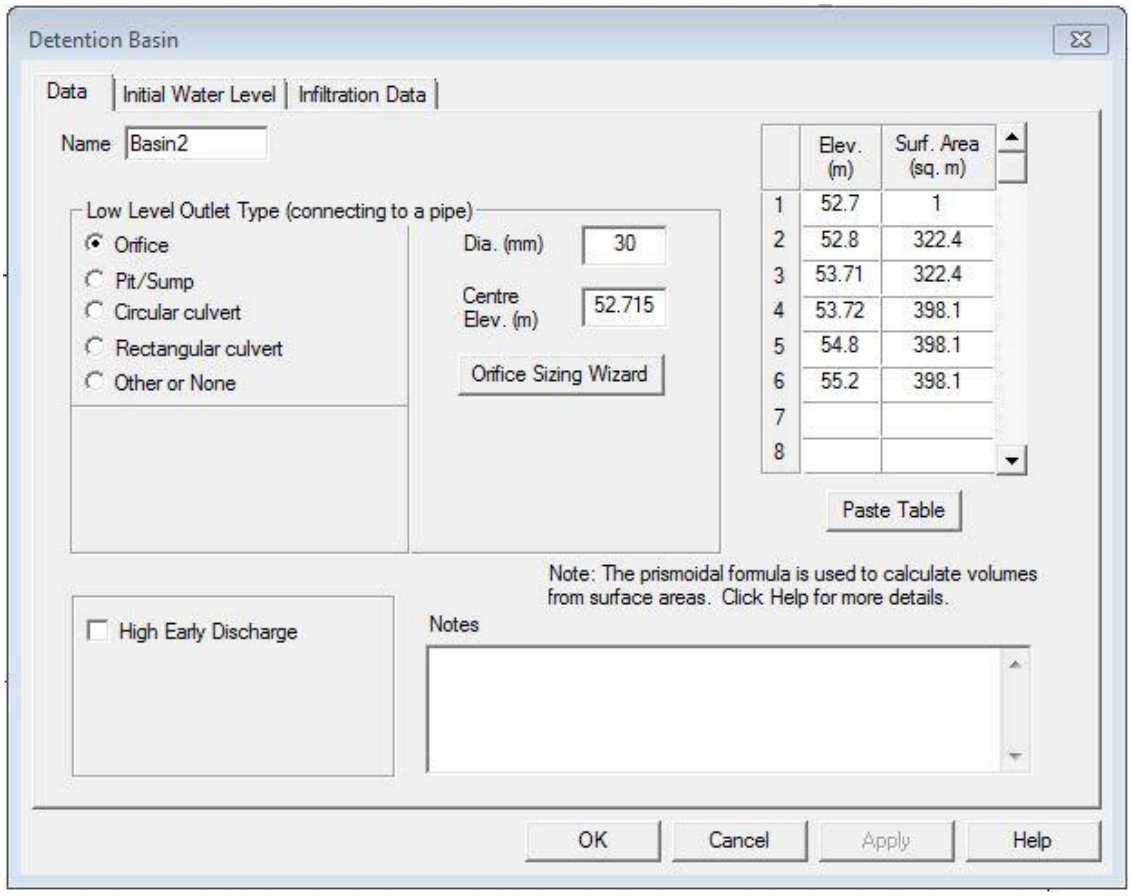
5 Year ARI Existing Case Peak Flows

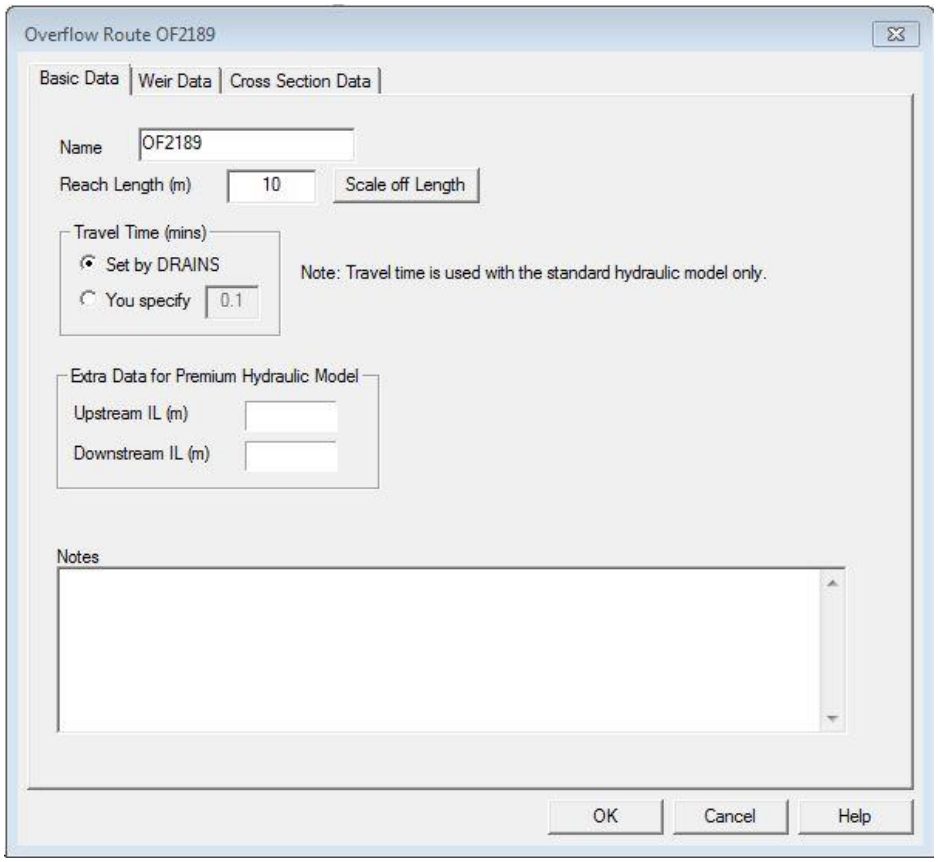


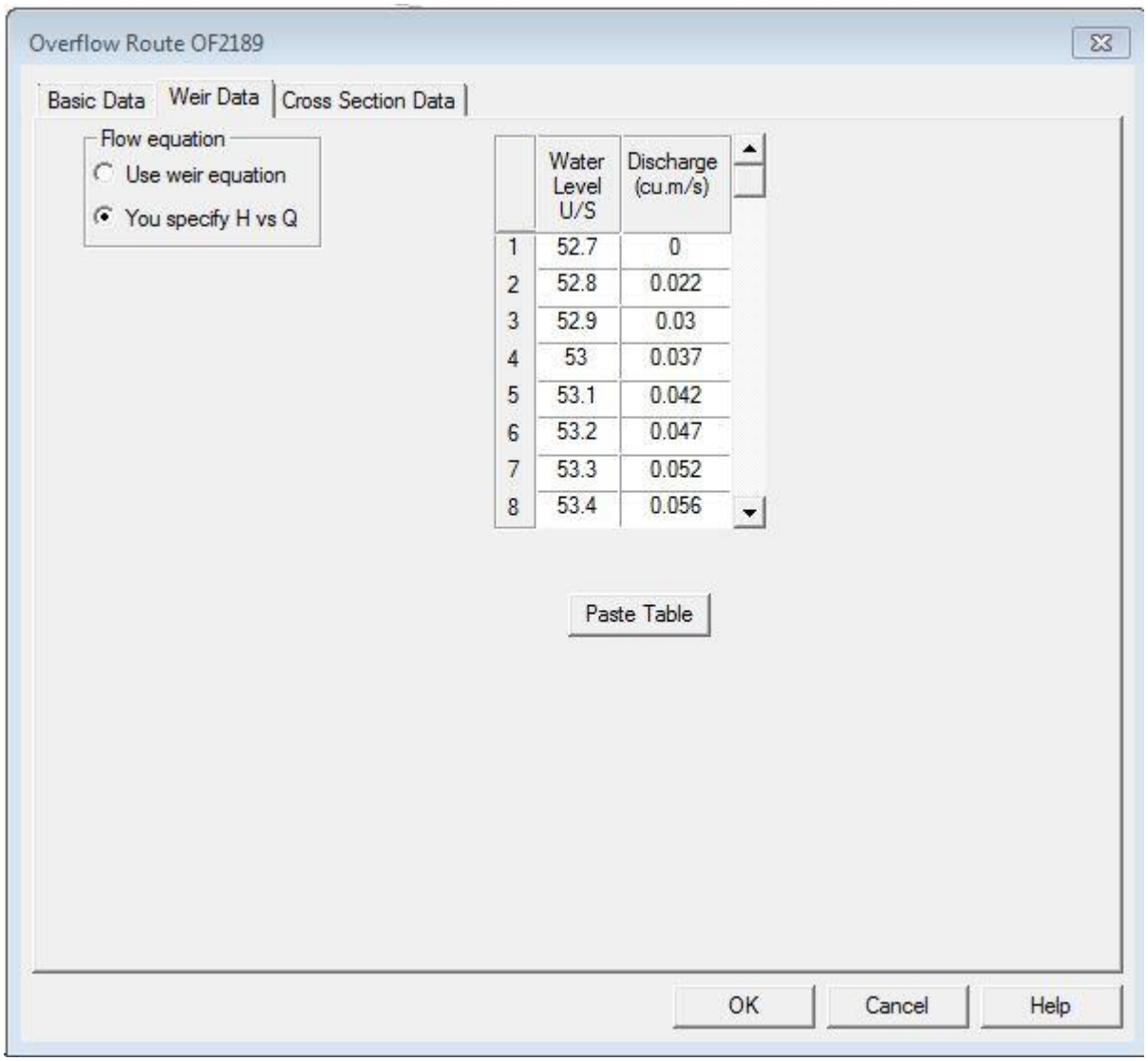
Appendix D Developed Case DRAINS model layout

Developed Case Model Layout



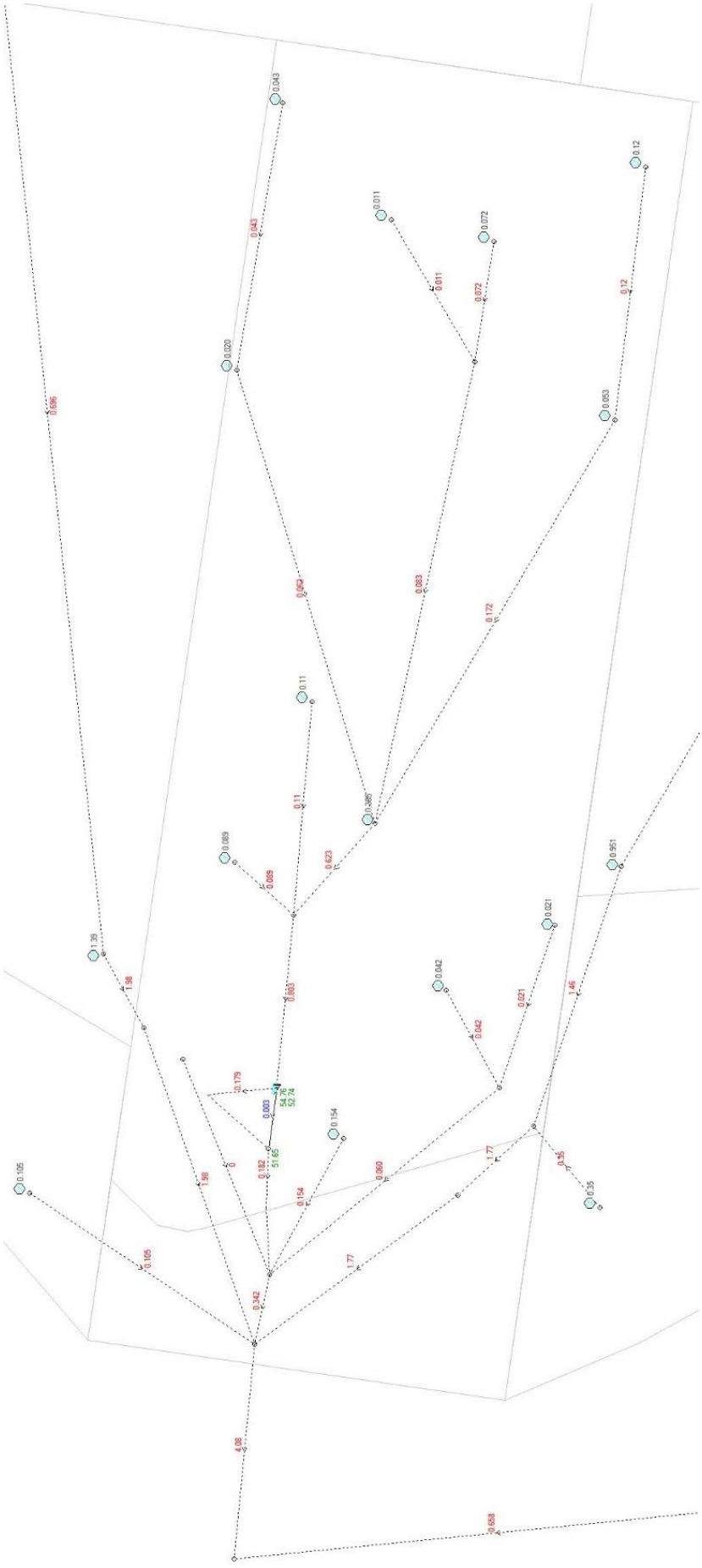

Detention Basin
Data
Initial Water Level
Infiltration Data
Name Basin2
Low Level Outlet Type (connecting to a pipe)
Orifice
Pit/Sump
Circular culvert
Rectangular culvert
Other or None
Dia. (mm) 30
Centre Elev. (m) 52.715
Orifice Sizing Wizard
Elev. (m)
Surf. Area (sq. m)
1 52.7 1
2 52.8 322.4
3 53.71 322.4
4 53.72 398.1
5 54.8 398.1
6 55.2 398.1
7
8
Paste Table
Note: The prismoidal formula is used to calculate volumes from surface areas. Click Help for more details.
High Early Discharge
Notes
OK
Cancel
Apply
Help


Overflow Route OF2189
Basic Data
Weir Data
Cross Section Data
Name OF2189
Reach Length (m) 10
Scale off Length
Travel Time (mins)
Set by DRAINS
You specify 0.1
Note: Travel time is used with the standard hydraulic model only.
Extra Data for Premium Hydraulic Model
Upstream IL (m)
Downstream IL (m)
Notes
OK
Cancel
Help

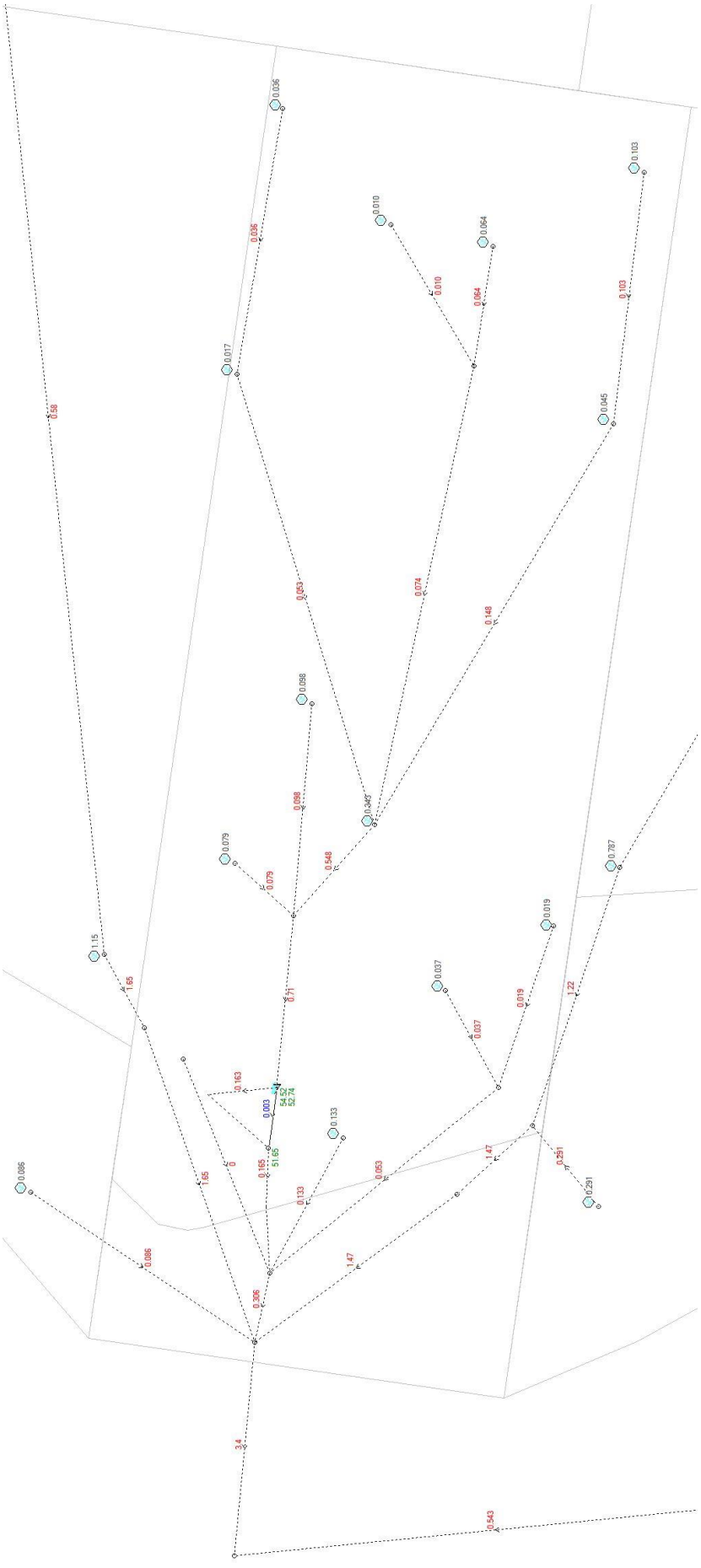

Overflow Route OF2189
Basic Data
Weir Data
Cross Section Data
Flow equation
Use weir equation
You specify H vs Q
Water Level U/S
Discharge (cu.m/s)
1 52.7 0
2 52.8 0.022
3 52.9 0.03
4 53 0.037
5 53.1 0.042
6 53.2 0.047
7 53.3 0.052
8 53.4 0.056
Paste Table
OK
Cancel
Help

Appendix E Developed Case DRAINS Results

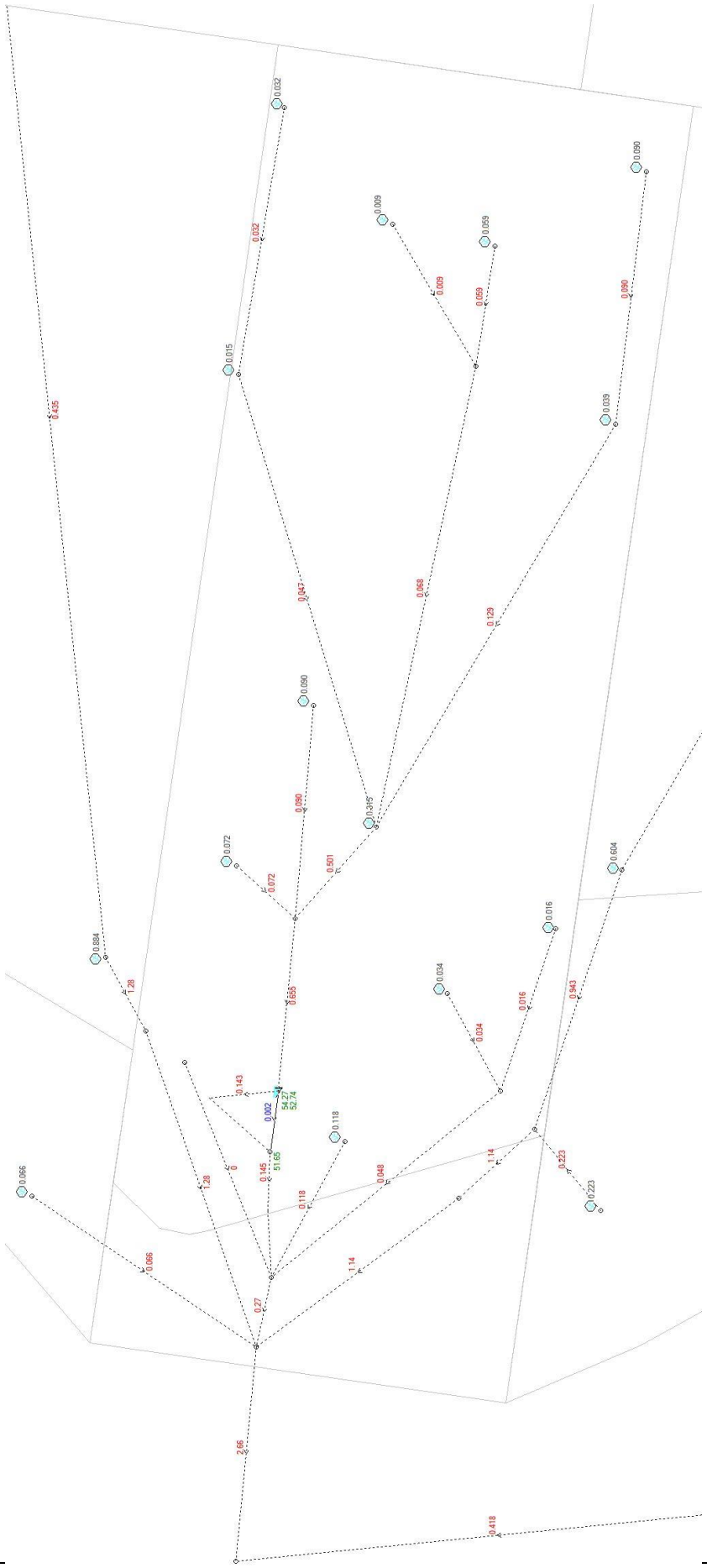
100 Year ARI Developed Case Peak Flows



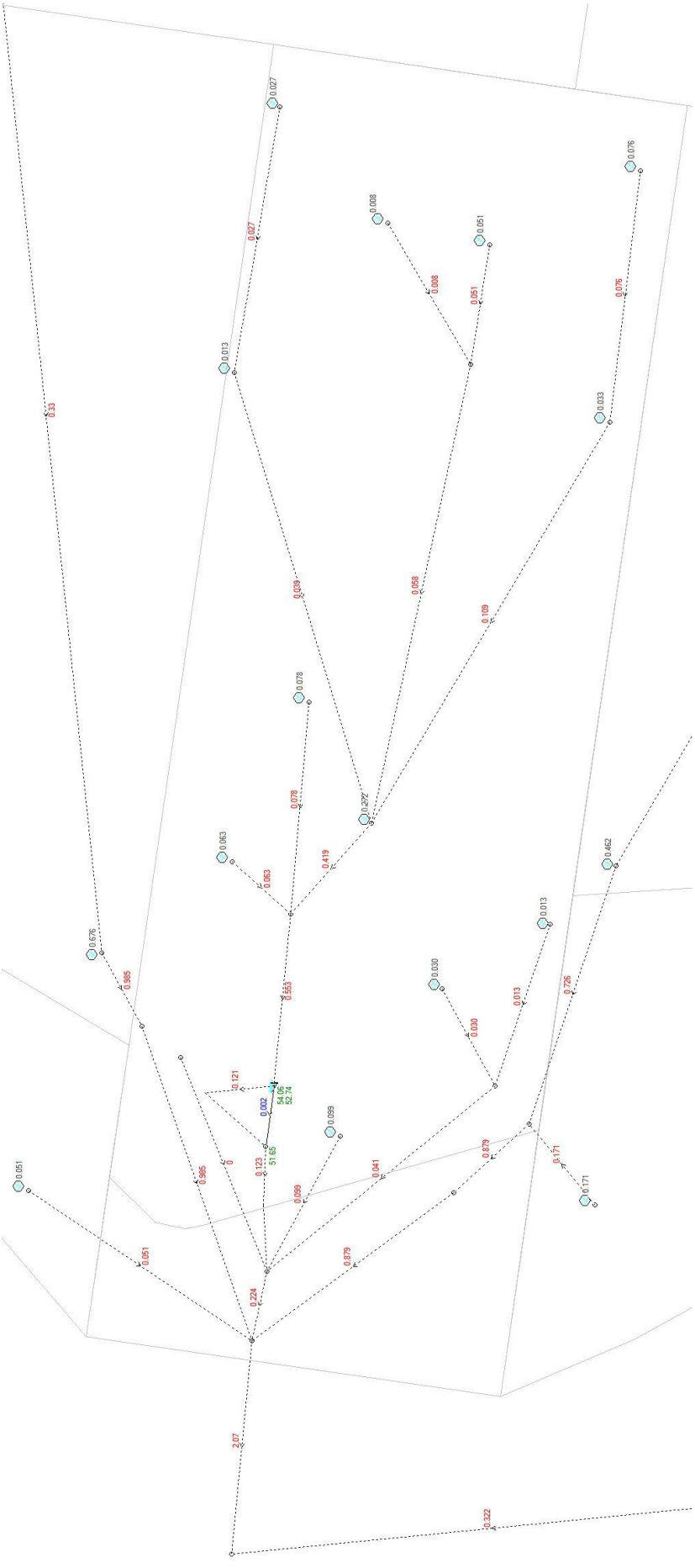
50 Year ARI Developed Case Peak Flows



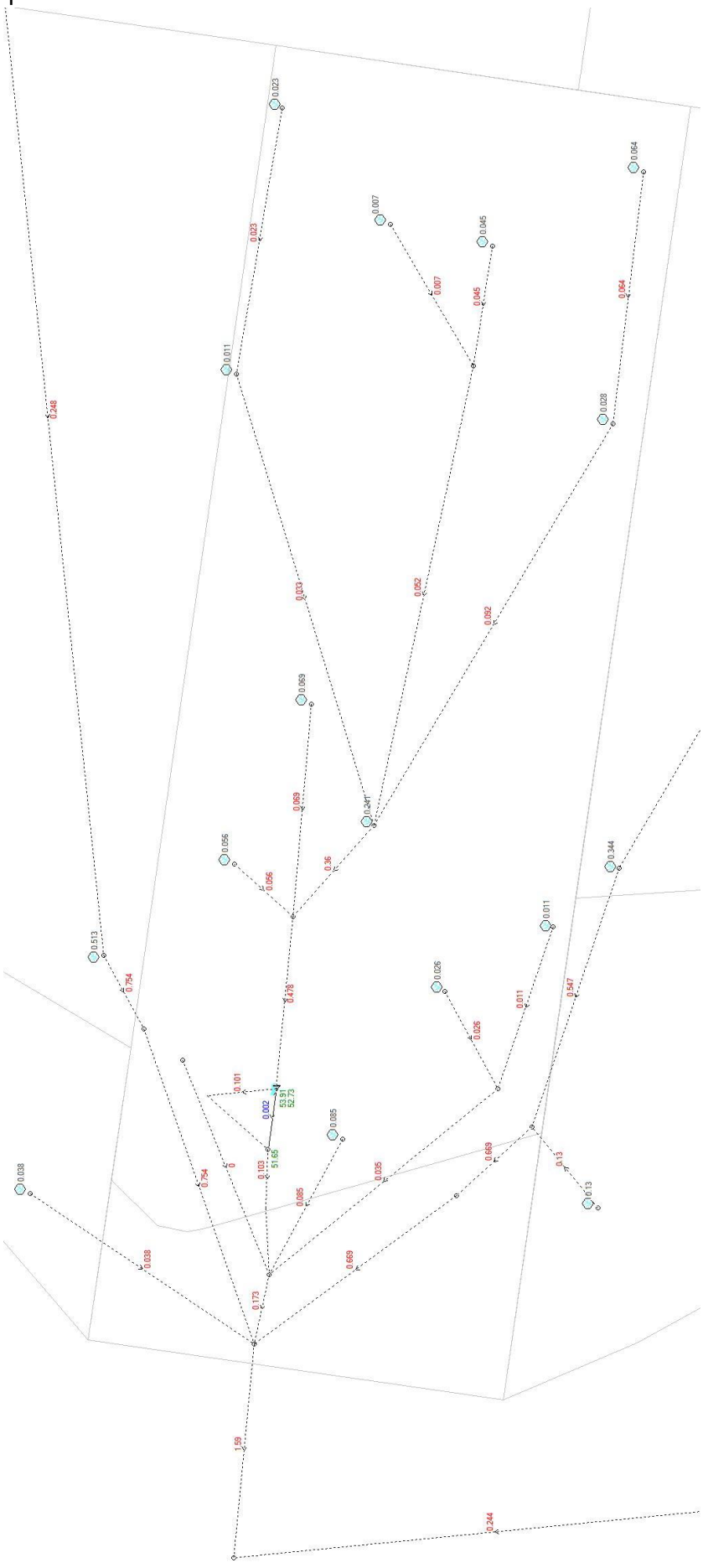
20 Year ARI Developed Case Peak Flows



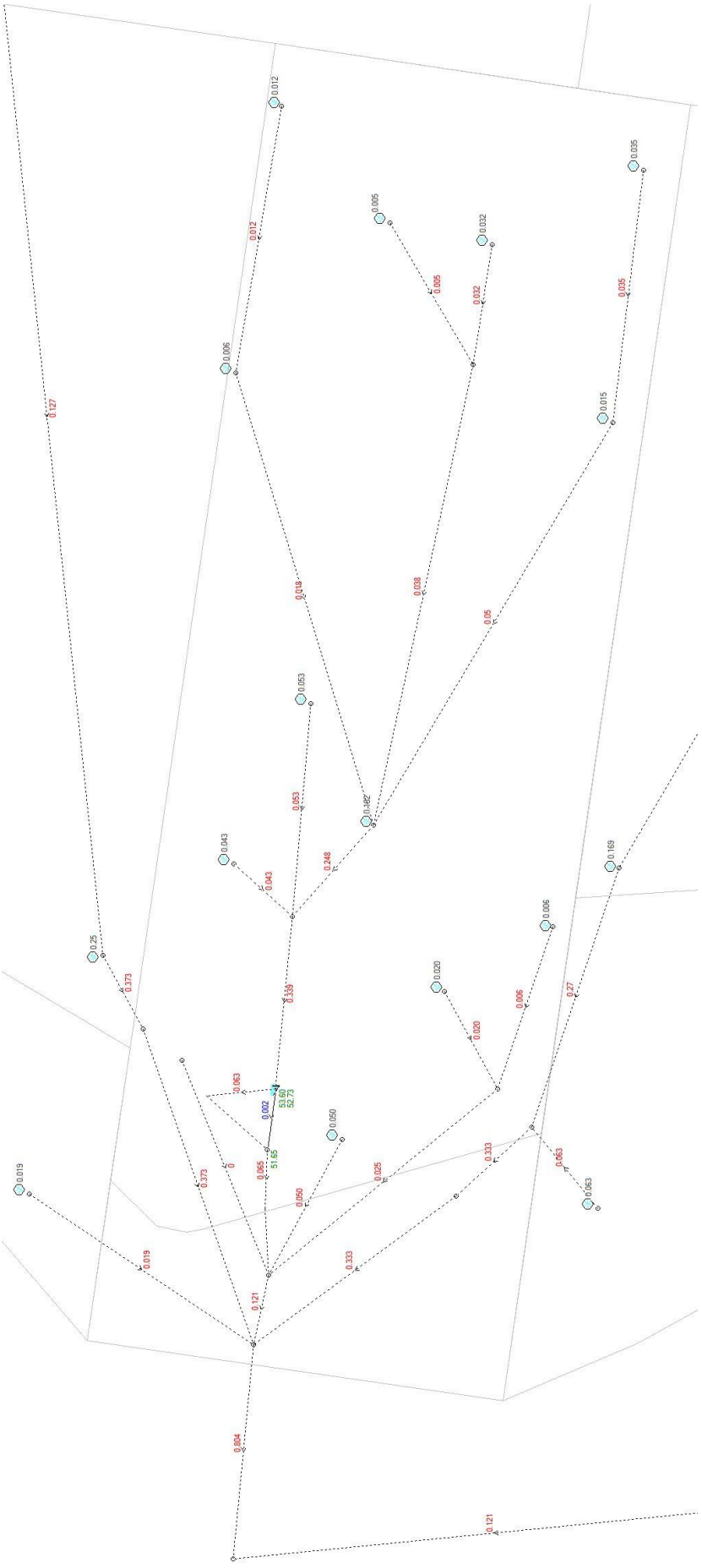
10 Year ARI Developed Case Peak Flows



5 Year ARI Developed Case Peak Flows

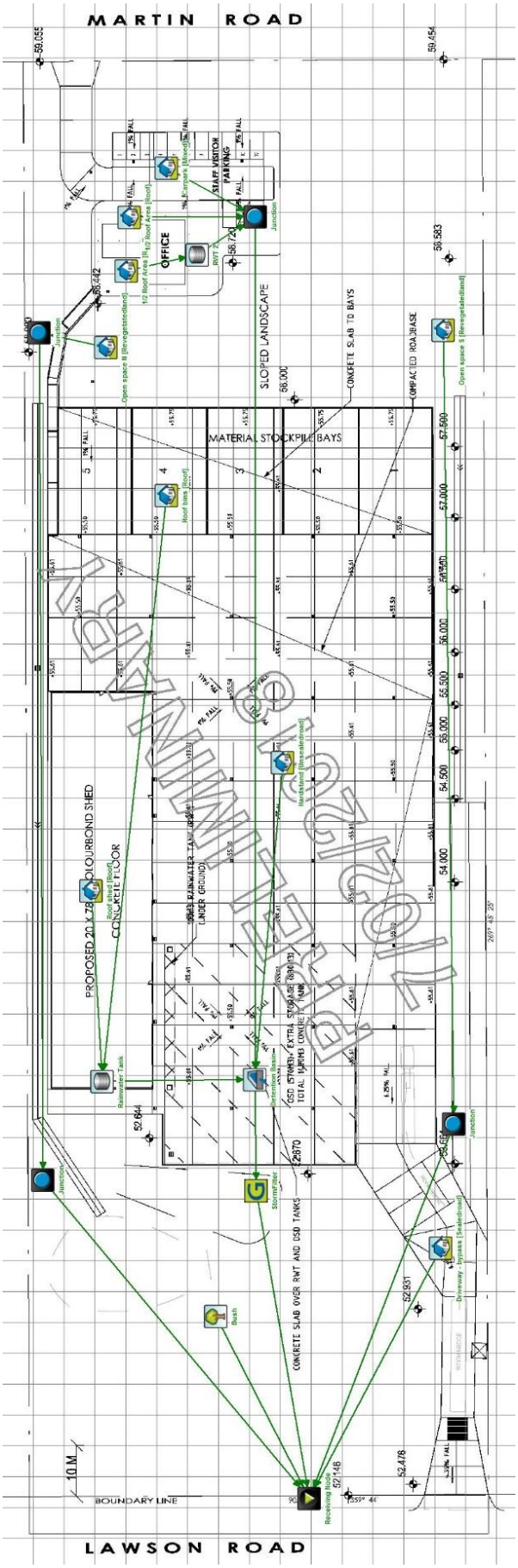


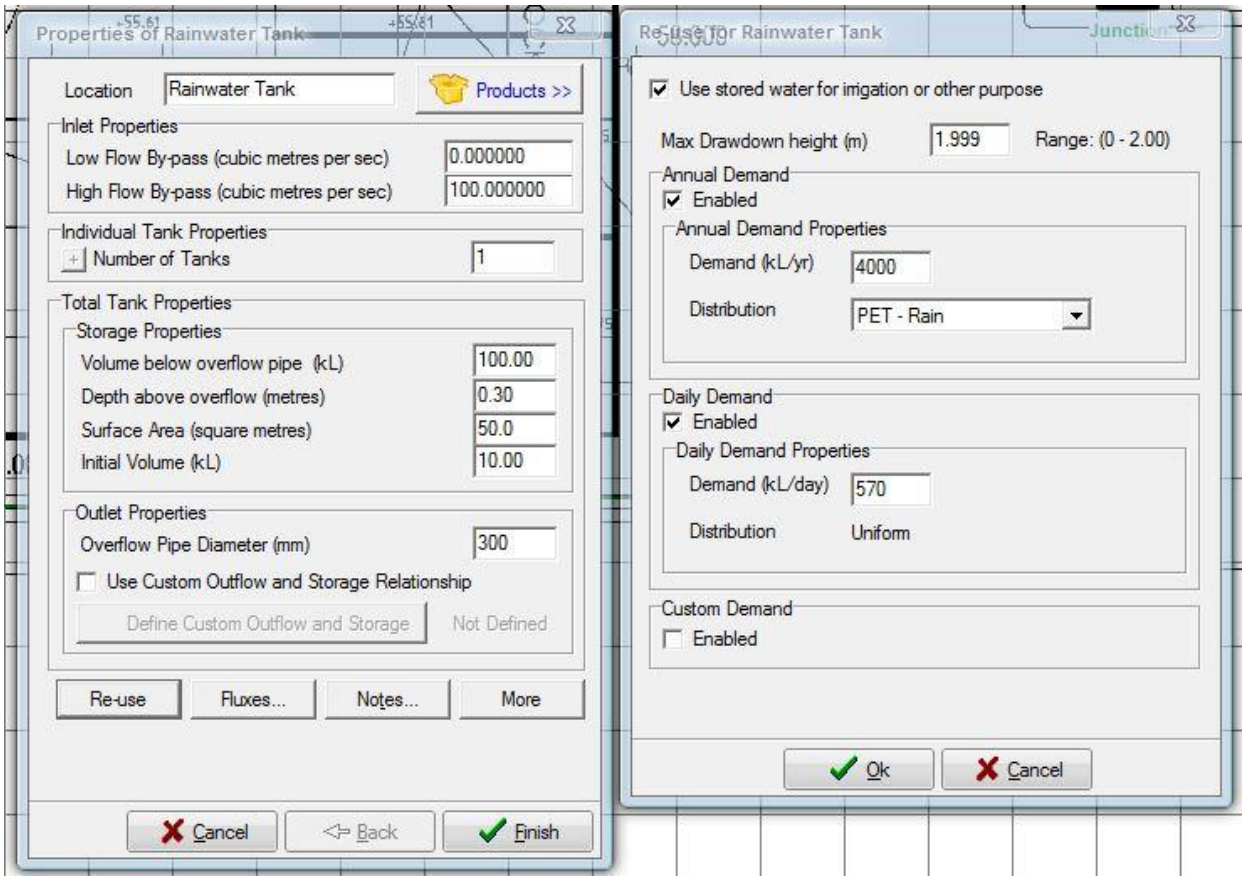
2 Year ARI Developed Case Peak Flows

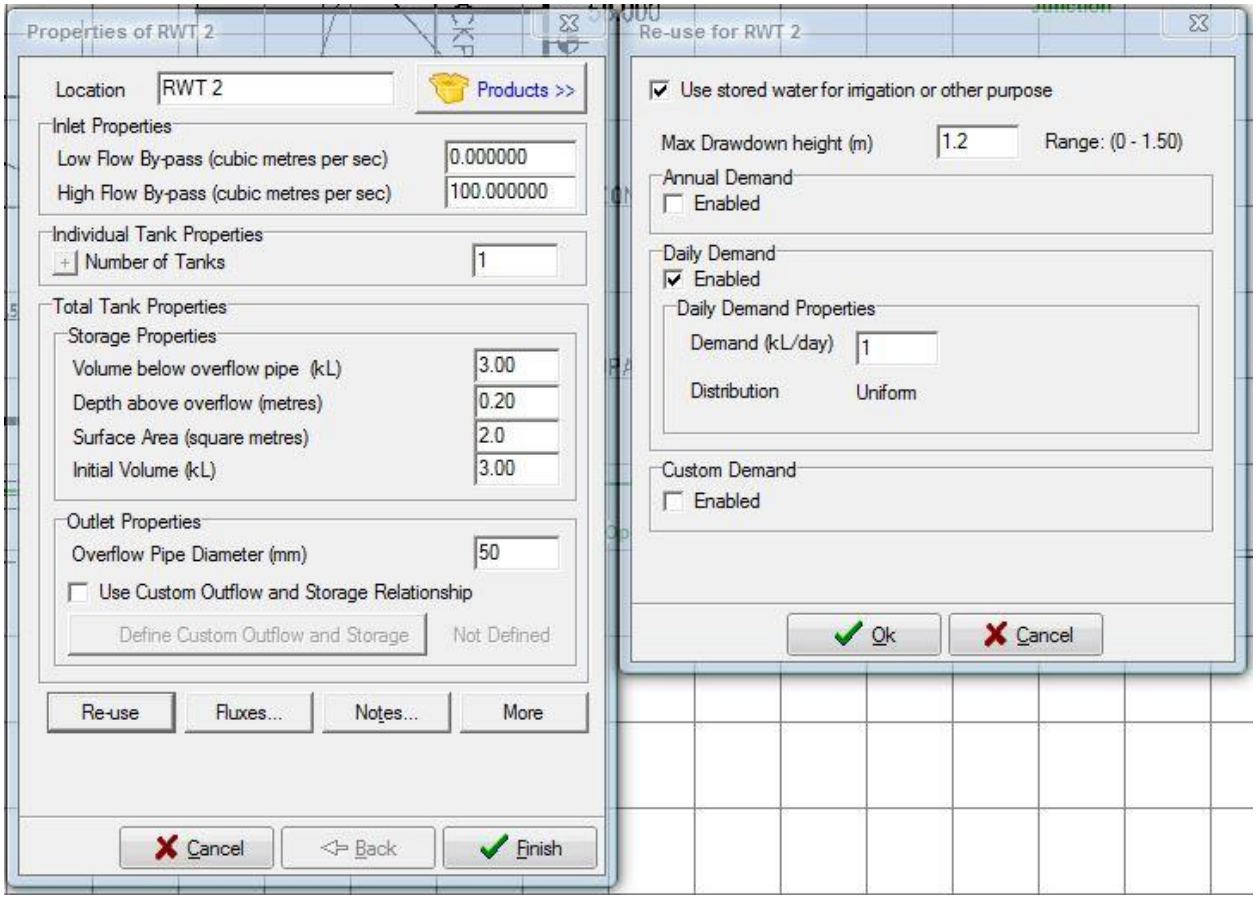


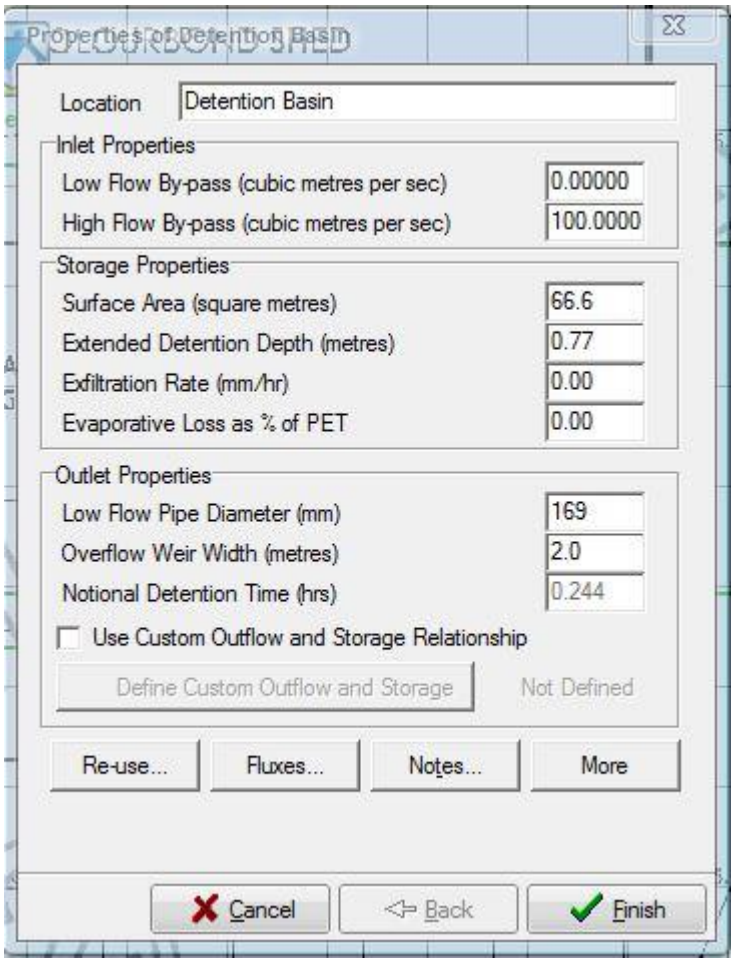
Appendix F MUSIC model layout and results

MUSIC Model Layout




Properties of Rainwater Tank
Location
Rainwater Tank
Products >>
Inlet Properties
Low Flow By-pass (cubic metres per sec)
0.000000
High Flow By-pass (cubic metres per sec)
100.000000
Individual Tank Properties
Number of Tanks
1
Total Tank Properties
Storage Properties
Volume below overflow pipe (kL)
100.00
Depth above overflow (metres)
0.30
Surface Area (square metres)
50.0
Initial Volume (kL)
10.00
Outlet Properties
Overflow Pipe Diameter (mm)
300
Use Custom Outflow and Storage Relationship
Define Custom Outflow and Storage
Not Defined
Re-use
Fluxes...
Notes...
More
Cancel
Back
Finish
Re-use for Rainwater Tank
Use stored water for irrigation or other purpose
Max Drawdown height (m)
1.999
Range: (0 - 2.00)
Annual Demand
Enabled
Annual Demand Properties
Demand (kL/yr)
4000
Distribution
PET - Rain
Daily Demand
Enabled
Daily Demand Properties
Demand (kL/day)
570
Distribution
Uniform
Custom Demand
Enabled
Ok
Cancel


Properties of RWT 2
Location
RWT 2
Products >>
Inlet Properties
Low Flow By-pass (cubic metres per sec)
0.000000
High Flow By-pass (cubic metres per sec)
100.000000
Individual Tank Properties
Number of Tanks
1
Total Tank Properties
Storage Properties
Volume below overflow pipe (kL)
3.00
Depth above overflow (metres)
0.20
Surface Area (square metres)
2.0
Initial Volume (kL)
3.00
Outlet Properties
Overflow Pipe Diameter (mm)
50
Use Custom Outflow and Storage Relationship
Define Custom Outflow and Storage
Not Defined
Re-use
Fluxes...
Notes...
More
Cancel
Back
Finish
Re-use for RWT 2
Use stored water for irrigation or other purpose
Max Drawdown height (m)
1.2
Range: (0 - 1.50)
Annual Demand
Enabled
Daily Demand
Enabled
Daily Demand Properties
Demand (kL/day)
1
Distribution
Uniform
Custom Demand
Enabled
Ok
Cancel



Stormwater360
AUSTRALIA

DETENTION PARAMETERS FOR STORMFILTER SYSTEMS

Fill values in BLUE cells

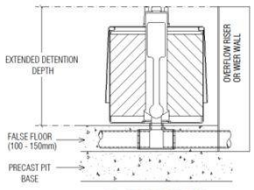
System Type (Detention or Precast)	Custom
Cartridge Height	690
Number of Cartridges	32
Cartridge Type	Full Flow ZPG
Custom Detention Tank Inputs	
Length (m)	8.5
Width (m)	8.5
Diameter (m, leave blank if not a manhole)	0.0

Detention Basin Properties For MUSIC

Inlet Properties	
Low Flow By-pass (cubic metres per sec)	0.000
High Flow By-pass (cubic metres per sec)	100.000
Storage Properties	
Surface Area (square metres)	66.6
Extended Detention Depth (metres)	0.77
Exfiltration Rate (mm/hr)	0.00
Evaporative Loss as % of PET	0.00
Outlet Properties	
Low Flow Pipe Diameter (mm)	169
Overflow Weir Width (metres)	2.0

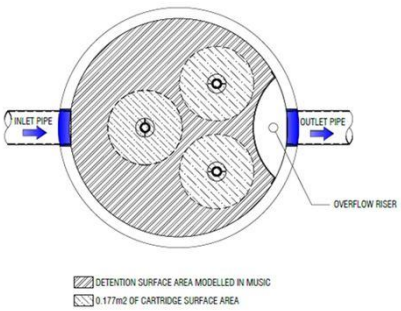
StormFilter Properties For MUSIC

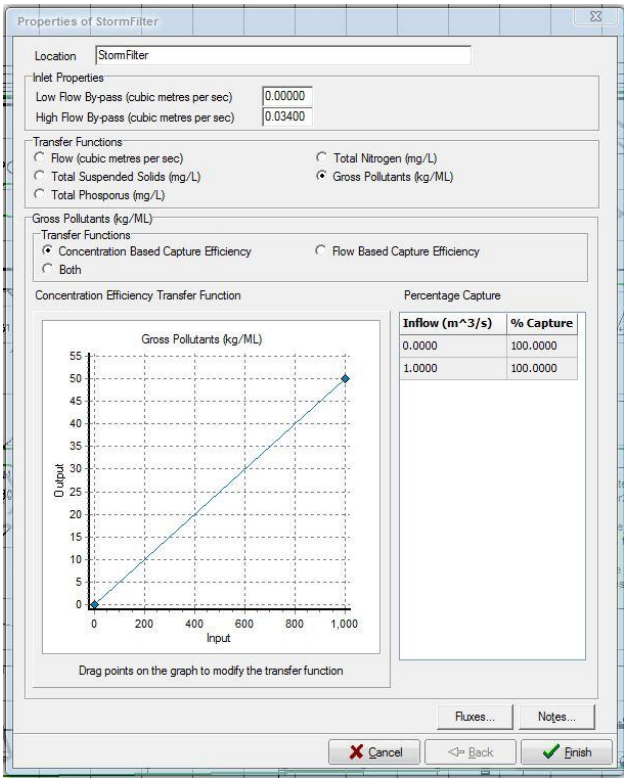
Inlet Properties	
Low Flow By-pass (cubic metres per sec)	0.000
High Flow By-pass (cubic metres per sec)	0.05120

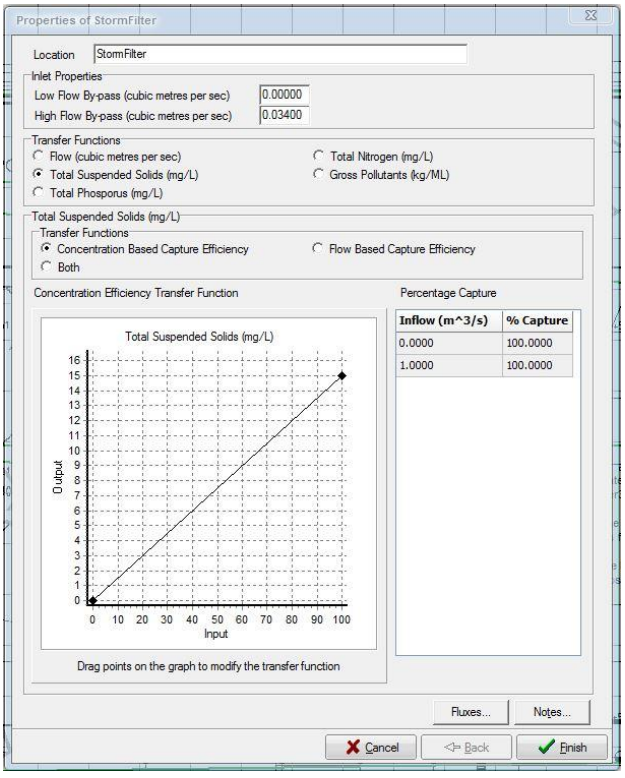


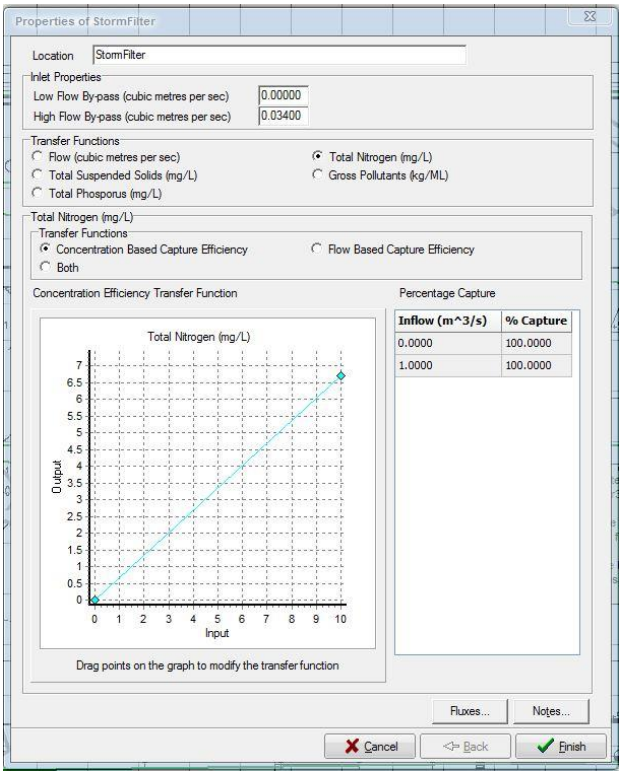
STORMFILTER CARTRIDGE DETAIL

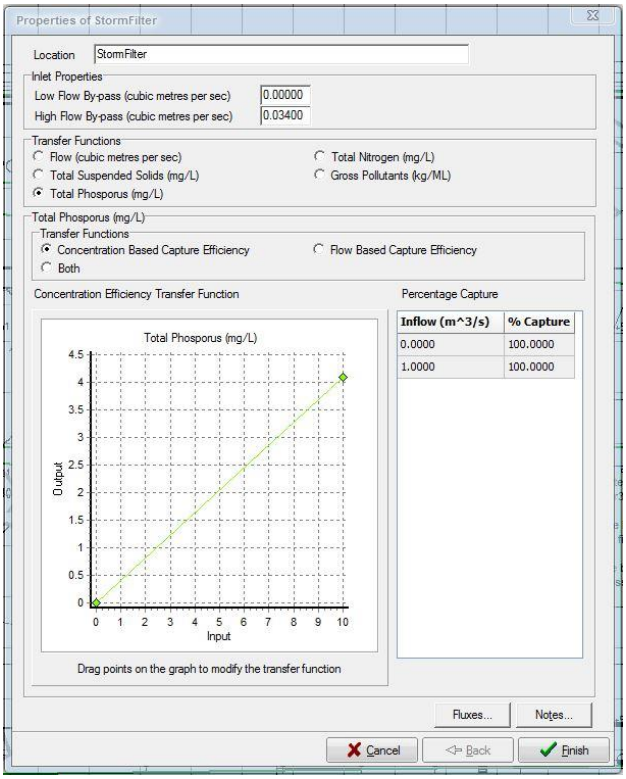
TYPICAL MANHOLE STORMFILTER



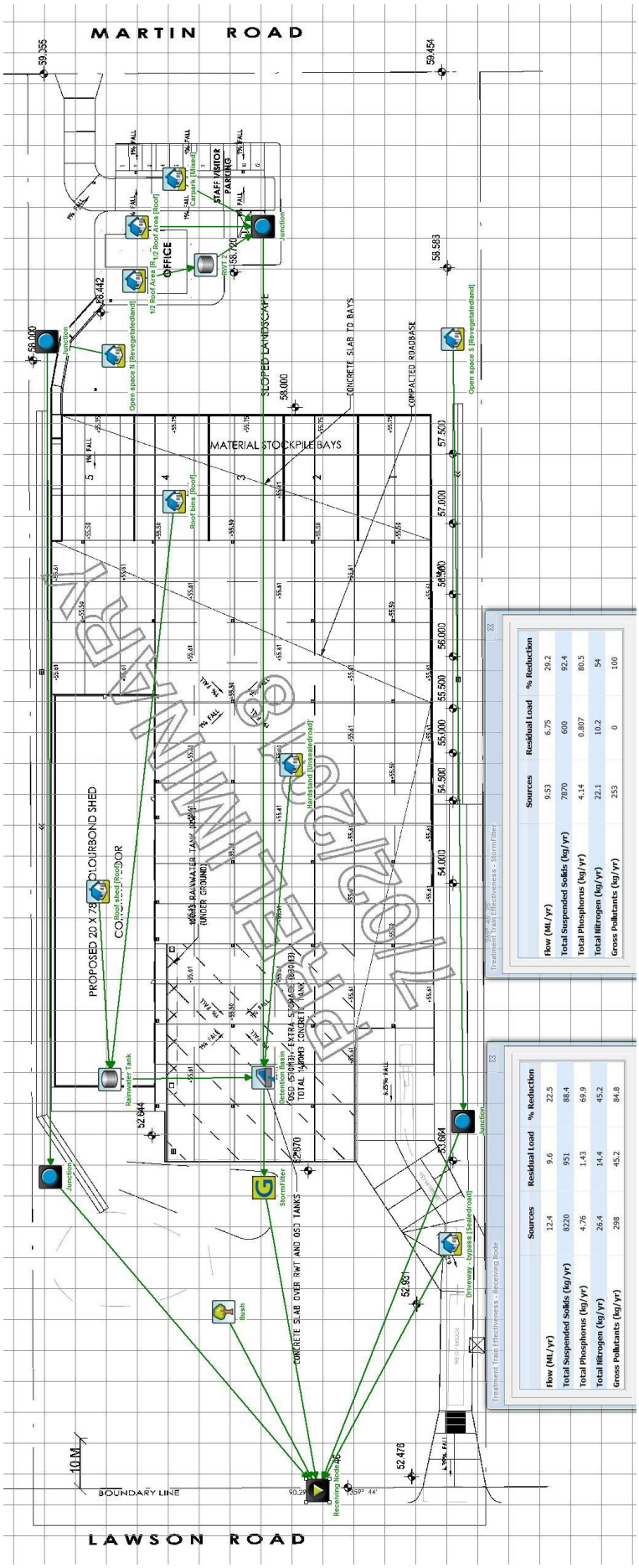

Properties of StormFilter
Location StormFilter
Inlet Properties
Low Flow By-pass (cubic metres per sec) 0.00000
High Flow By-pass (cubic metres per sec) 0.03400
Transfer Functions
Flow (cubic metres per sec)
Total Nitrogen (mg/L)
Total Suspended Solids (mg/L)
Gross Pollutants (kg/ML)
Total Phosporus (mg/L)
Gross Pollutants (kg/ML)
Transfer Functions
Concentration Based Capture Efficiency
Flow Based Capture Efficiency
Both
Concentration Efficiency Transfer Function
Gross Pollutants (kg/ML)
Output
Input
Drag points on the graph to modify the transfer function
Percentage Capture
Inflow (m^3/s) % Capture
0.0000 100.0000
1.0000 100.0000
Fluxes...
Notes...
Cancel
Back
Finish


Properties of StormFilter
Location StormFilter
Inlet Properties
Low Flow By-pass (cubic metres per sec) 0.00000
High Flow By-pass (cubic metres per sec) 0.03400
Transfer Functions
Flow (cubic metres per sec)
Total Nitrogen (mg/L)
Total Suspended Solids (mg/L)
Gross Pollutants (kg/ML)
Total Phosporus (mg/L)
Total Suspended Solids (mg/L)
Transfer Functions
Concentration Based Capture Efficiency
Flow Based Capture Efficiency
Both
Concentration Efficiency Transfer Function
Total Suspended Solids (mg/L)
Output
Input
Drag points on the graph to modify the transfer function
Percentage Capture
Inflow (m^3/s) % Capture
0.0000 100.0000
1.0000 100.0000
Fluxes...
Notes...
Cancel
Back
Finish


Properties of StormFilter
Location StormFilter
Inlet Properties
Low Flow By-pass (cubic metres per sec) 0.00000
High Flow By-pass (cubic metres per sec) 0.03400
Transfer Functions
Flow (cubic metres per sec)
Total Nitrogen (mg/L)
Total Suspended Solids (mg/L)
Gross Pollutants (kg/ML)
Total Phosporus (mg/L)
Total Nitrogen (mg/L)
Transfer Functions
Concentration Based Capture Efficiency
Flow Based Capture Efficiency
Both
Concentration Efficiency Transfer Function
Total Nitrogen (mg/L)
Output
Input
Drag points on the graph to modify the transfer function
Percentage Capture
Inflow (m^3/s) % Capture
0.0000 100.0000
1.0000 100.0000
Fluxes...
Notes...
Cancel
Back
Finish


Properties of StormFilter
Location StormFilter
Inlet Properties
Low Flow By-pass (cubic metres per sec) 0.00000
High Flow By-pass (cubic metres per sec) 0.03400
Transfer Functions
Flow (cubic metres per sec)
Total Nitrogen (mg/L)
Total Suspended Solids (mg/L)
Gross Pollutants (kg/ML)
Total Phosporus (mg/L)
Total Phosporus (mg/L)
Transfer Functions
Concentration Based Capture Efficiency
Flow Based Capture Efficiency
Both
Concentration Efficiency Transfer Function
Total Phosporus (mg/L)
Output
Input
Drag points on the graph to modify the transfer function
Percentage Capture
Inflow (m^3/s) % Capture
0.0000 100.0000
1.0000 100.0000
Fluxes...
Notes...
Cancel
Back
Finish

MUSIC Model Results



Appendix G Stormwater Water Concept Plan